Site Characterization Report

Assessment of Contaminated Sediments in Swan Creek Maumee Area of Concern, Toledo, Ohio

Prepared for
U.S. Environmental Protection Agency
Region 5
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°C	Degrees Celsius
µg/kg	Microgram(s) per kilogram
µg/L	Microgram(s) per liter
µmol/g_{oc}	Micromole(s) per gram of organic carbon
Affiliated	Affiliated Researchers, LLC
AOC	Area of Concern
AVS	Acid volatile sulfide
bss	Below sediment surface
BUI	Beneficial Use Impairment
CDF	Confined Disposal Facility
DRO	Diesel range organics
EA	EA Engineering, Science, and Technology, INC., PBC
EPA	U.S. Environmental Protection Agency
FSP	Field Sampling Plan
ft	Foot (feet)
LC50	Mean lethal concentration
mg/kg	Milligram(s) per kilogram
mg/L	Milligram(s) per liter
mL	Milliliter(s)
MS	Matrix spike
MSD	Matrix spike duplicate
ND	Non-detect/not detected
NELAC	National Environmental Laboratory Accreditation Conference
Ohio EPA	Ohio Environmental Protection Agency
Ohio SRV	Ohio-specific Sediment Reference Values
OMZA	Outside mixing zone average values
ORO	Oil range organics
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PEC	Probable effect concentration
QAPP	Quality Assurance Project Plan

Region 4 ESV	Region 4 Ecological Screening Values
Region 5 ECO	Region 5 Resource Conservation and Recovery Act Ecological Screening Value
RL	Reporting limit
SCR	Site Characterization Report
SEM	Simultaneously extracted metals
TAL	Target Analyte List
TCLP	Toxicity Characteristic Leaching Procedure
TEC	Threshold effect concentration
TKN	Total Kjeldahl nitrogen
TOC	Total organic carbon
TPH	Total petroleum hydrocarbons
USACE	U.S. Army Corps of Engineers

1. INTRODUCTION

EA Engineering, Science, and Technology, Inc., PBC (EA), for the U.S. Environmental Protection Agency (EPA) Great Lakes Architect-Engineer Services Contract Number 68HE0519D0001, has prepared this Site Characterization Report (SCR) to describe the 2021 Assessment of Contaminated Sediments in Swan Creek, Maumee Area of Concern (AOC), Toledo, Ohio (Swan Creek), Lucas County, Ohio (Figure 1-1) in accordance with the Swan Creek Quality Assurance Project Plan (QAPP) and Field Sampling Plan (FSP) (EA 2021).

1.1 SITE DESCRIPTION AND BACKGROUND

The Swan Creek project area extends from approximately river mile 3 downstream to the confluence of Swan Creek with the Maumee River and along the western bank of the Maumee River from the Swan Creek confluence to the I-280 Bridge. Swan Creek flows into the Maumee River in downtown Toledo, Ohio, and is in the Maumee AOC. The land use surrounding the project site supports commercial and industrial activities. Current and historic land uses include gas and chemical manufacturing plants, municipal landfills, and other industrial activities that may have contributed to contamination in Swan Creek. Based on results from 2011 and 2014 sampling events (Weston Solutions, Inc. 2012; CH2M HILL 2014), the contaminants of potential concern for Swan Creek sediments are oil and grease, mercury, heavy metals, total petroleum hydrocarbons (TPH), diesel range organics (DRO)/oil range organics (ORO), polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs).

The drainage area of Swan Creek is 204 square miles, and over 200 miles of creeks and ditches drain this watershed. Swan Creek itself is about 40 miles long. The headwaters of Swan Creek flow northeasterly through Fulton County until joining with Blue Creek to flow in a northeasterly direction toward downtown Toledo and the Maumee River. The major streams that feed Swan Creek are Ai Creek, Blue Creek, and Blystone Ditch. Swan Creek is the only major tributary to the Maumee River located within the Maumee AOC. The Maumee River drains into Lake Erie at Toledo (Maumee Remedial Action Plan and Duck & Otter Creeks Partnership, Inc. 2006).

The Maumee AOC was originally identified as the area extending from the Bowling Green water intake near Waterville along the Maumee River downstream to Maumee Bay. The area includes direct drainage into the waters that are within Lucas, Ottawa, and Wood counties. This includes Swan Creek, Ottawa River (Ten Mile Creek), Duck Creek, Otter Creek, Cedar Creek, Grassy Creek, and Crane Creek. In 1992, the Maumee AOC was extended to the east to include Turtle Creek, Packer Creek, and the Toussaint River. When the Maumee AOC was designated, it was primarily due to the large problem of agricultural runoff. However, upon further investigation, additional influences were identified including former dumps and contaminated industrial sites, combined sewer overflows, and disposal of dredged materials (Maumee Remedial Action Plan and Duck & Otter Creeks Partnership, Inc. 2006). Heavy metals and organic chemical contamination in sediment led to the lower Maumee River being classified as an AOC.
A series of Beneficial Use Impairments (BUIs) were determined for Swan Creek. The removal of these BUIs will be necessary to meet the goals of the Maumee AOC restoration, and the eventual delisting of the Maumee AOC.

A total of three BUIs currently apply to Swan Creek (Partners for Clean Streams 2021):

- BUI 6—Degradation of benthos
- BUI 8—Eutrophication or undesirable algae
- BUI 14—Loss of fish and wildlife habitat

Project Area

The Swan Creek project area extends from approximately river mile 3 downstream to the confluence of Swan Creek with the Maumee River and along the western bank of the Maumee River from the Swan Creek confluence to the I-280 Bridge (Figure 1-1). Swan Creek flows into the Maumee River in downtown Toledo, Ohio, and is in the Maumee AOC.

1.2 PURPOSE AND OBJECTIVES

1.2.1 Project Purpose and Objective

The purpose of this project is to assess sediments in Swan Creek and the Maumee River between the confluence with Swan Creek and upstream of the I-280 bridge within the Maumee AOC. The primary constituents of concern at the site are TPH (DRO/ORO), oil and grease, metals, PCBs, and PAHs. The primary goal of the Swan Creek Project is to collect data to support conceptual design-level evaluations that will be presented as part of a focused feasibility study. Generally, the objectives of the project are delineation of sediment contamination, assessment of biological risks, and determination of sediment disposal options.

1.2.2 Objectives of the Site Characterization Report

This SCR summarizes the findings from the field investigation, including data tables and maps, data interpretation, and conclusions of the investigation. The results of this site characterization were evaluated to assess the sediment quality in Swan Creek and to delineate sediment contamination, to identify the potential for biological risks, and to provide data in support of evaluation of sediment disposal options. The overall objective of this report is to present the data collected to support conceptual design-level evaluations that will be presented as part of a focused feasibility study.

2. SAMPLING NARRATIVE

The Swan Creek field investigation included surface sediment sampling, sediment core collection, surface water collection, and sample/core processing for physical, chemical, and biological analysis. Work was performed in coordination with EPA. The investigation, including all sampling activities and analytical testing methods, was carried out in accordance with procedures outlined in the QAPP and FSP (EA 2021).

2.1 SEDIMENT CORE AND SURFACE SAMPLE COLLECTION

Mobilization for the Swan Creek sediment sampling effort commenced on 1 November 2021. EA and Affiliated Researchers, LLC (Affiliated) initiated vibracore operations on 2 November 2021 and continued through 10 November 2021. Staging for the field investigation and for core processing took place at the City of Toledo's Streets, Bridges, and Harbor facility at 1020 Water Street in Toledo, Ohio. EPA selected 34 locations for sediment sampling in the Swan Creek area and 7 locations in the Maumee River area (Figure 2-1). Sample locations were chosen based on the location of historical and current outfalls, water depth, input from EPA, and sampling data where available. Some locations were chosen to fill data gaps based on previous investigations.

Sampling was attempted at all 41 locations using vibracore technology and Ponar grab sampler. The sampling equipment was onboard Affiliated's vibracoring vessel. Figure 2-1 provides the actual sample locations in the Swan Creek project area. Some of these locations were adjusted from those identified in the QAPP due to lack of soft sediment or obstructions such as moored vessels, debris, low hanging obstructions, and shallow water depths preventing access to the sample location. Collection of cores for physical and chemical analysis was attempted at each location. Ponar grabs were successfully collected from each of the 12 target Ponar locations in the Swan Creek project area. Sediment cores were collected from each of the target coring locations. Six of the core and Ponar locations were co-located.

Affiliated used an onboard real-time kinematic global positioning system receiver—with a geodetic accuracy of 10 centimeters in the horizontal and 2 centimeters in the vertical planes at an update frequency of 1 hertz—with a preloaded base map identifying target sample locations to navigate to each location. Proposed (target) and actual coordinates for the coring locations are provided in Table 2-1 (note this table includes 36 core locations as 2 cores were collected from SC21-MR03). Ponar sample coordinates are provided in Table 2-2. Separate coordinates were recorded for co-located locations where the Ponar sampler was not deployed at the exact same geographic location as the core; the core was retrieved through the Affiliated vessel's moonpool and the Ponar sampler was deployed off Affiliated's vessel, in accordance with the QAPP (EA 2021).

Three surface water samples were successfully collected at 3 target locations (Swan Creek, Maumee River, and Port Authority Confined Disposal Facility [CDF] location) from Affiliated's vessel and analyzed for chemical constituents. In addition, 25 gallons of elutriate preparation water was collected from the surface water location in Swan Creek. Surface water collection location coordinates are provided in Table 2-3.

Field notes that describe the coring, grab, and surface water sampling activities, sampling locations, and water depths were recorded in permanently bound logbooks and field collection forms with indelible ink. Personnel names, local weather conditions, and other information that impacted the field sampling program were also recorded. Each page of the logbooks was numbered and dated by the personnel entering the information. Copies of the field logbooks and field collection forms are provided in Appendix A and lithologic logs are provided in Appendix B. A photographic record is presented in Appendix C.

Analytical samples were defined as surface (collected via Ponar) from 0 to 0.5 foot (ft) below sediment surface (bss), and discrete intervals from each core were defined from 0 to 1.0 ft bss, 1–3 ft bss, and 3–5 ft bss, and every 2 ft thereafter to the end of the core at refusal or 10 ft total depth in accordance with the QAPP (EA 2021).

Sample identifications included a designation of "SC" for Swan Creek, the year of sampling (21), location number, reference to the site area where the sample was collected, either "SC" for Swan Creek or "MR" for Maumee River, and either "SURF" for surface samples or the interval from the core in feet. For example, the analytical sample SC21-SC06-SURF is the surface (Ponar) sample collected at Swan Creek location 06, and SC21-SC17-1030 is the sediment sample collected from the 1–3 ft interval of the core collected at Swan Creek location 17.

2.1.1 Sediment Cores

Affiliated used vibracore technology to retrieve a total of 98 sediment cores from 35 target locations. Cores were retrieved as described in the QAPP and FSP (EA 2021). Affiliated's Rossfelder P3C Vibracore system consists of a vibracore head, and control box located between the underwater cable and the power source. The vibracore head has a core tube clamp and an internal vibrator motor. The vibracorer applies thousands of vibrations per minute to help penetrate the sediment. Once the core tube is inserted in the core tube clamp the vibracorer is lowered to 1 ft above the sediment surface and then turned on as soon as the core tube touches the sediment. The core tube is vibrated into the sediment to the prescribed depth. Polycarbonate 2.75-inch inner diameter core tubes were used to collect the sediment. Details on core sample collection, processing, and recovery are provided in Tables 2-1 and 2-4.

After retrieval, the core tubes were carefully removed from the metal barrel. Each core tube was capped at both ends, sealed, measured, and labeled with the location number, direction of top and bottom of core, and date and time of retrieval. All sediment cores were stored upright onboard Affiliated's vessel. At the end of each sampling day, or periodically throughout the day, sediment cores were transferred to a refrigerated truck (cooled to 4 degrees Celsius [°C]) at the onshore core processing area. The cores were stored upright in the secured refrigeration truck until they were processed.

2.1.2 Surface Sediment Samples

A total of 12 surface sediment samples were successfully collected using a Ponar sampler onboard Affiliated's vessel. The Ponar sampler was manually deployed and retrieved as

described in the QAPP and FSP (EA 2021). The procedure included deploying the sampler off the vessel by hand and retrieving the sampler to the deck, decanting water at the top of the sampler, and transferring the sediment into a disposable aluminum tray, unless otherwise as noted in the discussion provided in Section 2.3. Sediment for analysis of the ratio of simultaneously extracted metals (SEM) to acid volatile sulfide (AVS) was placed into a jar directly after the Ponar sample was collected, prior to documentation and homogenization of the material to minimize aeration of the sample. Samples for SEM/AVS analysis were filled with no headspace. Following collection of sediment for SEM/AVS, the remaining sediment was homogenized and transferred directly into laboratory-provided sample containers which were labeled while onboard the vessel. Surface samples were stored in a cooler with ice onboard Affiliated's AR1 vessel until they could be transferred to the sample processing area onshore.

2.1.3 Surface Water and Elutriate Preparation Water Sampling

A total of 3 surface water samples were collected and submitted for chemistry analysis on 10 November 2021 (Table 2-3). The 3 surface water samples were collected from mid-depth of the water column at each location using monsoon pumps with dedicated Tygon tubing. Water collection was conducted from Affiliated's vessel.

Elutriate preparation water in the Swan Creek project area was collected from mid-depth of the water column at 1 of the 3 surface water locations [Swan Creek channel (SC21-SC-WAT)] on 10 November 2021 using monsoon pumps with dedicated Tygon tubing (Figure 2-1).

Water targeted for use in standard elutriate testing and ecotoxicological testing was stored in 2.5-gallon high-density polyethylene carboys. At the end of the workday, elutriate preparation water and ecotoxicological testing water were transferred to a refrigeration unit (cooled at 4°C) at the staging area, and delivered to EA's Ecotoxicology Laboratory, for analyses at the completion of sampling.

Upon receipt at the analytical laboratory, the samples were checked against the chain-of-custody, logged, and given a unique accession number. Samples were stored in walk-in refrigeration units (cooled to 4°C) following receipt and prior to analysis. Holding times for the surface water samples began when the water samples were collected and placed into the appropriate sample containers. The holding time for the elutriate samples was initiated at the completion of the elutriate preparation process.

2.1.4 In Situ Water Quality Measurements

Water quality measurements were recorded in situ at the surface water and elutriate preparation water locations using a YSI-EXO water quality probe. Water temperature (°C), pH, turbidity (nephelometric turbidity unit), and dissolved oxygen (milligrams per liter [mg/L]) measurements were recorded at bottom, mid-depth, and surface of the water column where applicable (Table 2-5). If water depth was less than 5 ft, measurements were recorded for bottom and surface of the water column. A copy of the field logbook with the water quality data is provided in Appendix A.

2.2 CORE PROCESSING

2.2.1 Core Processing – Depth Intervals

Sediment core sample processing was performed at a temporary staging location at the City of Toledo's Roads, Bridges, and Harbor facility at 1020 Water Street in Toledo, Ohio. At the processing facility, cores were split length-wise, photographed, lithologically logged, and sampled at depth intervals as described in the FSP and QAPP (EA 2021), unless otherwise noted in the discussion provided in Section 2.3. Core samples were homogenized by removing material collected from the prescribed depth interval in a single core and mixing until consistency was uniform (Table 2-6a). Sediment samples were packaged on wet ice and shipped to Pace South Carolina, Pace Green Bay, ALS Environmental, and Battelle in accordance with the QAPP (EA 2021). Lithologic and photographic logs of sediment cores are included in Appendixes B and C, respectively.

2.2.2 Core Processing – Sampling Unit Composites

Cores targeted for compositing were processed at the City of Toledo's Streets, Bridges, and Harbor facility. Prior to processing, cores were sorted and checked against the logbook. Sediments were extracted from each core into a pre-cleaned stainless-steel pot. Each composite sample was created using an equal volume of sediment (approximately 12 gallons total per sampling unit) from the selected locations within the sampling unit. Each composite sediment sample was homogenized until the sediment was thoroughly mixed and of uniform consistency. The compositing scheme and sampling units are provided in Table 2-6b.

After compositing was completed, the homogenized material was transferred into appropriately labeled, laboratory certified pre-cleaned containers using stainless-steel spoons. Containers were placed in a cooler on wet ice and documented on a chain-of-custody form. All equipment that encountered the sediment was decontaminated as outlined in the QAPP between the creation of each composite.

Composite chemistry samples were shipped overnight to Pace South Carolina and Pace Green Bay. Sediment and surface water targeted for elutriate preparation was driven by an EA employee in a refrigerated truck to EA's Ecotoxicological Laboratory and placed in a walk-in refrigeration unit until testing. Sediment targeted for ecotoxicological testing was hand delivered to EA's Ecotoxicological Laboratory, checked against chain-of-custody, logged in, given a unique accession number, and placed in a walk-in refrigeration unit until testing. The sample containers, preservatives, and holding time requirements for sediment samples are provided in the QAPP (EA 2021).

2.3 ELUTRIATE GENERATION AND TESTING

At EA's Ecotoxicological Laboratory, sampling unit composite sediments and Swan Creek elutriate preparation water were used to generate elutriates for aquatic toxicity testing. Elutriate generation was completed as follows:

- Samples were subsampled to create a volumetric sediment-to water ratio of 1:4 using surface water from Swan Creek. Volumetric measurements of the sediment were completed in a graduated cylinder or Erlenmeyer flask and the contents were added to an aquarium. The mixing was performed at room temperature (20±2°C).

- An air-diffuser tube was inserted near the bottom of the aquarium and the slurry was aerated vigorously for 30 minutes. The flask contents were manually stirred at 10-minute intervals to ensure complete mixing.

After mixing, the suspension was allowed to settle for 1 hour.

- The resulting liquid and material remaining in suspension after the 1-hour settling period is the suspended particulate phase or elutriate. The test organisms could be viewed sufficiently without issue and the samples were not centrifuged. The elutriate was decanted into pre-cleaned laboratory-provided containers and the settled material was discarded. A subsample of the elutriate was sent to Pace for chemical analysis (Table 2-6c).

Water column bioassays were initiated at the ecotoxicology laboratory within 24 hours of elutriate preparation (Table 2-6d). Methodology for the water column bioassays is provided in Appendix D.

2.4 WHOLE SEDIMENT BIOASSAYS AND BIOACCUMULATION EXPOSURES

Whole sediment bioassays and bioaccumulation testing was conducted in accordance with the QAPP and test methodologies and followed EA's standard toxicity testing protocol as documented in the QAPP (EA 2021).

Daphnia magna Water Column Toxicity Testing

The *Daphnia magna* acute toxicity test was conducted in 30-milliliter (mL) beakers with 25 mL of test solution per cup. The toxicity test had 4 replicates per concentration and control, with 5 organisms per replicate, for a total of 20 organisms exposed per test concentration and control. To initiate the acute toxicity test, neonates (<24 hours old) were randomly assigned to the test chambers. The test was maintained at 20±1°C with a 16-hour light/8-hour dark photoperiod. Temperature, pH, dissolved oxygen, conductivity measurements as well as survival were recorded on each concentration at test initiation, at 24 hours and test termination. Detailed information regarding the *Daphnia magna* water column toxicity testing is provided in Appendix D.

Pimephales promelas Water Column Toxicity Testing

The *Pimephales promelas* acute toxicity test was conducted in 1,000-mL beakers, with each beaker containing 250 mL of test solution. For the acute toxicity test, each test concentration and the control had 5 replicates of 10 organisms, for a total of 50 organisms exposed per test

concentration and control. The test was performed at 25±1°C with a 16-hour light/8-hour dark photoperiod. Observations of mortality were recorded daily, and dead organisms were removed when observed. Temperature, pH, dissolved oxygen, and conductivity measurements were recorded on one replicate of each concentration at test initiation and termination, and daily on the test solutions. Test organisms were fed daily to prevent starvation. Detailed information regarding the *Pimephales promelas* water column toxicity testing is provided in Appendix D.

Chironomus dilutus 10-Day Toxicity Tests

Toxicity testing was conducted in accordance with EPA guidance (EPA 2000), and test methodologies followed EA's standard toxicity testing protocol CT-AC-06 (EA 2018).

The test chambers used in the *Chironomus dilutus* 10-day survival and growth toxicity test were 300-mL lipless glass beakers, each containing 100 mL of sediment and 175 mL of overlying water. The tests were performed with 8 replicates per sediment. The sediments and overlying water were added to the chambers 1 day prior to introduction of the test organisms. The beakers were left undisturbed overnight to allow any suspended sediment particles in the water column to settle. The introduction of the test organisms to the test chambers marked the initiation of the toxicity tests. Ten organisms were randomly introduced into each replicate beaker for a total of 80 organisms per sediment. The test chambers were placed in a water bath to maintain temperatures at a target range of 23±1°C, with a 16-hour light/8-hour dark photoperiod. The *Chironomus dilutus* were fed 1.5 mL per replicate of a 4 grams per liter slurry of Tetramin flake food daily.

The overlying water in the exposure chambers was renewed a minimum of twice daily using a water delivery system. Fresh overlying water was slowly added to each replicate, displacing the water already in the beaker to flow out through a notch cut into the top of the beaker. The notch was sealed with fine mesh screen to prevent loss of organisms during the renewal process.

For the midge toxicity testing, water quality parameters of temperature, pH, dissolved oxygen, and conductivity were recorded daily on the overlying water in one replicate of each sediment. Composite samples of the overlying water of each sediment were also analyzed for alkalinity, hardness, conductivity, and ammonia at test initiation and termination.

At the end of the 10-day exposure period, the surviving organisms from each replicate were retrieved from the sediment. The number of surviving organisms from each replicate was recorded. The surviving *Chironomus dilutus* from each replicate were then placed in a dried, pre-weighed ceramic crucible and placed in a drying oven at 100°C for a minimum of 24 hours. The crucibles were then removed from the oven, placed in a desiccator to cool, and weighed. The dry weight of the surviving organisms in each replicate was determined by subtracting the weight of the crucible from the weight of the crucible plus dried organisms. The mean dry weight per organism was obtained by dividing the total organism dry weight per replicate by the number of surviving organisms per replicate.

The ash-free dry weight was determined for the *Chironomus dilutus* by placing the crucibles with oven-dried organisms in a muffle furnace at 550°C for at least 2 hours, then weighing the crucibles with organisms following an appropriate cooling period. For each replicate, the weight of the crucible with furnace-dried organisms was subtracted from the weight of the crucible with oven-dried organisms, yielding a total organism ash-free dry weight. A mean ash-free dry weight per organism was obtained by dividing the total organism ash-free dry weight per replicate by the number of surviving organisms per replicate. Detailed information regarding the *Chironomus dilutus* 10-day toxicity tests is provided in Appendix D.

Hyalella azteca 10-Day Toxicity Tests

Hyalella azteca 10-day survival and growth toxicity test were conducted in test chambers of 300-mL lipless glass beakers, each containing 100 mL of sediment and 175 mL of overlying water (lab water). The tests were performed with 8 replicates per sediment. The sediments and overlying water were added to the chambers at least 24 hours prior to introduction of the test organisms. The beakers were left undisturbed overnight to allow any suspended sediment particles in the water column to settle. The introduction of the test organisms to the test chambers marked the initiation of the toxicity tests. Ten organisms were randomly introduced into each replicate beaker for a total of 80 organisms per sediment. The test chambers were placed in a water bath to maintain temperatures at a target range of 23±1°C, with a 16-hour light/8-hour dark photoperiod.

The *Hyalella azteca* were fed 1.0 mL per replicate of YCT (a suspension of yeast, ground cereal leaves, and trout chow) daily. The overlying water in the exposure chambers was renewed a minimum of twice daily using a water delivery system. Fresh overlying water was slowly added to each replicate, displacing the water already in the beaker to flow out through a notch cut into the top of the beaker. The notch was sealed with fine mesh screen to prevent loss of organisms during the renewal process.

For the amphipod toxicity testing, water quality parameters of temperature, pH, dissolved oxygen, and conductivity were recorded daily on the overlying water in one replicate of each sediment. Composite samples of the overlying water of each sediment were also analyzed for alkalinity, hardness, and ammonia at test initiation and termination.

At the end of the 10-day (*Hyalella azteca*) exposure period, the surviving organisms from each replicate were retrieved from the sediment. The number of surviving organisms from each replicate was recorded. The surviving *Hyalella azteca* from each replicate were then placed in a dried, pre-weighed aluminum pan, and placed in a drying oven at 100°C for at least 24 hours. The pans were then removed from the oven, placed in a desiccator to cool, and weighed. The dry weight of the surviving organisms in each replicate was determined by subtracting the weight of the empty pan from the weight of the pan plus dried organisms. The mean dry weight per organism was obtained by dividing the total organism dry weight per replicate by the number of surviving organisms per replicate. Detailed information regarding the *Hyalella azteca* 10-Day toxicity tests is provided in Appendix D.

Lumbriculus variegatus bioaccumulation test

The *Lumbriculus variegatus* bioaccumulation test was conducted in 5-gallon aquaria, with 5 replicates per test sediment and control. Based on the analytical tissue biomass requirements, approximately 15 grams wet weight of *Lumbriculus variegatus* were loaded into each replicate. Each replicate had 1.5 liters of sediment and 6 liters of overlying water. Sediment and overlying water were loaded into the test chambers 1 day prior to test initiation to allow time for the suspended sediments to settle.

The overlying water was replaced twice daily by siphoning approximately 80 percent of the overlying water from the aquaria and replacing with new overlying water, taking care not to disturb the sediment surface. During the 28-day exposure period, the test chambers were maintained at a target temperature of 23±1°C with a 16-hour light/8-hour dark photoperiod. Measurements of temperature, pH, dissolved oxygen, and conductivity of the overlying water were recorded on one replicate of each sample and control at test initiation, termination, and on each intermediate day. Composite samples of the overlying water of each sediment were also analyzed for alkalinity, hardness, and ammonia at test initiation and termination. The organisms were not fed during the exposure period.

After 28 days of exposure, the *Lumbriculus variegatus* were recovered from each sediment and placed into clean laboratory water for 24 hours to purge their digestive tracts. Detailed information regarding the bioaccumulation exposures is provided in Appendix D.

2.5 ANALYTICAL PROGRAM

Samples were successfully collected from each location in accordance with the QAPP (EA 2021). Sediment samples were designated for shipment via overnight delivery and were sealed inside plastic bubble-wrapped bags and placed upright inside lined coolers filled with ice. Each cooler also contained a chain-of- custody specific to its contents and a temperature blank. Each cooler was sealed with custody seals and packing tape and was affixed an airbill in a viable location. Samples designated for transport via refrigeration trailer (sealed 5-gallon buckets) were securely placed within the trailer to prevent the bucket from tipping or rolling. Additional detail on samples submitted for analysis are provided in Tables 2-6a, 2-6b, 2-6c and 2-6d.

- 136 sediment samples and 8 field duplicates were submitted for TPH-DRO and ORO, Target Analyte List (TAL) metals, total organic carbon (TOC), and oil and grease.
- 132 sediment samples and 7 field duplicates were submitted for PCB Aroclor analysis.
- 136 sediment samples and 8 field duplicates were submitted for moisture content analysis.
- 12 sediment samples and 1 field duplicate were submitted for 34 PAH analysis.
- 124 sediment samples and 7 field duplicates were submitted for 17 PAH analysis.

- 4 sediment samples and 1 field duplicate were submitted for PCB congener analysis.
- 48 sediment samples and 3 field duplicates were submitted for SEM/AVS analysis.
- 135 sediment samples and 8 field duplicates were submitted for grain size analysis.
- 8 sediment samples and 1 field duplicate were submitted for total Kjeldahl nitrogen (TKN), nitrogen ammonia, total cyanide, and total phosphorus analysis.
- 8 sediment samples were submitted for Toxicity Characteristic Leaching Procedure (TCLP) (includes herbicides, metals, pesticides, semivolatile organic compounds, volatile organic compounds, cyanide, ignitability, pH, flashpoint, paint filter test, and percent solids/moisture content) analysis.
- 12 sediment samples and a control were submitted for benthic toxicity testing with, *Hyalella azteca* (10-day).
- 12 sediment samples and a control were submitted for benthic toxicity testing with *Chironomus dilutus* (10-day).
- 4 sediment samples, a control and a pre-test were submitted for sediment bioaccumulation exposures with *Lumbriculus variegatus* (28-day).

Surface water and elutriate samples submitted for analysis as follows:

- 3 surface water samples and 1 field duplicate were submitted for TPH-DRO and ORO, TAL metals, oil and grease, PCB Aroclors, 17 PAHs, TKN, nitrogen ammonia, total cyanide, and total phosphorus analysis.
- 8 standard elutriate samples and 1 field duplicate were generated in EA's Ecotoxicological Laboratory and submitted for TPH-DRO and ORO, TAL metals, oil and grease, PCB Aroclors, 17 PAHs, TKN, nitrogen ammonia, total cyanide, and total phosphorus analysis. The 8 elutriate samples and a control, were also used to conduct the following aquatic toxicity tests: *Daphnia magna (*48-hours) and *Pimephales promelas* (96-hours).

Tissue samples from the sediment bioaccumulation testing were submitted for analysis as follows:

- 30 tissue samples were submitted for percent lipids, percent moisture, and PCB congener analysis.

The APTIM Federal Services, LLC (APTIM) Quality Assurance Technical Support Program was subcontracted by EPA to conduct a 100 percent Tier I and 20 percent Tier II data validation

verification check for this project. The Tier I and Tier II reviews were performed according to the National Functional Guidelines for Superfund Organics Method Data Review (EPA 2014a) and National Functional Guidelines for Inorganic Superfund Data Review (EPA 2014b). Electronic data validation was performed within the Great Lakes National Program Office's exchange and Evaluation System prior to review by APTIM's Quality Assurance Technical Support Program (EA 2018). To assess compliance with the Laboratory Statement of Work, data validation included completeness and compliance checks, data assessment, and validation at Stage 2 following Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA 2009).

2.6 SAMPLE HANDLING, CHAIN-OF-CUSTODY, AND QUALITY ASSURANCE/QUALITY CONTROL

2.6.1 Sample Handling, Chain-of-Custody, and Documentation

Sediment and surface water samples for chemical analysis (except for 34 PAHs and SEM/AVS) were shipped priority overnight to Pace Analytical Services, LLC. Samples to be analyzed for SEM/AVS were shipped to ALS Environmental (a subcontractor to Pace). Samples analyzed for 34 PAHs were shipped to Battelle (Office of Research and Development contracted lab). Samples collected for bioassay testing and standard elutriate preparation were transported via refrigerated truck to EA's Ecotoxicology Laboratory in Hunt Valley, Maryland. Following bioaccumulation testing at EA's Ecotoxicology Laboratory, tissue samples were delivered to Eurofins TestAmerica. Following elutriate preparation, elutriate samples were shipped priority overnight to Pace Analytical Services, LLC for chemical analysis.

Samples were placed in the appropriate sample containers (obtained from TestAmerica), preserved, and labeled in accordance with the QAPP/FSP (EA 2021). With exception given to sediment collected for SEM/AVS analysis, sediments within an interval were mixed to uniform consistency to homogenize prior to placing in jars. Sediment sampled for SEM/AVS analysis was placed directly into jars after sufficient surface sample volume was collected, prior to homogenization. SEM/AVS samples were filled without headspace. In preparation for shipment to the laboratories, all samples were packaged in accordance with the procedures outlined in the FSP (EA 2021).

Sample labeling was performed in accordance with Standard Operating Procedure 001 (Attachment A of the FSP [EA 2021]). Individual sample containers were labeled with a unique designation that corresponded to the specific geographic location, year of collection, and subsample depth interval. The FSP (EA 2021) outlines the specific sample identification procedures that were implemented. Sample identifications included the location (SC for Swan Creek, MR for Maumee River), the year of sampling (21 for 2021), the location number, and either "-SURF" for surface samples or the interval from the core in feet. An example of a sample identifier is "SC21-22-2040," which describes a sample collected from the Swan Creek Area in 2021 at location 22 at the depth interval of 2-4 ft bss. Field duplicates were designated by adding "FD" to the end of the sample identifier. Matrix spike (MS)/matrix spike duplicates (MSDs)

were designated by adding "MS" or "MSD" to the end of the sample identifier. For example: SC21-23-2040-FD or SC21-12-SURF-MS.

Chain-of-custody forms were completed and used to track samples from the time of sampling to the arrival of samples at the laboratory. Completed chain-of-custody forms are provided in Appendix A (available electronically) of the Data Usability Assessment Report (EA 2022).

2.6.2 Quality Control

Throughout the project, various measures were implemented to help facilitate the overall quality and usability of the collected data. The field investigation activities included collection of additional quality control samples (e.g., duplicates, MS/MSD, etc.) sufficient to meet the requirements of the data quality objectives as defined in the QAPP (EA 2021). Duplicate samples were submitted as described in the FSP, and field and laboratory quality control requirements were completed in accordance with the QAPP (EA 2021). Deviations from the QAPP/FSP can be found in Section 2.9.

2.7 DECONTAMINATION

Decontamination procedures were implemented during the field investigation to prevent cross-contamination between sampling locations. During sampling activities, disposable or dedicated sampling tools and materials were utilized whenever possible to minimize the decontamination effort. Decontamination procedures were carried out in accordance with the standard operating procedures presented in Attachment A of the FSP (EA 2021).

2.8 INVESTIGATION-DERIVED WASTE

Following collection of the sediment samples, investigation-derived waste was managed in accordance with the procedures described in the FSP (EA 2021). In general, residual sediments and decontamination water were collected, drummed, and disposed of off-site. Water used for decontamination of the sampling equipment on Affiliated's vessel was allowed to drain back into the creek at each respective sampling location. Disposable materials and personal protective equipment that came into contact with site sediments were bagged and disposed of as general municipal waste.

2.9 DEVIATIONS FROM THE QAPP AND FSP

2.9.1 Target Locations

Of the 35 sediment core sampling locations, 26 were more than 10 ft from the target sampling location and were moved during the field investigation based on discussions with EPA and due to lack of soft sediment, gravel, debris, shallow water, or other obstructions preventing sample collection (Ponar grab samples were collected at the target sampling locations). Due to limited material recovery, sample volume requirements, and target recovery depth desired based on historical data in the vicinity, an additional core was collected for analysis at SC21-MR03.

Deviations greater than 10 ft were noted in the field logbook and approved by EPA during the field investigation. Table 2-1 presents coordinates for the target and the actual locations. Detailed information on sample location deviations is also presented in Table 2-1. Appendix B includes documentation of attempts at each location and details on refusal where encountered.

2.9.2 Sample Recovery

Sediment penetration and recovery of the cores, as observed through the clear core liner, were recorded on a field data collection form for each location. The recovery value was also verified immediately prior to processing to ensure sediment had settled in core tubes that were partially full. Sediment penetration and recovery of the cores used for chemical analysis are presented in Table 2-4. Appendix B provided documentation of attempts made to reach target penetration depths and retain the desired recovery.

3. SEDIMENT, SURFACE WATER AND ELUTRIATE RESULTS

The overall data quality objective for the project is to provide data of known and documented quality to characterize current site conditions. Data collected from the Swan Creek site were validated by evaluating the completeness, correctness, and conformance of the data set against the method, standard operating procedure, or contract requirements documented in the QAPP/FSP (EA 2021). The data review and validation achieved the project goals. The overall data review and validation program attained the project objectives with no adverse effects on data quality or usability.

To complete the assessment of contaminated sediments in Swan Creek, the extent of potential sediment contamination was evaluated. Surficial samples (collected via Ponar) were analyzed to assess surficial contamination, potential toxicity to benthic organisms, and bioaccumulation. Sediment cores were collected and sampled to assess sediment contamination at depth. To address the goals of this assessment, the validated sediment data collected under this investigation were compared to the following screening levels, as available: Ohio-specific Sediment Reference Values (Ohio SRV) (Ohio EPA 2018) for metals only, threshold effect concentrations (TECs) and probable effect concentrations (PECs) (MacDonald et al. 2000), Region 4 Ecological Screening Values (Region 4 ESV) (EPA Region 4 2018) for compounds other than metals without TECs and PECs (DRO-ORO), and EPA Region 5 Resource Conservation and Recovery Act Ecological Screening Value (Region 5 ECO) (EPA 2003) for cyanide only. A comparison of screening criteria is provided in Appendix E. EPA will use sediment data to determine if contaminant concentrations in an area exceed the project screening levels (MacDonald et al. 2000; Ohio EPA 2018; EPA Region 5 2003). Based on this evaluation, areas may be selected for further assessment, designated as remedial sites, and/or moved on to restoration.

Composite sediment samples, elutriate samples, elutriate toxicity testing, and surface water samples were collected for future evaluations of sediment disposal options. Sediment cores were composited and analyzed for bulk chemistry, waste characterization, and elutriate preparation. The elutriate and surface water samples were analyzed for chemistry. Following elutriate generation, water column toxicity testing was completed using two different organisms. Samples with statistically significant lower survival when compared to the control sample indicate potential biological risk during disposal. The surface water samples will help determine whether placement of sediments dredged and placed in the CDF will require additional controls to comply with water quality standards and will be used as a reference material for aquatic toxicity testing.

For surface water and elutriates, detected concentrations of constituents were compared to aquatic screening levels determined following consultation with Ohio EPA and the U.S. Army Corps of Engineers (USACE). Where available, results were screened against Ohio's Lake Erie Drainage Basin aquatic life water quality criteria for outside mixing zone average values (OMZA). If there were no screening values for Ohio's Lake Erie OMZA then Lake Erie Human Health non-drink values were used to screen results. If Lake Erie Human Health non-drink values were not available for parameters, then Ohio River Basin Human Health non-drink values

were used to screen results. If none of the previously mentioned screening criteria were available EPA Region 4 values were used to screen criteria (Ohio EPA 2017; EPA 2021). Specific references to the water quality criteria used in the aforementioned hierarchy are included in the Chapter 3 results tables. The surface water, elutriate, and toxicity testing data are provided for informational purposes for use in potential future mixing zone evaluations and to determine if additional controls would need to be used at the CDF in order to protect aquatic life from water discharges resulting from the CDF disposal of contaminated sediments.

Biological risks were assessed via comparison of sediment concentrations to screening levels, sediment toxicity testing, and bioaccumulation testing. The results of the sediment toxicity and bioaccumulation testing were statistically compared to the controls, reference, and pre-test (bioaccumulation testing only). These results are further discussed in Chapter 4.

Figures have been prepared to visually present contaminant concentrations and identify potential focus areas within the study area.

Detected values equal to or greater than the method detection limit, but less than the laboratory reporting limit (RL), were J-qualified and are estimated. Analytes that were not detected were U-qualified. Field duplicate results are presented in the analytical tables but are not included in the bulk sediment results figures and discussion.

3.1 DATA EVALUATION

3.1.1 Screening Criteria

The sediment quality guidelines were developed as informal (non-regulatory) guidelines for use in interpreting chemical data from analyses of sediments. Several biological-effects approaches have been used to assess freshwater sediment quality relative to the potential for adverse effects on benthic organisms, including the TEC/PEC (MacDonald et al. 2000) approach. The TEC and PEC levels were derived using concentrations with both effects and no observed effects (MacDonald et al. 2000). TECs typically represent concentrations below which adverse biological effects are unlikely to be observed, while PECs typically represent concentrations above which adverse effects are likely to be observed (MacDonald et al. 2000). Concentrations that are between the TEC and PEC represent the concentrations at which adverse biological effects occasionally occur.

For metal contaminants in Ohio, Sediment Reference Values (Ohio SRVs) provide background sediment concentration values specific to sediments in Ohio. These values were developed by the Ohio EPA (Ohio EPA 2018) and are proposed for use if site-specific background concentrations do not exist, to indicate if sediments have been impacted by site-related activities.

For compounds other than metals without TECs and PECs, including DRO-ORO and cyanide, Region 4 ESV (EPA Region 4 2018) and Region 5 ECO (EPA 2003) were used.

Following consultation with Ohio EPA and USACE, screening criteria for surface water and elutriates were compared to aquatic screening levels including Ohio's Lake Erie Drainage Basin aquatic life OMZA. The OMZA represent chemical concentrations that are protective of aquatic life for long-term exposure. If there were no screening values for Ohio's Lake Erie OMZA then Lake Erie Human Health non-drink values were used to screen results, non-drink values are applied to locations outside the influence of a drinking water intake. If Lake Erie Human Health non-drink values were not available for parameters, then Ohio River Basin Human Health non-drink values were used to screen results, these values apply to the Ohio River basin as a whole. If none of the previously mentioned screening criteria were available, EPA Region 4 values, which can be broadly applied, were used as screening criteria (Ohio EPA 2017; EPA 2021). The screening criteria used by compound are described in the results tables.

Validated results for bulk sediment, surface water, and elutriate chemical testing are presented in Tables 3-1 through 3-17 and are summarized in the following sections by analytical group. A summary of PEC exceedances in sediment is provided in Table 3-18.

3.1.2 Calculation of Total Polycyclic Aromatic Hydrocarbons and Total Polychlorinated Biphenyls

When calculating total 17 PAHs, results that were J-qualified were calculated using the result value, and results that were U-qualified were calculated using one-half the RL. Substituting one-half the RL (not detected [ND] = ½ RL) for each ND provides a conservative estimate of the concentration. This method, however, tends to produce results that are biased high, especially in data sets where many analytes are NDs. This overestimation is important to consider when comparing calculated total values to guidelines. Total PCB results often have a significant number of NDs. Additionally, individual PCB Aroclors represent mixtures of PCB congeners, creating the potential for double counting. For these reasons, total PCB concentrations were calculated by summing the concentrations of each PCB Aroclor with NDs set equal to zero (ND=0) to reduce the potential for overestimation.

3.1.3 Ratio of Simultaneously Extracted Metals to Acid Volatile Sulfide

The bioavailability of divalent metals to aquatic organisms is influenced by the presence of AVS. In low oxygenated (anaerobic) environments, divalent metals precipitate as metal sulfides, making them unavailable for uptake by aquatic organisms. Using this method, five metals (cadmium, copper, lead, nickel and zinc) were extracted, measured, converted to units of micromoles per gram and added together (including any values that were J-qualified) to determine the amount of SEM. If a metal was not detected, it was considered a zero in the calculation. SEM was then compared to the amount of AVS detected (units of micromoles per gram) in the same sediment sample. If AVS was not detected in the sample, the SEM/AVS ratio was not calculated.

An SEM/AVS ratio less than 1 indicates a high degree of probability that the metals are bound as metal sulfides and not bioavailable to aquatic organisms. If the SEM/AVS ratio is greater than 1,

then the metals in sediment exceed the sulfide binding ability and have a higher probability of being bioavailable to aquatic organisms.

While the SEM/AVS ratio provides information on bioavailability, it does not always inform toxicity. Metal toxicity is evaluated through an indirect estimate of bioavailability based on the concentrations of AVS and SEM, as well as TOC in the sediments.

Site-specific bioavailability of metals may reduce toxicity based on SEM/AVS and TOC results. Bioavailability of divalent metals in sediments can be predicted by measuring the relationship between AVS and SEM where total SEM is the sum of cadmium, copper, lead, nickel, silver, and zinc. The sulfides naturally occurring in sediment react with the metals forming an insoluble metal sulfide that is not bioavailable for uptake by ecological receptors. An excess of AVS will ensure that the bioavailability of metals (and the probability for toxicity) is low; an excess of SEM may indicate the potential for toxicity (Interstate Technology & Regulatory Council 2011). Organic carbon content also can reduce bioavailability of metals. The sum of SEM – AVS difference is divided by fraction of organic carbon in sediment. Per EPA guidance (2005), if the result is <130 micromoles per gram of organic carbon (μmol/g_{oc}), then toxicity to benthic invertebrates is not anticipated. If the result is >3,000 μmol/g_{oc}, then toxicity is likely. If the result is between 130 and 3,000 μmol/g_{oc}, then toxicity is uncertain (Interstate Technology & Regulatory Council 2011). Samples with high site-specific bioavailability and metals concentrations exceeding PECs (MacDonald et al. 2000) may indicate biological risk.

3.2 DISCRETE CORE AND SURFACE GRAB SEDIMENT RESULTS

Discrete core samples were collected from 28 locations in Swan Creek beginning just downstream of Western Avenue to the confluence of the Maumee River. Cores were also collected from 8 locations on the Maumee River. Surface grab samples were collected from 10 locations along Swan Creek and at 2 locations along the Maumee River as described in Chapter 2. A summary of the screening criteria, number of exceedances, and maximum values for each constituent is provided in Table 3-18.

The following sections document the results of sample recovery, lithology, and the analytical results. The depths to refusal and lithology cross-sections are presented in Figures 3-1a through 3-1d and Figures 3-2a and 3-2b, respectively. A summary of the Ponar sample results (0-0.5 ft) is presented in Figure 3-3.

Core profile figures showing the concentrations with depth are presented in Figures 3-4 through 3-29. These figures include data from the current Swan Creek site characterization as well as samples collected in 2012 and 2014 (Weston Solutions, Inc. 2012; CH2M HILL 2014). The sediment core surface interval (0-1 ft) concentration is portrayed as the color in the plan view/aerial portion of the figure, a text box at each location summarizes the maximum concentration at that location and the depth interval where the maximum concentration was detected. Depth profiles for each location are displayed in the chart at the bottom of each figure. Color bins were based on contaminant-specific screening criteria and in consultation with EPA, USACE, and Ohio EPA.

3.2.1 Sample Recovery

One core was collected and processed from each of the 36 core locations during the 2021 field effort (Table 2-4). Ponar surface samples were collected at each of the 12 sample locations. Core collection attempts were targeted to reach refusal at each location, with the average depth of refusal expected to be 3.5 ft. The actual depth of penetration ranged from 1.2 to 8 ft, with an average depth of 5.5 ft. Ponar surface samples were recovered successfully at each of the proposed 12 locations.

Multiple attempts were required at the core locations to achieve 70 percent recovery at the majority of locations, due to hard bottom conditions encountered throughout the creek. Coordinates were collected for each attempt and field notes were recorded for locations where refusal was encountered (Appendix B). Core recovery did not meet or exceed 70 percent after at least three attempts at the following sample locations: SC21-SC13 (65 percent), SC21-SC24 (66 percent), SC21-SC29 (60 percent), and SC21-MR03-A (65 percent).

The depth of refusal was recorded for each sample attempt and plotted in Figures 3-1a through 3-1d. Figure 3-1a presents an overview and Figures 3-1b, 3-1c and 3-1d provide detailed views of the depths of refusal for the west, central, and east areas of the site, respectively. In general, the depth of refusal is lower further upstream Swan Creek and increases downstream Swan Creek and into Maumee River. But the depth of refusal seems location dependent as the sediment thickness is related to the physical features of Swan Creek in the specific stretch of water.

Sediment recovery ranged from 1.7 ft (SC21-SC08, SC21-SC10, and SC21-SC28) to 7.8 ft (SC21-SC32) (Table 2-4). Detailed lithographic descriptions of the 36 collected cores are presented in Appendix B.

3.2.2 Lithology

A total of 36 sediment cores were collected in the Swan Creek Area; 28 from Swan Creek and 8 from the Maumee River. The cores demonstrated lithologic profiles consistent with sediment types associated with a fluvial system with a strong current (Maumee River) and a lower-discharge tributary (Swan Creek). Most cores were comprised of a mixture of clay and/or silt, with some sandy or gravelly intervals present at varying depths. Overall, the Swan Creek cores exhibited a more varied lithology compared to those from the Maumee River. Coarse-grained intervals ranged from thinly to thickly bedded. Native and non-native material such as shells, roots, woody material, and industrial slag were observed within various sediment types and depths. Hydrocarbon odors were observed in 22 cores. Complete core logs and photographs are provided in Appendixes B and C, respectively. A general description of cores collected during the investigation is included in the text that follows.

Starting in the upstream area of Swan Creek, core SC21-SC02 contained a mixture of fine and coarse-grained intervals, with a basal gravel layer. SC21-SC03 was largely silt with some sand. SC21-SC04 was comprised mainly of sand with a few beds of fine-grained material. SC21-SC06

through -08 were comprised mostly of silt/clay with a little sand and trace amounts of gravel. SC21-SC09 contained alternating layers of organic clay/silt and sand, with sandy intervals coarsening at depth. SC21-SC10 was comprised of fine-grained material with sand. SC21-SC11 was comprised mostly of sand, with a thick, siltier layer at the bottom. SC21-SC12 and -13 were mostly silt/clay and some sand, coarsening slightly at depth. SC21-SC15 contained organic silt/clay with a layer of sand. SC21-SC16 and -17 were highly variable, containing thin, alternating layers of silt, clay, sand, and gravel, with most intervals containing organic material. SC21-SC19 was comprised mainly of silt, with sand content decreasing at depth. SC21-SC20 and -21 were also comprised mainly of silt with a little sand and trace amounts of gravel, though SC21-SC21 contained discreet intervals of coarse-grained material. SC21-SC22 was a nearly equal mixture of fine- and coarse-grained material in the upper interval, becoming sandier at depth. SC21-SC23 was mainly comprised of silt, with fine sand throughout. SC21-SC24 was mainly silt/clay with a thin interval of sand near the bottom. SC21-SC25 had thick intervals of organic silt/clay with a bed of silty sand between. SC21-SC26 was again mostly silt/clay with some sand throughout. SC21-SC28 contained some gravel and sand near the top and generally became finer-grained with depth, with fluctuations in amounts of sand, silt, and clay. SC21-SC29 was comprised of gravel, sand, and silt. SC21-SC30 contained mostly fine-grained material with some basal sand and gravel. SC21-SC31 and -32 were largely silt/clay in the upper intervals, with the lower half of SC31 alternating between fine-grained sand and organic silty intervals, and SC32 containing a discreet sandy interval present above a basal silt/clay layer. Finally, SC21-SC33, located at the confluence of Swan Creek and the Maumee River, was mostly fine-grained at the top, with a gravelly interval below and a slightly sandier bottom. A cross-section depicting the primary lithology of cores along Swan Creek is presented in Figure 3-2a.

In the Maumee River, starting with the location furthest upstream, SC21-MR06 had a silty top and sandy bed at the bottom. SC21-MR05 was mainly comprised of silt/clay with a discreet sandy bed halfway through the core. SC21-MR04 was almost entirely silt/clay, with a little sand in the upper intervals. SC21-MR03-1 contained organic, slightly finer-grained material at the top, with sandier intervals near the bottom. SC21-MR03-2 contained alternating layers of silt/clay and sand, with variations in plasticity between finer layers and relative coarseness between sandier layers. SC21-MR02 was almost entirely silt and/or clay. SC21-MR01 was largely comprised of silt/clay, with a sandy interval halfway through the core. A cross-section depicting the primary lithology of cores along the Maumee River is presented in Figure 3-2b.

3.2.3 Physical Properties - Grain Size and Moisture Content

A total of 143 samples (including field duplicates) were submitted for grain size with hydrometer analysis. Of the total, 134 were discrete core and Ponar samples and 9 were composite samples collected for waste characterization purposes. Detailed analytical results are presented in Table 3-1a for discrete samples and Table 3-1b for composite samples.

Of the discrete samples, 87 were composed primarily (greater than 50 percent) of silt and clay. Silt and clay content in samples ranged from 0.9 percent (SC21-SC01-SURF) to 100 percent (SC21-SC24-0010). Of the discrete samples, 35 were composed primarily (greater than

50 percent) of sand. Sand content in samples ranged from 3.9 percent (SC21-SC32-0010) to 93.4 percent (SC21-SC01-SURF).

Of the composite samples, 4 were composed primarily (greater than 50 percent) of silt and clay. Silt and clay content in samples ranged from 28 percent (SC21-COMP-01) to 64.6 percent (SC21-COMP-03). Of the composite samples, 3 were composed primarily (greater than 50 percent) of sand. Sand content in samples ranged from 31 percent (SC21-COMP-03) to 65.6 percent (SC21-COMP-01).

A total of 144 samples (including field duplicates) were submitted for moisture content analysis. Of the total, 135 were discrete core and Ponar samples and 9 were composite samples collected for waste characterization purposes. Detailed analytical results are presented in Table 3-1a for discrete samples and Table 3-1b for composite samples.

In the discrete samples, moisture content in samples ranged from 15.6 percent (SC21-SC01-SURF) to 175.7 percent (SC21-MR04-0010). In the composite samples, moisture content in samples ranged from 17.8 percent (SC21-COMP-03) to 60.9 percent (SC21-COMP-04). In some samples, the moisture content exceeded 100 percent. This is due to the fact that the moisture content analysis measures the ratio of the weight (mass) of water to the dry weight of solids in a given mass of soil. In cases where the weight of the water in the soil is greater than the dry weight of soil, the moisture content will be greater than 100 percent.

3.2.4 Total Petroleum Hydrocarbons and Oil and Grease

A total of 144 sediment samples (including field duplicates) were submitted for TPH-DRO (C10-C28)/ORO (C28-C40) and oil and grease analysis. Of the total, 135 were discrete core and Ponar samples and 9 were composite samples collected for waste characterization purposes. Detailed analytical results are presented in Table 3-2a for discrete samples and Table 3-2b for composite samples. Figure 3-4a presents the summed TPH results (C10 to C40) and Figures 3-4b and 3-4c present the DRO and ORO fraction results, respectively. Figure 3-5 presents oil and grease results.

In the discrete samples, TPH was detected in 135 of 135 samples submitted. Concentrations of TPH ranged from 23.5 milligrams per kilogram (mg/kg) (SC21-SC07-4060) to 4,500 mg/kg (SC21-SC21-1020). DRO was detected in 134 of 135 samples submitted. Concentrations of DRO ranged from 8.5 mg/kg (SC21-SC07-4060) to 3,700 mg/kg (SC21-SC31-1020). ORO was detected in 121 of 135 samples submitted, and concentrations ranged from 10 mg/kg (SC21-SC10-0010) to 1,300 mg/kg (SC21-SC21-1020). Oil and grease was detected in 94 of 135 samples submitted and concentrations ranged from 110 mg/kg (SC21-SC06-2040) to 11,000 mg/kg (SC21-SC17-6080).

In the composite samples, TPH was detected in 9 of 9 samples submitted. Concentrations of TPH ranged from 129 mg/kg (SC21-COMP-06) to 3,880 mg/kg (SC21-COMP-05FD). DRO was detected in 9 of 9 samples submitted. Concentrations of DRO ranged from 100 mg/kg (SC21-COMP-06) to 3,100 mg/kg (SC21-COMP-05FD). ORO was detected in 9 of 9 samples

submitted, and concentrations ranged from 29 mg/kg (SC21-COMP-06) to 780 mg/kg (SC21-COMP-05FD). Oil and grease was detected in 9 of 9 samples submitted and concentrations ranged from 280 mg/kg (SC21-COMP-03) to 2,000 mg/kg (SC21-COMP-05, SC21-COMP-05FD).

3.2.5 Total Organic Carbon

A total of 144 samples (including field duplicates) were submitted for TOC analysis. Of the total, 135 were discrete core and Ponar samples and 9 were composite samples collected for waste characterization purposes. Detailed analytical results are presented in Table 3-3a for discrete samples and Table 3-3b for composite samples.

In discrete samples, TOC concentrations ranged from 0.459 percent (SC21-SC04-4060FD) to 94.3 percent (SC21-SC21-2040). In composite samples, TOC concentrations ranged from 1.32 percent (SC21-COMP-03) to 5.26 percent (SC21-COMP-07).

3.2.6 Metals

A total of 144 sediment samples (including field duplicates) were submitted for TAL metals analysis. Of the total, 135 were discrete core and Ponar samples and 9 were composite samples collected for waste characterization purposes. Detailed analytical results are presented in Table 3-3a for discrete samples and Table 3-3b for composite samples. Figure 3-6 through Figure 3-27 present individual metals results.

Results were compared to respective TEC, PEC, and Ohio SRV. Of the 23 analyzed metals, 22 have screening criteria: 8 have TEC/PEC values (arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc) from MacDonald et al. (2000), and 22 have an Ohio SRV (aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium. silver, thallium, vanadium, and zinc) from Ohio EPA (2018). The results discussion for metals focuses on the comparison to the Ohio SRV and the PEC, as available.

Aluminum

Aluminum sediment sample results are presented in Figure 3-6. In the discrete samples, aluminum was detected in 135 samples and concentrations ranged from 2,860 mg/kg (SC21-SC04-4060) to 27,800 mg/kg (SC21-MR04-1020). Of the total samples submitted for aluminum analysis (including field duplicates), 0 had concentrations that exceeded the Ohio SRV (42,000 mg/kg). There is no PEC value for aluminum.

In the composite samples, aluminum was detected in 9 samples and concentrations ranged from 5,640 mg/kg (SC21-COMP-02) to 18,200 mg/kg (SC21-COMP-07). Of the total samples submitted for aluminum analysis (including field duplicates), 0 had concentrations that exceeded the Ohio SRV (42,000 mg/kg). There is no PEC value for aluminum.

Antimony

Antimony sediment sample results are presented in Figure 3-7. In the discrete samples, antimony was detected in 10 samples and concentrations ranged from 2.2 mg/kg SC21-SC21-1020, SC21-SC28-0010FD) to 9.2 mg/kg (SC21-SC29-0010). Of the total samples submitted for antimony analysis (including field duplicates), 10 had concentrations that exceeded the Ohio SRV (0.84 mg/kg). There is no PEC value for antimony.

Antimony was not detected in any of the composite samples.

Arsenic

Arsenic sediment sample results are presented in Figure 3-8. In the discrete samples, arsenic was detected in 135 samples and concentrations ranged from 1.2 mg/kg (SC21-SC25-0010) to 394 mg/kg (SC21-SC31-2040). Of the total samples submitted for arsenic analysis (including field duplicates), 59 had concentrations that exceeded the Ohio SRV (11 mg/kg) and 19 had concentrations that exceeded the PEC (33 mg/kg).

In the composite samples, arsenic was detected in 9 samples and concentrations ranged from 6.5 mg/kg (SC21-COMP-01) to 60.7 mg/kg (SC21-COMP-07). Of the total samples submitted for arsenic analysis (including field duplicates), 6 had concentrations that exceeded the Ohio SRV (11 mg/kg) and 2 had concentrations that exceeded the PEC (33 mg/kg).

Barium

Barium sediment sample results are presented in Figure 3-9. In the discrete samples, barium was detected in 135 samples and concentrations ranged from 15 mg/kg (SC21-SC04-4060) to 298 mg/kg (SC21-SC21-2040). Of the total samples submitted for barium analysis (including field duplicates), 5 had concentrations that exceeded the Ohio SRV (210 mg/kg). There is no PEC value for barium.

In the composite samples, barium was detected in 9 samples and concentrations ranged from 53.2 mg/kg (SC21-COMP-02) to 191 mg/kg (SC21-COMP-07). Of the total samples submitted for barium analysis (including field duplicates), none had concentrations that exceeded the Ohio SRV (210 mg/kg). There is no PEC value for barium.

Beryllium

Beryllium sediment sample results are presented in Figure 3-10. In the discrete samples, beryllium was detected in 135 samples and concentrations ranged from 0.13 mg/kg (SC21-SC04-4060) to 1.2 mg/kg (SC21-MR04-1020). Of the total samples submitted for beryllium analysis (including field duplicates), 25 had concentrations that exceeded the Ohio SRV (0.8 mg/kg). There is no PEC value for beryllium.

In the composite samples, beryllium was detected in 9 samples and concentrations ranged from 0.31 mg/kg (SC21-COMP-02) to 0.94 mg/kg (SC21-COMP-07). Of the total samples submitted for beryllium analysis (including field duplicates), 1 had a concentration that exceeded the Ohio SRV (0.8 mg/kg). There is no PEC value for beryllium.

Cadmium

Cadmium sediment sample results are presented in Figure 3-11. In the discrete samples, cadmium was detected in 130 samples and concentrations ranged from 0.12 mg/kg (SC21-SC04-4060FD) to 11.5 mg/kg (SC21-SC21-2040). Of the total samples submitted for cadmium analysis (including field duplicates), 52 had concentrations that exceeded the Ohio SRV (0.96 mg/kg) and 6 had concentrations that exceeded the PEC (4.98 mg/kg).

In the composite samples, cadmium was detected in 9 samples and concentrations ranged from 0.5 mg/kg (SC21-COMP-06) to 4.8 mg/kg (SC21-COMP-07). Of the total samples submitted for cadmium analysis (including field duplicates), 6 had concentrations that exceeded the Ohio SRV (0.96 mg/kg) and none had concentrations that exceeded the PEC (4.98 mg/kg).

Calcium

Calcium sediment sample results are presented in Figure 3-12. In the discrete samples, calcium was detected in 135 samples and concentrations ranged from 394 mg/kg (SC21-SC25-0010) to 132,000 mg/kg (SC21-SC20-0010). Of the total samples submitted for calcium analysis (including field duplicates), 1 had a concentration that exceeded the Ohio SRV (110,000 mg/kg). There is no PEC value for calcium.

In the composite samples, calcium was detected in 9 samples and concentrations ranged from 26,300 mg/kg (SC21-COMP-05FD) to 84,900 mg/kg (SC21-COMP-03). Of the total samples submitted for calcium analysis (including field duplicates), none had a concentration that exceeded the Ohio SRV (110,000 mg/kg). There is no PEC value for calcium.

Chromium

Chromium sediment sample results are presented in Figure 3-13. In the discrete samples, chromium was detected in 135 samples and concentrations ranged from 5.3 mg/kg (SC21-SC04-4060) to 1,820 mg/kg (SC21-SC19-0010). Of the total samples submitted for chromium analysis (including field duplicates), 10 had concentrations that exceeded the Ohio SRV (51 mg/kg) and 6 had concentrations that exceeded the PEC (111 mg/kg).

In the composite samples, chromium was detected in 9 samples and concentrations ranged from 13.6 mg/kg (SC21-COMP-02) to 415 mg/kg (SC21-COMP-08). Of the total samples submitted for chromium analysis (including field duplicates), 2 had concentrations that exceeded the Ohio SRV (51 mg/kg) and 1 had a concentration that exceeded the PEC (111 mg/kg).

Cobalt

Cobalt sediment sample results are presented in Figure 3-14. In the discrete samples, cobalt was detected in 134 samples and concentrations ranged from 3.2 mg/kg (SC21-SCREF-SURF) to 17.4 mg/kg (SC21-SC12-1020). Of the total samples submitted for cobalt analysis (including field duplicates), 10 had concentrations that exceeded the Ohio SRV (12 mg/kg). There is no PEC value for cobalt.

In the composite samples, cobalt was detected in 9 samples and concentrations ranged from 5.8 mg/kg (SC21-COMP-02) to 13.4 mg/kg (SC21-COMP-07). Of the total samples submitted for cobalt analysis (including field duplicates), 1 had a concentration that exceeded the Ohio SRV (12 mg/kg). There is no PEC value for cobalt.

Copper

Copper sediment sample results are presented in Figure 3-15. In the discrete samples, copper was detected in 135 samples and concentrations ranged from 3.7 mg/kg (SC21-SC25-0010) to 1,210 mg/kg (SC21-SC19-0010). Of the total samples submitted for copper analysis (including field duplicates), 80 had concentrations that exceeded the Ohio SRV (42 mg/kg) and 24 had concentrations that exceeded the PEC (149 mg/kg).

In the composite samples, copper was detected in 9 samples and concentrations ranged from 39 mg/kg (SC21-COMP-02) to 345 mg/kg (SC21-COMP-04). Of the total samples submitted for copper analysis (including field duplicates), 8 had concentrations that exceeded the Ohio SRV (42 mg/kg) and 3 had concentrations that exceeded the PEC (149 mg/kg).

Iron

Iron sediment sample results are presented in Figure 3-16. In the discrete samples, iron was detected in 135 samples and concentrations ranged from 2,490 mg/kg (SC21-SC25-0010) to 33,600 mg/kg (SC21-MR04-1020). Of the total samples submitted for iron analysis (including field duplicates), none had concentrations that exceeded the Ohio SRV (44,000 mg/kg). There is no PEC value for iron.

In the composite samples, iron was detected in 9 samples and concentrations ranged from 10,800 mg/kg (SC21-COMP-02) to 29,100 mg/kg (SC21-COMP-07). Of the total samples submitted for iron analysis (including field duplicates), none had concentrations that exceeded the Ohio SRV (44,000 mg/kg). There is no PEC value for iron.

Lead

Lead sediment sample results are presented in Figure 3-17. In the discrete samples, lead was detected in 135 samples and concentrations ranged from 3.6 mg/kg (SC21-SC04-4060) to 1,290 mg/kg (SC21-SC21-2040). Of the total samples submitted for lead analysis (including

field duplicates), 77 had concentrations that exceeded the Ohio SRV (47 mg/kg) and 52 had concentrations that exceeded the PEC (128 mg/kg).

In the composite samples, lead was detected in 9 samples and concentrations ranged from 43.7 mg/kg (SC21-COMP-01) to 570 mg/kg (SC21-COMP-07). Of the total samples submitted for lead analysis (including field duplicates), 8 had concentrations that exceeded the Ohio SRV (47 mg/kg) and 5 had concentrations that exceeded the PEC (128 mg/kg).

Magnesium

Magnesium sediment sample results are presented in Figure 3-18. In the discrete samples, magnesium was detected in 135 samples and concentrations ranged from 270 mg/kg (SC21-SC25-0010) to 23,800 mg/kg (SC21-MR04-4060). Of the total samples submitted for magnesium analysis (including field duplicates), none had concentrations that exceeded the Ohio SRV (29,000 mg/kg). There is no PEC value for magnesium.

In the composite samples, magnesium was detected in 9 samples and concentrations ranged from 8,160 mg/kg (SC21-COMP-05FD) to 21,600 mg/kg (SC21-COMP-03). Of the total samples submitted for magnesium analysis (including field duplicates), none had concentrations that exceeded the Ohio SRV (29,000 mg/kg). There is no PEC value for magnesium.

Manganese

Manganese sediment sample results are presented in Figure 3-19. In the discrete samples, manganese was detected in 135 samples and concentrations ranged from 9.7 mg/kg (SC21-SC25-0010) to 670 mg/kg (SC21-MR03-A-1020, SC21-MR04-1020). Of the total samples submitted for manganese analysis (including field duplicates), none had concentrations that exceeded the Ohio SRV (1,000 mg/kg). There is no PEC value for manganese.

In the composite samples, manganese was detected in 9 samples and concentrations ranged from 201 mg/kg (SC21-COMP-02) to 546 mg/kg (SC21-COMP-03). Of the total samples submitted for manganese analysis (including field duplicates), none had concentrations that exceeded the Ohio SRV (1,000 mg/kg). There is no PEC value for manganese.

Mercury

Mercury sediment sample results are presented in Figure 3-20. In the discrete samples, mercury was detected in 115 samples and concentrations ranged from 0.016 mg/kg (SC21-SC07-2040) to 4.6 mg/kg (SC21-SC31-2040). Of the total samples submitted for mercury analysis (including field duplicates), 78 had concentrations that exceeded the Ohio SRV (0.12 mg/kg) and 31 had concentrations that exceeded the PEC (1.06 mg/kg).

In the composite samples, mercury was detected in 9 samples and concentrations ranged from 0.075 mg/kg (SC21-COMP-01) to 1.2 mg/kg (SC21-COMP-07). Of the total samples submitted

for mercury analysis (including field duplicates), 7 had concentrations that exceeded the Ohio SRV (0.12 mg/kg) and 1 had a concentration that exceeded the PEC (1.06 mg/kg).

Nickel

Nickel sediment sample results are presented in Figure 3-21. In the discrete samples, nickel was detected in 135 samples and concentrations ranged from 5.9 mg/kg (SC21-SC25-0010) to 97.1 mg/kg (SC21-SC29-0010). Of the total samples submitted for nickel analysis (including field duplicates), 14 had concentrations that exceeded the Ohio SRV (36 mg/kg) and 6 had concentrations that exceeded the PEC (48.6 mg/kg).

In the composite samples, nickel was detected in 9 samples and concentrations ranged from 14.2 mg/kg (SC21-COMP-02) to 47.8 mg/kg (SC21-COMP-08). Of the total samples submitted for nickel analysis (including field duplicates), 2 had concentrations that exceeded the Ohio SRV (36 mg/kg) and none had concentrations that exceeded the PEC (48.6 mg/kg).

Potassium

Potassium sediment sample results are presented in Figure 3-22. In the discrete samples, potassium was detected in 135 samples and concentrations ranged from 255 mg/kg (SC21-SC25-0010) to 6,830 mg/kg (SC21-SC12-1020). Of the total samples submitted for potassium analysis (including field duplicates), none had concentrations that exceeded the Ohio SRV (12,000 mg/kg). There is no PEC value for potassium.

In the composite samples, potassium was detected in 9 samples and concentrations ranged from 1,250 mg/kg (SC21-COMP-02) to 4,050 mg/kg (SC21-COMP-03). Of the total samples submitted for potassium analysis (including field duplicates), none had concentrations that exceeded the Ohio SRV (12,000 mg/kg). There is no PEC value for potassium.

Selenium

Selenium was not detected in any of the 2021 sediment samples, but the historical sediment sample results are presented in Figure 3-23.

Silver

Silver sediment sample results are presented in Figure 3-24. In the discrete samples, silver was detected in 56 samples and concentrations ranged from 0.21 mg/kg (SC21-SC09-2040) to 7.2 mg/kg (SC21-SC21-2040). Of the total samples submitted for silver analysis (including field duplicates), 52 had concentrations that exceeded the Ohio SRV (0.43 mg/kg). There is no PEC value for silver.

In the composite samples, silver was detected in 3 samples and concentrations ranged from 0.47 mg/kg (SC21-COMP-05) to 2.1 mg/kg (SC21-COMP-08). Of the total samples submitted

for silver analysis (including field duplicates), 3 had concentrations that exceeded the Ohio SRV (0.43 mg/kg). There is no PEC value for silver.

Sodium

There is no Ohio SRV or PEC value for sodium, so sediment results are not presented on a figure.

In the discrete samples, sodium was detected in 133 samples and concentrations ranged from 82.1 mg/kg (SC21-SC04-4060) to 1,520 mg/kg (SC21-SC03-1020).

In the composite samples, sodium was detected in 9 samples and concentrations ranged from 187 mg/kg (SC21-COMP-05FD) to 450 mg/kg (SC21-COMP-07).

Thallium

Thallium was not detected in any of the 2021 sediment samples, but the historical sediment sample results are presented in Figure 3-25.

Vanadium

Vanadium sediment sample results are presented in Figure 3-26. In the discrete samples, vanadium was detected in 135 samples and concentrations ranged from 8.9 mg/kg (SC21-SC04-4060) to 57 mg/kg (SC21-SC12-1020). Of the total samples submitted for vanadium analysis (including field duplicates), 13 had concentrations that exceeded the Ohio SRV (40 mg/kg). There is no PEC value for vanadium.

In the composite samples, vanadium was detected in 9 samples and concentrations ranged from 15.7 mg/kg (SC21-COMP-02) to 41.8 mg/kg (SC21-COMP-07). Of the total samples submitted for vanadium analysis (including field duplicates), 1 had a concentration that exceeded the Ohio SRV (40 mg/kg). There is no PEC value for vanadium.

Zinc

Zinc sediment sample results are presented in Figure 3-27. In the discrete samples, zinc was detected in 135 samples and concentrations ranged from 6 mg/kg (SC21-SC25-0010) to 1,290 mg/kg (SC21-SC25-4060). Of the total samples submitted for zinc analysis (including field duplicates), 56 had concentrations that exceeded the Ohio SRV (190 mg/kg) and 21 had concentrations that exceeded the PEC (459 mg/kg).

In the composite samples, zinc was detected in 9 samples and concentrations ranged from 108 mg/kg (SC21-COMP-03) to 680 mg/kg (SC21-COMP-07). Of the total samples submitted for zinc analysis (including field duplicates), 5 had concentrations that exceeded the Ohio SRV (190 mg/kg) and 2 had concentrations that exceeded the PEC (459 mg/kg).

3.2.7 Ratio of Simultaneously Extracted Metals to Acid Volatile Sulfide

The bioavailability of divalent metals to aquatic organisms is influenced by the presence of AVS. In low oxygenated (anaerobic) environments, divalent metals precipitate as metal sulfides, making them unavailable for uptake by aquatic organisms. Using this method, five metals (cadmium, copper, lead, nickel, and zinc) were extracted, measured, converted to units of micromoles per gram (µmol/g) and added together (including any values that were J-qualified) to determine the amount of SEM. If a metal was not detected, it was considered a zero in the calculation. SEM was then compared to the amount of AVS detected (units of µmol/g) in the same sediment sample. If AVS was not detected in the sample, the SEM/AVS ratio was not calculated.

An SEM/AVS ratio less than 1 indicates a high degree of probability that the metals are bound as metal sulfides and not bioavailable to aquatic organisms. If the SEM/AVS ratio is greater than 1, then the metals in sediment exceed the sulfide binding ability and have a higher probability of being bioavailable to aquatic organisms (EPA 2005).

A total of 51 discrete surface samples, including field duplicates, were submitted for SEM and AVS analysis and the SEM/AVS ratio was calculated (Table 3-4). Two samples had a ratio greater than 1 (ratios in parentheses): SC21-SC01-SURF (6.04) and SC21-SC19-0010 (1.93). The SEM/AVS ratio was not calculated for 5 samples (SC21-SC06-0010, SC21-SC08-0010, SC21-SC10-0010, SC21-SC12-0010, and SC21-SC20-0010) because AVS was not detected. With the exception of these 7 samples, all samples produced SEM/AVS ratios less than 1, indicating a high probability that the metals are bound as sulfides and not bioavailable.

Organic carbon content also can reduce bioavailability of metals. The sum of SEM – AVS difference is divided by fraction of organic carbon in sediment. Per EPA guidance (2005), if the result is <130 µmol/g_{oc}, then toxicity to benthic invertebrates is not anticipated. If the result is >3,000 µmol/g_{oc}, then toxicity is likely. If the result is between 130 and 3,000 µmol/g_{oc}, then toxicity is uncertain (Interstate Technology & Regulatory Council 2011).

A total of 51 discrete surface samples, including field duplicates, were submitted for SEM and AVS analysis and the (Σ SEM - AVS) / fraction of organic carbon ratio was calculated (Table 3-4). One sample had a ratio greater than 130 µmol/g_{oc}: SC21-SC19-0010 (187 µmol/g_{oc}). There were no samples with results >3,000 µmol/g_{oc}.

3.2.8 Polychlorinated Biphenyl Aroclors

There are TEC and PEC values only for total PCB concentrations, not for individual Aroclors: 59.8 and 676 micrograms per kilogram (µg/kg), respectively. Total PCB Aroclor concentrations were calculated and compared to the screening criteria by summing the concentrations of individual PCB Aroclors with non-detects treated as 0 (ND=0). A total of 139 sediment samples, including field duplicates, were submitted for PCB Aroclor analysis of 9 individual Aroclors. Of the total, 130 were discrete core and Ponar samples and 9 were composite samples collected for waste characterization purposes. Detailed analytical results of individual Aroclor concentrations

and summed totals are presented in Table 3-5a for discrete samples and Table 3-5b for composite samples. The summed total PCBs sediment sample results are presented in Figure 3-28.

In discrete samples, 5 of the individual Aroclors were detected: Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260, and Aroclor-1268. Aroclor-1242 was detected in 53 of the samples submitted, Aroclor-1248 in 5 samples, Aroclor-1254 in 44, Aroclor-1260 in 8 samples, and Aroclor-1268 was detected in 4 samples. Total PCB Aroclor concentrations (ND=0) ranged from 18.7 µg/kg (SC21-SC32-6080) to 31,400 µg/kg (SC21-SC15-1020). Of the samples submitted, 47 (including field duplicates) had total PCB concentrations (ND=0) that exceeded the TEC (59.8 µg/kg) and 11 samples exceeded the PEC (676 µg/kg).

In composite samples, 3 of the individual Aroclors were detected: Aroclor-1242, Aroclor-1254, and Aroclor-1268. Aroclor-1242 was detected in 9 of the samples submitted, Aroclor-1254 in 6, and Aroclor-1268 in 1. Total PCB Aroclor concentrations (ND=0) ranged from 51 µg/kg (SC21-COMP-03) to 15,000 µg/kg (SC21-COMP-05, SC21-COMP-05FD). Of the samples submitted, 8 (including field duplicates) had total PCB concentrations (ND=0) that exceeded the TEC (59.8 µg/kg) and 3 samples exceeded the PEC (676 µg/kg).

3.2.9 Polychlorinated Biphenyl Congeners

There are TEC and PEC values only for total PCB concentrations, not for individual congeners: 59.8 and 676 µg/kg, respectively. Total PCB congener concentrations were calculated and compared to the screening criteria by summing the concentrations of individual PCB congeners with non-detects treated as 0 (ND=0).

A total of 5 discrete sediment samples, including field duplicates, were submitted for PCB congener analysis. Total PCB congener concentrations (ND=0) ranged from 30.6 µg/kg (SC21-SC11-SURF) to 17,279 µg/kg (SC21-SC18-SURFFD). Of the samples submitted, 4 (including field duplicates) had total PCB concentrations (ND=0) that exceeded the TEC (59.8 µg/kg) and 2 samples exceeded the PEC (676 µg/kg). Individual congener concentrations as well as the summed totals are presented in Table 3-6.

The surface samples analyzed for PCB congeners (SC21-SC11, SC21-SC14, SC21-SC18, and SC21-SCREF) were also analyzed for PCB aroclors (see below). It is worth noting, the aroclor and congener total concentrations did not follow a specific pattern in relation to each other. For SC21-SC11, the total PCB congener concentration was between 5 to 10 times lower than the total PCB aroclor concentration. For SC21-SC14, the total PCB congener and total PCB aroclor concentrations were similar. For SC21-SC18, the total PCB congener concentrations of the parent and duplicate samples was approximately half of or nearly equal to the total PCB aroclor concentration. For SC21-SCREF, the total PCB congener concentration was between 5 to 10 times higher than the total PCB aroclor concentration. However, when the total PCB congener and total PCB aroclor concentrations were compared to the PEC, both either exceeded or did not exceed for a given sample.

Sample Location	SC21-SC11	SC21-SC14	SC21-SC18/ SC21-SC18 (FD)	SC21-SCREF
Total PCB Congeners				
Sample Date	11/9/2021	11/9/2021	11/9/2021	11/9/2021
Depth Interval	0-0.5	0-0.5	0-0.5	0-0.5
Total PCB Congener Concentration (µg/kg)	30.6	**170**	**8,400/17,279**	**406**
Total PCB Aroclor Data at Locations Analyzed for Congeners				
Sample Date	11/10/2021	11/9/2021	11/9/2021	11/9/2021
Depth Interval	0-0.5	0-0.5	0-0.5	0-0.5
Total PCB Aroclor Concentration (µg/kg)	**224**	**127**	**17,000**	**60**

Note: Underlined and bolded values indicate a concentration exceeding the TEC (59.8 µg/kg). Shaded cells indicate a concentration exceeding the PEC (676 µg/kg). See also Tables 3-5A and 3-6.

3.2.10 Polycyclic Aromatic Hydrocarbons

A total of 131 sediment samples, including field duplicates, were submitted for 17 PAH analysis. Of the total, 122 were discrete core and Ponar samples and 9 were composite samples collected for waste characterization purposes. Tables 3-7a and 3-7b provide the PAH results. In discrete samples, each of the 17 individual PAHs was detected in at least 1 sample, In composite samples, with the exception of dibenzo(a,h)anthracene, each of the 17 individual PAHs was detected in at least 1 sample, 9 had concentrations that exceeded respective PEC values in at least 1 sample, and 16 had concentrations that exceeded respective Region 4 ESV in at least 1 sample.

A total of 13 discrete sediment samples, including field duplicates, were submitted for 34 PAH analysis. Table 3-8 provides the results for each of the analyzed 34 PAHs.
Nine of the 17 individual analyzed PAHs have PEC values from MacDonald et al. (2000) and each of the 17 has a Region 4 ESV. The results discussion focuses on the comparison to the PEC values, if available, and comparisons to the Region 4 ESV are discussed where PEC values are not available.

3.2.10.1 17 Polycyclic Aromatic Hydrocarbons

Results for individual 17 PAHs are provided below. Detailed analytical results of 17 PAH analysis are presented in Table 3-7a for discrete samples and Table 3-7b for composite samples. The summed total 17 PAHs (ND=1/2 RL) sediment sample results are presented in Figure 3-29.

2-Methylnaphthalene

In discrete samples, 2-methylnaphthalene was detected in 114 of the 122 samples submitted for analysis. 2-Methylnaphthalene concentrations ranged from 0.58 µg/kg (SC21-SC07-2040FD) to

63,000 µg/kg (SC21-SC24-2040). Of the total samples submitted for 2-methylnaphthalene, 73 exceeded the Region 4 ESV (20.2 µg/kg). There is no PEC value for 2-methylnaphthalene.

In composite samples, 2-methylnaphthalene was detected in 9 of the 9 samples submitted for analysis. 2-Methylnaphthalene concentrations ranged from 17 µg/kg (SC21-COMP-01) to 4,700 µg/kg (SC21-COMP-08). Of the total samples submitted for 2-methylnaphthalene, 8 exceeded the Region 4 ESV (20.2 µg/kg). There is no PEC value for 2-methylnaphthalene.

Acenaphthene

In discrete samples, acenaphthene was detected in 115 of the 122 samples submitted for analysis. Acenaphthene concentrations ranged from 1.9µg/kg (SC21-SC07-2040FD) to 89,000 µg/kg (SC21-SC09-0010). Of the total samples submitted for acenaphthene, 101 exceeded the Region 4 ESV (6.71 µg/kg). There is no PEC value for acenaphthene.

In composite samples, acenaphthene was detected in 9 of the 9 samples submitted for analysis. Acenaphthene concentrations ranged from 63 µg/kg (SC21-COMP-01) to 16,000 µg/kg (SC21-COMP-05FD). Of the total samples submitted for acenaphthene, 9 exceeded the Region 4 ESV (6.71 µg/kg). There is no PEC value for acenaphthene.

Acenaphthylene

In discrete samples, acenaphthylene was detected in 110 of the 122 samples submitted for analysis. Acenaphthylene concentrations ranged from 0.91 µg/kg (SC21-SC20-1020, SC21-SC07-2040FD) to 5,800 µg/kg (SC21-SC31-4060). Of the total samples submitted for acenaphthylene, 90 exceeded the Region 4 ESV (5.9 µg/kg). There is no PEC value for acenaphthylene.

In composite samples, acenaphthylene was detected in 9 of the 9 samples submitted for analysis. Acenaphthylene concentrations ranged from 45 µg/kg (SC21-COMP-01) to 1,400 µg/kg (SC21-COMP-05FD). Of the total samples submitted for acenaphthylene, 9 exceeded the Region 4 ESV (5.9 µg/kg). There is no PEC value for acenaphthylene.

Anthracene

In discrete samples, anthracene was detected in 115 of the 122 samples submitted for analysis. Anthracene concentrations ranged from 1.2 µg/kg (SC21-SC07-2040FD) to 50,000 µg/kg (SC21-SC31-4060). Of the total samples submitted for anthracene (including field duplicates), 51 had concentrations that exceeded the PEC (845 µg/kg).

In composite samples, anthracene was detected in 9 of the 9 samples submitted for analysis. Anthracene concentrations ranged from 160 µg/kg (SC21-COMP-01) to 15,000 µg/kg (SC21-COMP-05FD). Of the total samples submitted for anthracene (including field duplicates), 7 had concentrations that exceeded the PEC (845 µg/kg).

Benzo(a)anthracene

In discrete samples, benzo(a)anthracene was detected in 116 of the 122 samples submitted for analysis. Benzo(a)anthracene concentrations ranged from 0.59 µg/kg (SC21-SC12-2040) to 38,000 µg/kg (SC21-SC31-4060). Of the total samples submitted for benzo(a)anthracene (including field duplicates), 57 had concentrations that exceeded the PEC (1,050 µg/kg).

In composite samples, benzo(a)anthracene was detected in 9 of the 9 samples submitted for analysis. Benzo(a)anthracene concentrations ranged from 470 µg/kg (SC21-COMP-01) to 9,400 µg/kg (SC21-COMP-05FD). Of the total samples submitted for benzo(a)anthracene (including field duplicates), 6 had concentrations that exceeded the PEC (1,050 µg/kg).

Benzo(a)pyrene

In discrete samples, benzo(a)pyrene was detected in 116 of the 122 samples submitted for analysis. Benzo(a)pyrene concentrations ranged from 0.51 µg/kg (SC21-SC12-2040) to 25,000 µg/kg (SC21-SC31-4060). Of the total samples submitted for benzo(a)pyrene (including field duplicates), 46 had concentrations that exceeded the PEC (1,450 µg/kg).

In composite samples, benzo(a)pyrene was detected in 8 of the 9 samples submitted for analysis. Benzo(a)pyrene concentrations ranged from 380 µg/kg (SC21-COMP-02) to 5,200 µg/kg (SC21-COMP-05FD). Of the total samples submitted for benzo(a)pyrene (including field duplicates), 5 had concentrations that exceeded the PEC (1,450 µg/kg).

Benzo(b)fluoranthene

In discrete samples, benzo(b)fluoranthene was detected in 117 of the 122 samples submitted for analysis. Benzo(b)fluoranthene concentrations ranged from 0.69 µg/kg (SC21-SC12-2040) to 20,000 µg/kg (SC21-SC31-4060). Of the total samples submitted for benzo(b)fluoranthene, 78 had concentrations that exceeded the Region 4 ESV (190 µg/kg). There is no PEC value for benzo(b)fluoranthene.

In composite samples, benzo(b)fluoranthene was detected in 9 of the 9 samples submitted for analysis. Benzo(b)fluoranthene concentrations ranged from 340 µg/kg (SC21-COMP-03) to 5,600 µg/kg (SC21-COMP-05FD). Of the total samples submitted for benzo(b)fluoranthene, 9 had concentrations that exceeded the Region 4 ESV (190 µg/kg). There is no PEC value for benzo(b)fluoranthene.

Benzo(g,h,i)perylene

In discrete samples, benzo(g,h,i)perylene was detected in 116 of the 122 samples submitted for analysis. Benzo(g,h,i)perylene concentrations ranged from 1.2 µg/kg (SC21-SC07-2040FD) to 8,100 µg/kg (SC21-SC31-4060). Of the total samples submitted for benzo(g,h,i)perylene (including field duplicates), 73 had concentrations that exceeded the Region 4 ESV (170 µg/kg). There is no PEC value for benzo(g,h,i)perylene.

In composite samples, benzo(g,h,i)perylene was detected in 9 of the 9 samples submitted for analysis. Benzo(g,h,i)perylene concentrations ranged from 98 µg/kg (SC21-COMP-03) to 1,500 µg/kg (SC21-COMP-08). Of the total samples submitted for benzo(g,h,i)perylene (including field duplicates), 7 had concentrations that exceeded the Region 4 ESV (170 µg/kg). There is no PEC value for benzo(g,h,i)perylene.

Benzo(k)fluoranthene

In discrete samples, benzo(k)fluoranthene was detected in 109 of the 122 samples submitted for analysis. Benzo(k)fluoranthene concentrations ranged from 0.85 µg/kg (SC21-SC07-2040FD) to 8,600 µg/kg (SC21-SC31-4060). Of the total samples submitted for benzo(k)fluoranthene (including field duplicates), 64 had concentrations that exceeded the Region 4 ESV (240 µg/kg). There is no PEC value for benzo(k)fluoranthene.

In composite samples, benzo(k)fluoranthene was detected in 9 of the 9 samples submitted for analysis. Benzo(k)fluoranthene concentrations ranged from 110 µg/kg (SC21-COMP-03) to 2,400 µg/kg (SC21-COMP-05FD). Of the total samples submitted for benzo(k)fluoranthene (including field duplicates), 6 had concentrations that exceeded the Region 4 ESV (240 µg/kg). There is no PEC value for benzo(k)fluoranthene.

Chrysene

In discrete samples, chrysene was detected in 118 of the 122 samples submitted for analysis. Chrysene concentrations ranged from 1.8 µg/kg (SC21-SC12-2040) to 28,000 µg/kg (SC21-SC31-4060). Of the total samples submitted for chrysene (including field duplicates), 51 had concentrations that exceeded the PEC (1,290 µg/kg).

In composite samples, chrysene was detected in 9 of the 9 samples submitted for analysis. Chrysene concentrations ranged from 440 µg/kg (SC21-COMP-01) to 7,400 µg/kg (SC21-COMP-05FD). Of the total samples submitted for chrysene (including field duplicates), 5 had concentrations that exceeded the PEC (1,290 µg/kg).

Dibenzo(a,h)anthracene

In discrete samples, dibenzo(a,h)anthracene was detected in 4 of the 122 samples submitted for analysis. Dibenzo(a,h)anthracene concentrations ranged from 0.44 µg/kg (SC21-SC06-2040) to 3.9 µg/kg (SC21-SC11-2040). Of the total samples submitted for dibenzo(a,h)anthracene (including field duplicates), none had concentrations that exceeded the Region 4 ESV (33 µg/kg). There is no PEC value for dibenzo(a,h)anthracene.

Dibenzo(a,h)anthracene was not detected in the 9 composite samples submitted for analysis.

Fluoranthene

In discrete samples, fluoranthene was detected in 117 of the 122 samples submitted for analysis. Fluoranthene concentrations ranged from 0.82 µg/kg (SC21-SC12-2040) to 97,000 µg/kg (SC21-SC31-4060). Of the total samples submitted for fluoranthene (including field duplicates), 59 had concentrations that exceeded the PEC (2,230 µg/kg).

In composite samples, fluoranthene was detected in 9 of the 9 samples submitted for analysis. Fluoranthene concentrations ranged from 1,100 µg/kg (SC21-COMP-01) to 30,000 µg/kg (SC21-COMP-05FD). Of the total samples submitted for fluoranthene (including field duplicates), 6 had concentrations that exceeded the PEC (2,230 µg/kg).

Fluorene

In discrete samples, fluorene was detected in 116 of the 122 samples submitted for analysis. Fluorene concentrations ranged from 1.3 µg/kg (SC21-SC07-2040FD, SC21-SC12-2040) to 52,000 µg/kg (SC21-SC09-0010). Of the total samples submitted for fluorene (including field duplicates), 53 had concentrations that exceeded the PEC (536 µg/kg).

In composite samples, fluorene was detected in 9 of the 9 samples submitted for analysis. Fluorene concentrations ranged from 77 µg/kg (SC21-COMP-01) to 16,000 µg/kg (SC21-COMP-05FD). Of the total samples submitted for fluorene (including field duplicates), 7 had concentrations that exceeded the PEC (536 µg/kg).

Indeno(1,2,3-cd)pyrene

In discrete samples, indeno(1,2,3-cd)pyrene was detected in 113 of the 122 samples submitted for analysis. Indeno(1,2,3-cd)pyrene concentrations ranged from 0.68 µg/kg (SC21-SC08-0010) to 8,000 µg/kg (SC21-SC31-4060). Of the total samples submitted for indeno(1,2,3-cd)pyrene (including field duplicates), 73 had concentrations that exceeded the Region 4 ESV (200 µg/kg). There is no PEC value for indeno(1,2,3-cd)pyrene.

In composite samples, indeno(1,2,3-cd)pyrene was detected in 9 of the 9 samples submitted for analysis. Indeno(1,2,3-cd)pyrene concentrations ranged from 110 µg/kg (SC21-COMP-03) to 1,700 µg/kg (SC21-COMP-05FD). Of the total samples submitted for indeno(1,2,3-cd)pyrene (including field duplicates), 7 had concentrations that exceeded the Region 4 ESV (200 µg/kg). There is no PEC value for indeno(1,2,3-cd)pyrene.

Naphthalene

In discrete samples, naphthalene was detected in 111 of the 122 samples submitted for analysis. Naphthalene concentrations ranged from 0.83 µg/kg (SC21-SC07-2040FD) to 170,000 µg/kg (SC21-SC24-2040). Of the total samples submitted for naphthalene (including field duplicates), 26 had concentrations that exceeded the PEC (561 µg/kg).

In composite samples, naphthalene was detected in 9 of the 9 samples submitted for analysis. Naphthalene concentrations ranged from 23 µg/kg (SC21-COMP-06) to 8,100 µg/kg (SC21-COMP-08). Of the total samples submitted for naphthalene (including field duplicates), 4 had concentrations that exceeded the PEC (561 µg/kg).

Phenanthrene

In discrete samples, phenanthrene was detected in 122 of the 122 samples submitted for analysis. Phenanthrene concentrations ranged from 3.1 µg/kg (SC21-SC07-2040FD) to 150,000 µg/kg (SC21-SC31-4060 and SC21-SC31-6080). Of the total samples submitted for phenanthrene (including field duplicates), 57 had concentrations that exceeded the PEC (1,170 µg/kg).

In composite samples, phenanthrene was detected in 9 of the 9 samples submitted for analysis. Phenanthrene concentrations ranged from 570 µg/kg (SC21-COMP-01) to 49,000 µg/kg (SC21-COMP-05FD). Of the total samples submitted for phenanthrene (including field duplicates), 8 had concentrations that exceeded the PEC (1,170 µg/kg).

Pyrene

In discrete samples, pyrene was detected in 118 of the 122 samples submitted for analysis. Pyrene concentrations ranged from 2.7 µg/kg (SC21-SC12-2040) to 85,000 µg/kg (SC21-SC31-4060). Of the total samples submitted for pyrene (including field duplicates), 59 had concentrations that exceeded the PEC (1,520 µg/kg).

In composite samples, pyrene was detected in 9 of the 9 samples submitted for analysis. Pyrene concentrations ranged from 930 µg/kg (SC21-COMP-01) to 23,000 µg/kg (SC21-COMP-05FD). Of the total samples submitted for pyrene (including field duplicates), 7 had concentrations that exceeded the PEC (1,520 µg/kg).

Total PAHs

Total PAHs were calculated using 17 individual PAHs (Total 17 PAHs) to be consistent with the derivation of the TEC and PEC values. Total 17 PAH concentrations were calculated by summing the concentrations of individual 17 PAHs with non-detects treated as one-half the reporting limit (ND= ½ RL).

In discrete samples, Total 17 PAH concentrations (ND=½ RL) ranged from 38.55 µg/kg (SC21-SC04-4060FD) to 706,130 µg/kg (SC21-SC31-6080). Of the samples submitted (including field duplicates), 49 had total 17 PAH concentrations (ND=½RL) that exceeded the PEC (22,800 µg/kg). The highest total 17 PAH (ND=½RL) concentration was greater than 30 times the PEC. Detailed results are presented in Table 3-7a in numerical order of location numbers and presented in Figure 3-29.

In composite samples, Total 17 PAH concentrations (ND=½ RL) ranged from 5,441 µg/kg (SC21-SC04-6080) to 185,160 µg/kg (SC21-COMP-05FD). Of the samples submitted (including

field duplicates), 5 had total 17 PAH concentrations (ND=½RL) that exceeded the PEC (22,800 µg/kg). The highest total 17 PAH (ND=½RL) concentration was greater than 8 times the PEC. Detailed results are presented in Table 3-7b in numerical order of location numbers and presented in Figure 3-29.

3.2.10.2 34 Polycyclic Aromatic Hydrocarbons

A total of 13 discrete sediment samples, including field duplicates, were submitted for 34 PAHs analysis. Of the 34 analyzed individual PAHs, each was detected in all 13 samples and 9 had concentrations that exceeded respective PEC values in at least 1 sample, and 16 had concentrations that exceeded respective Region 4 ESV in at least one sample.

Total 34 PAH concentrations were calculated by summing the concentrations of individual PAHs with non-detects treated as one-half the reporting limit (ND=½RL). Total 34 PAH concentrations (ND=½ RL) ranged from 2,482 µg/kg (SC21-MRREF-SURF) to 231,963 µg/kg (SC21-SC18-SURF).

The Total 34 PAH concentrations (ND=½ RL) were compared to the 17 PAH PEC value as a benchmark comparison. Of the samples submitted (including field duplicates), 7 had total 34 PAH concentrations (ND=½RL) that exceeded the PEC (22,800 µg/kg). Detailed results are presented in Table 3-8 in numerical order of location numbers.

3.2.11 Nitrogen (Ammonia)

A total of 9 composite sediment samples, including field duplicates, were submitted for ammonia analysis. Ammonia was detected in 9 of the 9 samples submitted for nitrogen (ammonia) analysis, including field duplicates. Ammonia concentrations ranged from 14 mg/kg (SC21-COMP-03) to 230 mg/kg (SC21-COMP-08) (Table 3-9).

3.2.12 Nitrogen (TKN)

A total of 9 composite sediment samples, including field duplicates, were submitted for TKN analysis. TKN was detected in 9 of 9 samples submitted for nitrogen (TKN) analysis, including field duplicates. TKN concentrations ranged from 600 mg/kg (SC21-COMP-03) to 1,800 mg/kg (SC21-COMP-05FD, SC21-COMP-08) (Table 3-9).

3.2.13 Phosphorous

A total of 9 composite sediment samples, including field duplicates, were submitted for phosphorous analysis. Phosphorous was detected in 9 of the 9 samples submitted for analysis, including field duplicates. Phosphorous concentrations ranged from 370 mg/kg (SC21-COMP-01) to 1,100 mg/kg (SC21-COMP-05FD) (Table 3-9).

3.2.14 Cyanide

A total of 9 composite sediment samples, including field duplicates, were submitted for cyanide analysis. Total cyanide was detected in 2 of the 9 samples submitted for analysis, including field duplicates. Total cyanide concentrations ranged from 0.43 mg/kg (SC21-COMP-07) to 10 mg/kg (SC21-COMP-08). Of the total samples submitted for total cyanide 2 had concentrations that exceed the EPA Region 5 ECO screening value (0.0001 mg/kg) (Table 3-10).

3.2.15 TCLP

A total of 8 sediment samples were submitted for TCLP analysis. There were no detections for herbicides, pesticides, or semivolatile organic compounds. Arsenic, barium, and lead were the only metals detected and benzene was the only volatile organic compound detected. Each of the detected concentrations were below the TCLP regulatory levels from 40 Code of Federal Regulations 261.24. Ignitability was over 140 degrees Fahrenheit for each of the samples. pH ranged from 7.4 to 8.1. All but one sample (SC21-COMP-01) passed the paint filter test (Table 3-11).

3.3 STANDARD ELUTRIATES AND SURFACE WATER RESULTS

3.3.1 Total Petroleum Hydrocarbons and Oil and Grease

A total of 9 standard elutriates and 4 surface water samples, including field duplicates, were submitted for TPH-DRO (C10-C28)/ORO (C28-C40) and oil and grease analysis. TPH results are presented in Table 3-12. Oil and grease results are presented in Table 3-13.

DRO was detected in 4 of the 4 surface water samples submitted. Concentrations of DRO ranged from 0.22 mg/L (SC21-SC-WAT) to 0.31 mg/L (SC21-CDF-WAT). ORO was not detected in the 4 surface water samples submitted. Oil and grease was detected in 4 of the 4 surface water samples submitted. Concentration of oil and grease ranged from 2.6 mg/L (SC21-SC-WAT) to 11 mg/L (SC21-SC-WATFD).

DRO was detected in 9 of the 9 standard elutriate samples. Concentrations of DRO ranged from 0.22 mg/L (SC21-COMP-01-SETFD) to 0.88 mg/L (SC21-COMP-07-SET). ORO was not detected in the 9 samples submitted. Oil and grease was detected in 7 of the 9 samples submitted. Concentration of oil and grease ranged from 3 mg/L (SC21-COMP-02-SET) to 4.9 mg/L (SC21-COMP-04-SET, SC21-COMP-07-SET).

3.3.2 Metals

A total of 9 standard elutriate and 4 surface water samples, including field duplicates, were submitted for metals analysis. Results were compared to Ohio EPA and EPA water quality criteria (Ohio EPA 2021). Results are presented in Table 3-14. Of the 23 analyzed metals, 16 have screening criteria values (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium. silver, thallium, vanadium, and zinc) (Ohio EPA

2021). Antimony, arsenic, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium. silver, and thallium were not detected in any of the 4 surface water samples submitted for analysis. Antimony, selenium, silver, and thallium were not detected in any of the 9 standard elutriate samples submitted for analysis (Table 3-14).

Arsenic

Arsenic was not detected in surface water.

Arsenic was detected in 9 of 13 standard elutriate samples submitted for analysis. Arsenic concentrations ranged from 4.5 micrograms per liter (μg/L) (SC21-COMP-01-SETFD) to 36.3 μg/L (SC21-COMP-02-SET). Of the total samples submitted for arsenic analysis (including field duplicates), none had concentrations that exceeded the criteria (150 μg/L) (Table 3-14).

Barium

Barium was detected in 4 of 4 samples submitted for surface water analysis. Barium concentrations ranged from 45.8 μg/L (SC21-CDF-WAT) to 64.9 μg/L (SC21-SC-WAT). Of the total samples submitted for barium analysis (including field duplicates), none had concentrations that exceeded the criteria (640 μg/L) (Table 3-14).

Barium was detected in 9 of 9 standard elutriate samples submitted for analysis. Barium concentrations ranged from 129 μg/L (SC21-COMP-03-SET) to 305 μg/L (SC21-COMP-04-SET). Of the total samples submitted for barium analysis (including field duplicates), none had concentrations that exceeded the criteria (640 μg/L) (Table 3-14).

Beryllium

Beryllium was not detected in surface water.

Beryllium was detected in 1 of 9 standard elutriate samples submitted for analysis (SC21-COMP-04-SET); the detected concentration was 0.88 μg/L. Of the total samples submitted for beryllium analysis (including field duplicates), none had concentrations that exceeded the criteria (11 μg/L) (Table 3-14).

Cadmium

Cadmium was not detected in surface water.

Cadmium was detected in 5 of 9 standard elutriate samples submitted for analysis. Cadmium concentrations ranged from 0.74 μg/L (SC21-COMP-05-SET) to 2.4 μg/L (SC21-COMP-04-SET). Of the total samples submitted for cadmium analysis (including field duplicates), none had concentrations that exceeded the criteria (11 μg/L) (Table 3-14).

Chromium

Chromium was not detected in surface water.

Chromium was detected in 9 of 9 standard elutriate samples submitted for analysis. Chromium concentrations ranged from 7.7 µg/L (SC21-COMP-01-SET) to 83.2 µg/L (SC21-COMP-08-SET). Of the total samples submitted for chromium analysis (including field duplicates), none had concentrations that exceeded the criteria (86 µg/L) (Table 3-14).

Cobalt

Cobalt was not detected in surface water.

Cobalt was detected in 1 of 9 standard elutriate samples submitted for analysis (SC21-COMP-04-SET); the detected concentration was 12.7 µg/L. Of the total samples submitted for cobalt analysis (including field duplicates), none had concentrations that exceeded the criteria (24 µg/L) (Table 3-14).

Copper

Copper was not detected in surface water.

Copper was detected in 9 of 9 standard elutriate samples submitted for analysis. Copper concentrations ranged from 14.7 µg/L (SC21-COMP-01-SET) to 115 µg/L (SC21-COMP-04-SET). Of the total samples submitted for copper analysis (including field duplicates), 9 had concentrations that exceeded the criteria (9.3 µg/L) (Table 3-14).

Lead

Lead was not detected in surface water.

Lead was detected in 9 of 9 standard elutriate samples submitted for analysis. Lead concentrations ranged from 17.7 µg/L (SC21-COMP-01-SET) to 209 µg/L (SC21-COMP-04-SET). Of the total samples submitted for lead analysis (including field duplicates), 9 had concentrations that exceeded the criteria (6.4 µg/L) (Table 3-14).

Mercury

Mercury was not detected in surface water.

Mercury was detected in 5 of 9 standard elutriate samples submitted for analysis. Mercury concentrations ranged from 0.11 µg/L (SC21-COMP-05-SET) to 0.26 µg/L (SC21-COMP-04-SET). Of the total samples submitted for mercury analysis (including field duplicates), none had concentrations that exceeded the criteria (0.91 µg/L) (Table 3-14).

Nickel

Nickel was not detected in surface water.

Nickel was detected in 9 of 9 standard elutriate samples submitted for analysis. Nickel concentrations ranged from 8.9 µg/L (SC21-COMP-01-SET) to 40.4 µg/L (SC21-COMP-04-SET). Of the total samples submitted for nickel analysis (including field duplicates), none had concentrations that exceeded the criteria (52 µg/L) (Table 3-14).

Vanadium

Vanadium was detected in 1 of 4 surface water samples submitted for analysis. The detected vanadium concentration was 3.5 µg/L (SC21-CDF-WAT). Of the total samples submitted for vanadium analysis (including field duplicates), none had concentrations that exceeded the criteria (44 µg/L) (Table 3-14).

Vanadium was detected in 9 of 9 standard elutriate samples submitted for analysis. Vanadium concentrations ranged from 5.7 µg/L (SC21-COMP-01-SET) to 37.4 µg/L (SC21-COMP-04-SET). Of the total samples submitted for vanadium analysis (including field duplicates), none had concentrations that exceeded the criteria (44 µg/L) (Table 3-14).

Zinc

Zinc was detected in 1 of 4 surface water samples submitted for analysis. The detected zinc concentration was 9.9 mg/L. Of the total samples submitted for zinc analysis (including field duplicates), none had concentrations that exceeded the criteria (120 µg/L) (Table 3-14).

Zinc was detected in 9 of 9 standard elutriate samples submitted for analysis. Zinc concentrations ranged from 48 µg/L (SC21-COMP-01-SET) to 375 µg/L (SC21-COMP-04-SET). Of the total samples submitted for zinc analysis (including field duplicates), 3 had concentrations that exceeded the criteria (120 µg/L) (Table 3-14).

Detailed results are presented in Table 3-14 in numerical order of location numbers.

3.3.3 Polychlorinated Biphenyl Aroclors

Total PCB Aroclor concentrations were calculated and compared to the screening criterion of 0.00012 µg/L by summing the concentrations of individual PCB Aroclors with non-detects treated as 0 (ND=0). A total of 9 standard elutriates and 4 surface water samples, including field duplicates, were submitted for PCB Aroclor analysis. PCB Aroclors were not detected in surface water.

Of the nine analyzed individual Aroclors, only Aroclor-1242 was detected in the standard elutriate samples. Aroclor-1242 was detected in 3 samples. Aroclor-1242 concentrations (ND=0) ranged from 0.33 (SC21-COMP-04-SET) to 3.5 µg/L (SC21-COMP-05-SET). Of the samples

submitted, 3 (including field duplicates) had total PCB concentrations (ND=0) that exceeded the criteria. Individual Aroclor concentrations as well as the summed total are presented in greater detail in Table 3-15 in numerical order of location numbers.

3.3.4 Polycyclic Aromatic Hydrocarbons

Table 3-16 provides the results for all of the analyzed PAHs; however, only individual compounds with screening criteria are included in this results discussion. There are criteria for 15 of the 17 individual PAHs analyzed (2-methylnaphthalane and benzo(g,h,i)perylene do not have a criterion).

A total of 9 standard elutriates and 4 surface water samples, including field duplicates, were submitted for 17 PAH analysis. None of the individual PAHs were detected in the surface water samples. In the standard elutriate samples, each of the 17 individual PAHs was detected in at least one sample except for dibenz(a,h)anthracene, and 6 individual PAHs had concentrations that exceeded respective criteria in at least one sample.

Acenaphthene was detected in 9 of the 9 standard elutriate samples submitted for analysis. Acenaphthene concentrations ranged from 0.02 µg/L (SC21-COMP-02-SET) to 24 µg/L (SC21-COMP-04-SET). Of the total samples submitted for acenaphthene (including field duplicates), 2 had concentrations that exceeded the criteria (15 µg/L) (Table 3-16).

Acenaphthylene was detected in 7 of the 9 standard elutriate samples submitted for analysis. Acenaphthylene concentrations ranged from 0.077 µg/L (SC21-COMP-03-SET) to 3.6 µg/L (SC21-COMP-05-SET). Of the total samples submitted for acenaphthylene (including field duplicates), none had concentrations that exceeded the criteria (13 µg/L) (Table 3-16).

Anthracene was detected in 8 of the 9 standard elutriate samples submitted for analysis. Anthracene concentrations ranged from 0.021 µg/L (SC21-COMP-01-SET) to 1.1 µg/L (SC21-COMP-04-SET and SC21-COMP-07-SET). Of the total samples submitted for anthracene (including field duplicates), 8 had concentrations that exceeded the criteria (0.02 µg/L) (Table 3-16).

Benzo(a)anthracene was detected in 9 of the 9 standard elutriate samples submitted for analysis. Benzo(a)anthracene concentrations ranged from 0.035 µg/L (SC21-COMP-02-SET) to 0.59 µg/L (SC21-COMP-07-SET). Of the total samples submitted for benzo(a)anthracene (including field duplicates), none had concentrations that exceeded the criteria (4.7 µg/L) (Table 3-16).

Benzo(a)pyrene was detected in 7 of the 9 standard elutriate samples submitted for analysis. Benzo(a)pyrene concentrations ranged from 0.035 µg/L (SC21-COMP-03-SET) to 0.27 µg/L (SC21-COMP-07-SET). Of the total samples submitted for benzo(a)pyrene (including field duplicates), 3 had concentrations that exceeded the criteria (0.06 µg/L) (Table 3-16).

Benzo(b)fluoranthene was detected in 9 of the 9 standard elutriate samples submitted for analysis. Benzo(b)fluoranthene concentrations ranged from 0.03 µg/L (SC21-COMP-02-SET) to

0.25 µg/L (SC21-COMP-07-SET). Of the total samples submitted for benzo(b)fluoranthene (including field duplicates), none had concentrations that exceeded the criteria (2.6 µg/L) (Table 3-16).

Benzo(k)fluoranthene was detected in 8 of the 9 standard elutriate samples submitted for analysis. Benzo(k)fluoranthene concentrations ranged from 0.016 µg/L (SC21-COMP-03-SET) to 0.11 µg/L (SC21-COMP-07-SET). Of the total samples submitted for benzo(k)fluoranthene (including field duplicates), none had concentrations that exceeded the criteria (0.13 µg/L) (Table 3-16).

Chrysene was detected in 9 of the 9 standard elutriate samples submitted for analysis. Chrysene concentrations ranged from 0.055 µg/L (SC21-COMP-02-SET) to 0.47 µg/L (SC21-COMP-07-SET). Of the total samples submitted for chrysene (including field duplicates) (including field duplicates), none had concentrations that exceeded the criteria (4.7 µg/L) (Table 3-16).

Fluoranthene was detected in 9 of the 9 standard elutriate samples submitted for analysis. Fluoranthene concentrations ranged from 0.19 µg/L (SC21-COMP-01-SET) to 2.7 µg/L (SC21-COMP-05-SET). Of the total samples submitted for fluoranthene (including field duplicates) (including field duplicates), 6 had concentrations that exceeded the criteria (0.8 µg/L) (Table 3-16).

Fluorene was detected in 9 of the 9 standard elutriate samples submitted for analysis. Fluorene concentrations ranged from 0.02 µg/L (SC21-COMP-01-SETFD) to 14 µg/L (SC21-COMP-05-SET). Of the total samples submitted for fluorene (including field duplicates), none had concentrations that exceeded the criteria (19 µg/L) (Table 3-16).

Indeno(1,2,3-cd)pyrene was detected in 6 of the 9 standard elutriate samples submitted for analysis. Indeno(1,2,3-cd)pyrene concentrations ranged from 0.025 µg/L (SC21-COMP-04-SET) to 0.085 µg/L (SC21-COMP-07-SET). Of the total samples submitted for indeno(1,2,3-cd)pyrene (including field duplicates), 6 had concentrations that exceeded the criteria (0.013 µg/L) (Table 3-16).

Naphthalene was detected in 6 of the 9 standard elutriate samples submitted for analysis. Naphthalene concentrations ranged from 0.035 µg/L (SC21-COMP-06-SET) to 0.44 µg/L (SC21-COMP-07-SET). Of the total samples submitted for naphthalene (including field duplicates), none had concentrations that exceeded the criteria (21 µg/L) (Table 3-16).

Phenanthrene was detected in 9 of the 9 standard elutriate samples submitted for analysis. Phenanthrene concentrations ranged from 0.098 µg/L (SC21-COMP-03-SET) to 16 µg/L (SC21-COMP-05-SET). Of the total samples submitted for phenanthrene (including field duplicates), 2 had concentrations that exceeded the criteria (2.3 µg/L) (Table 3-16).

Pyrene was detected in 9 of the 9 standard elutriate samples submitted for analysis. Pyrene concentrations ranged from 0.11 µg/L (SC21-COMP-02-SET) to 2.3 µg/L (SC21-COMP-07-

SET). Of the total samples submitted for pyrene (including field duplicates), none had concentrations that exceeded the criteria (4.6 µg/L) (Table 3-16).

Total 17 PAH concentrations were calculated by summing the concentrations of individual 17 PAHs with non-detects treated as one-half the reporting limit (ND= ½RL). Total 17 PAH concentrations (ND=½ RL) ranged from 1.00 µg/L (SC21-COMP-01-SET) to 57.9 µg/L (SC21-COMP-05-SET).

Detailed results are presented in Table 3-16 in numerical order of location numbers.

3.3.5 Nitrogen (Ammonia)

A total of 9 standard elutriates and 4 surface water samples, including field duplicates, were submitted for nitrogen (ammonia) analysis. Ammonia was detected in 4 of the 4 surface water samples submitted for analysis, including field duplicates. Ammonia concentrations ranged from 0.035 mg/L (SC21-SC-WATFD) to 0.13 mg/L (SC21-CDF-WAT). Of the total samples submitted for nitrogen (ammonia) analysis (including field duplicates), none had concentrations that exceeded the criteria (0.5 mg/L) (Table 3-17).

Ammonia was detected in 9 of the 9 of the standard elutriate samples submitted for analysis, including field duplicates. Ammonia concentrations ranged from 0.31 mg/L (SC21-COMP-03-SET) to 13 mg/L (SC21-COMP-07-SET). Of the total samples submitted for nitrogen (ammonia) analysis (including field duplicates), 8 had concentrations that exceeded the criteria (0.5 mg/L) (Table 3-17).

3.3.6 Nitrogen (TKN)

A total of 9 standard elutriates and 4 surface water samples, including field duplicates, were submitted for nitrogen (TKN) analysis. TKN was detected in 4 of the 4 surface water samples submitted for analysis, including field duplicates. TKN concentrations ranged from 0.49 mg/L (SC21-SC-WATFD) to 1.2 mg/L (SC21-CDF-WAT) (Table 3-17).

TKN was detected in 9 of the 9 standard elutriate samples submitted for analysis, including field duplicates. TKN concentrations ranged from 1 mg/L (SC21-COMP-03-SET) to 14 mg/L (SC21-COMP-07-SET) (Table 3-17).

3.3.7 Phosphorus

A total of 9 standard elutriates and 4 surface water samples, including field duplicates, were submitted for phosphorus analysis. Phosphorus was detected in 4 of the 4 surface water samples submitted for analysis, including field duplicates. Phosphorus concentrations ranged from 0.041 mg/L (SC21-SC-WAT) to 0.19 mg/L (SC21-CDF-WAT) (Table 3-17).

Phosphorus was detected in 9 of the 9 standard elutriate samples submitted for analysis, including field duplicates. Phosphorus concentrations ranged from 0.11 mg/L (SC21-COMP-03-SET) to 1.2 mg/L (SC21-COMP-04-SET) (Table 3-17).

3.3.8 Cyanide

A total of 9 standard elutriates and 4 surface water samples, including field duplicates, were submitted for cyanide analysis. Cyanide was not detected in any of the 13 samples submitted for analysis. (Table 3-17).

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4. TOXICITY AND BIOACCUMULATION TESTING RESULTS

Toxicity and bioaccumulation testing was conducted by EA's Ecotoxicology Laboratory located in Hunt Valley, Maryland. Toxicity testing included: water column bioassays with *Daphnia magna* (water flea) and *Pimephales promelas* (fathead minnow); 10-day whole sediment survival and growth toxicity tests with *Chironomus dilutus* (midge) and *Hyalella azteca* (amphipod); and 28-day bioaccumulation tests with *Lumbriculus variegatus* (Oligochaeta worm).

The water column bioassays evaluated the effects of exposure to the sediment elutriates on survival of the water column organisms. The whole sediment toxicity tests evaluated the effects of exposure to the sediment samples on survival and growth of the test organisms. The bioaccumulation tests evaluated percent recovery of the test organisms and bioaccumulative effects as a result of 28 days of exposure to the sediment samples. At the completion of the bioaccumulation testing, the organism tissues were submitted for selected chemical analyses.

The toxicity and bioaccumulation testing report is provided in Appendix D. A summary of the results for each test species is provided in this section.

4.1 AQUATIC TOXICITY TESTING

Elutriate was generated using site surface water samples for future evaluations of sediment disposal options. Subsequent elutriate toxicity testing was conducted on two different organisms *Daphnia magna* and *Pimephales promelas*, in accordance with EPA 2021.0 and EPA 2000.0 respectively. For the water column toxicity testing, elutriates were prepared from the 8 composited sediment samples using site surface water. Samples with statistically significant lower survival when compared to the control sample indicate potential biological risk during disposal. Elutriate toxicity results for survival were compared to the control for statistical difference.

4.1.1 *Daphnia magna* Elutriate Toxicity Test

Results of the *Daphnia magna* elutriate toxicity test indicated that none of the elutriate samples were acutely toxic to *Daphnia magna* (Table 4-1). Each of the elutriates had 48-hour mean lethal concentration (LC50) values of >100 percent elutriate (Figure 4-1), and survival in the 100 percent test concentrations ranged from 95 to 100 percent (Figure 4-2). There was a minimum of 95 percent survival in the laboratory controls, and the surface water had 95 percent survival at test termination.

4.1.2 *Pimephales promelas* Elutriate Toxicity Test

Results of the *Pimephales promelas* elutriate toxicity test indicated that of the 8 elutriate samples tested, 1 (SC21-COMP-07) of the 8 was acutely toxic to *Pimephales promelas* with a 96-hour LC50 of 96.1 percent (46 percent survival in 100 percent concentration) (Table 4-2). Each of the other elutriates had 96-hour LC50 values of >100 percent elutriate (Figure 4-1), and survival in the 100 percent test concentrations ranged from 90 to 100 percent (Figure 4-2). There was a

minimum of 92 percent survival in the laboratory controls, and the surface water had 98 percent survival at test termination.

4.2 SEDIMENT TOXICITY TESTING

Ten-day sediment toxicity testing using 2 different organisms *Chironomus dilutus* (freshwater midge) and *Hyalella azteca* (freshwater amphipod) were completed on 12 sediment samples. Survival (percent survival) and growth (mean dry weight) results were compared to reference and control samples. Samples with statistically significant lower survival and growth when compared to reference and control samples indicate the potential for biological risk. Chemical analytical results from the surface ponar samples which were subjected to the toxicity tests are presented in Figure 3-3.

The testing consisted of a 10-day sediment exposure period, after which the organisms were retrieved from the sediment and survival was recorded. The organisms were processed for dry weight determinations to measure growth. Survival (percent survival) and growth (mean dry weight or mean ash free dry weight) results were statistically compared to reference and control samples. Samples with statistically significant lower survival or growth were identified.

4.2.1 *Chironomus dilutus* Sediment Toxicity Test

The results of the *C. dilutus* sediment toxicity tests complied with current National Environmental Laboratory Accreditation Conference (NELAC) standards. The survival and growth results of the *C. dilutus* toxicity tests were statistically analyzed according to EPA guidance (2000) to determine if any of the site sediments were significantly different (p=0.05) from the control or reference sediment. If the data were normally distributed, then a t-test was performed to detect statistically significant differences between test sediments and the reference sediment. If the data distribution was non-normal, then a Wilcoxon two sample test was used to compare the group means. The Shapiro-Wilk's test was used to determine if the data were normally distributed, and the f-test was used to test for homogeneity of variance. Samples with statistically significant lower survival and growth when compared to the reference sample were identified.

The survival and growth of *Chironomus dilutus* exposed to the site sediments were statistically compared to organisms exposed to the laboratory control and reference sediments (SC21-MRREF-SURF, SC21-SCREF-SURF) (Table 4-3). The survival results (Figure 4-3) indicated that the organisms exposed to 6 site sediments were statistically different (p=0.05) from the laboratory control (SC21-MR06-SURF, SC21-SC11-SURF, SC21-SC18-SURF, SC21-SC27-SURF, SC21-SC30-SURF, SC21-SC33-SURF). When compared to the laboratory control and to the reference samples, SC21-MR06-SURF, SC21-SC18-SURF and SC21-SC33-SURF had an adverse effect on *C. dilutus* survival in the 10-day sediment exposures.

Mean ash free dry weight indicated that 2 site sediment samples (SC21-MR06-SURF and SC21-SC30-SURF) were significantly different from the laboratory control and reference

samples (Figure 4-4). Therefore, these samples had an adverse effect on *C. dilutus* growth in the 10-day sediment exposures.

Figure 4-5 presents the geographical distribution of toxicological effects at the locations with co-located toxicity testing.

4.2.2 *Hyalella azteca* Sediment Toxicity Test

The results of the *H. azteca* sediment toxicity tests complied with current NELAC standards. The survival and growth results of the *H. azteca* toxicity tests were statistically analyzed according to the EPA guidance (2000) to determine if any of the site sediments were significantly different (p=0.05) from the control or reference sediment. If the data were normally distributed, then a t-test was performed to detect statistically significant differences between test sediments and the reference sediment. If the data distribution was non-normal, then a Wilcoxon two sample test was used to compare the group means. Shapiro-Wilk's test was used to determine if the data were normally distributed, and the f-test was used to test for homogeneity of variance. Samples with statistically significant lower survival and growth when compared to the reference sample were identified.

The survival and growth of *Hyalella azteca* exposed to the site sediments were statistically compared to organisms exposed to the laboratory control and reference sediments (SC21-MRREF-SURF, SC21-SCREF-SURF) (Table 4-4). The results indicated that for survival the organisms exposed to each of the 10 site sediments were statistically different (p=0.05) from the laboratory control and at least one of the reference samples (Figure 4-3). Mean weight indicated that each of the 10 site sediment samples were significantly different from the control and at least one of the reference samples (Figure 4-4). For both survival and growth *Hyalella azteca* were statistically different (p=0.05) from the Swan Creek or Maumee River reference sample.

Figure 4-5 presents the geographical distribution of toxicological effects at the locations with co-located toxicity testing.

4.2.3 *Lumbriculus variegatus* Bioaccumulation Test

Bioaccumulation testing consisted of 28-day bioaccumulation exposures with *Lumbriculus variegatus* (freshwater oligochaete worm) on surface sediment samples from 4 locations (SC21-SC11, SC21-SC14, SC21-SC18 and a reference location SC21-SCREF). Following a 28-day sediment exposure period, organisms were retrieved from the sediment and allowed to depurate their digestive tracts for approximately 24 hours. After the depuration period, the organisms were placed into analytical jars and submitted for chemical analysis. The testing produced 5 replicates per sediment sample and control. Pre-test (control) tissues, which represent the constituent tissue concentrations in the test organisms upon arrival to the testing laboratory and prior to laboratory exposures, were also submitted for chemical analysis. These tissues originate from organisms that are sacrificed from each shipment and subsequently frozen. These organisms are not exposed to test sediments, but contaminants in their tissues represent baseline

contaminants that accumulated in their natural environment. The tissues were processed and analyzed for PCB congeners and percent lipids. The organism weight that was recovered from the replicates is presented in Table 4-5.

The results of the *L. variegatus* sediment 28-day bioaccumulation tests complied with current NELAC standards. Tissue results were compared between organisms exposed to site sediments and reference sediments as well as pre-test tissue. Total PCB congener tissue data are represented by the sum of all PCB congeners (ND=0). Results are reported as wet weight.

Statistical analyses of tissue chemistry data were performed according to procedures outlined in Section 7.5.3 of the Southeast Regional Implementation Manual (EPA and USACE 2008). Results of total PCB congener of *L. variegatus* tissue were lipid-normalized (wet weight) and statistically compared to the reference site and the pre-test tissue concentration. Mean lipid concentrations are provided in Table 4-6 and total mean PCBs concentrations in *L. variegatus* tissue on a lipid-normalized and whole-body basis are provided in Table 4-7a and 4-7b, respectively. Figure 4-6 depicts mean PCBs concentrations in *L. variegatus* tissues (ND=0) exceedances compared to the reference and pre-test sample concentrations as well as PCB congener sediment results. Each of the 3 site tissue samples was statistically different ($p < 0.05$) from the reference tissue lipid-normalized concentration and the pre-test tissue concentration.

Total lipid-normalized mean PCB congener (ND=0) tissue concentrations from site sediment exposures ranged from 129 to 2,870 µg/kg-lipid with an average concentration of 1,122 µg/kg-lipid. The highest lipid normalized total PCB tissue concentration (>100 times greater than reference value) was at sample location SC21-SC18, which also exhibited the highest total PCBs congener concentration in the sediment. All other sample locations were at least 6 times greater than the lipid-normalized reference concentration.

Total mean PCB congener (ND=0) tissue concentrations from site sediment exposures ranged from 168 to 5,790 µg/kg with an average concentration of 2,140 µg/kg. The highest mean total PCB tissue concentration (>250 times greater than reference value) was at sample location SC21-SC18, which also exhibited the highest total PCBs congener concentration in the sediment (8,400 mg/kg and 17,279 µg/kg in the parent sample and field duplicate respectively). All other sample locations were at least 7 times greater than the mean reference concentration.

The fact that the PCB congener tissue concentrations from all 3 site samples are significantly higher than the reference tissue concentrations is noteworthy given the surface sediment PCB congener concentrations. Although there may be other contributing factors, it is generally expected that PCB congener tissue concentrations would be higher at locations with higher PCB congener sediment concentrations. The surface sediment total PCB congener concentrations for SC21-SC11 (0.031 mg/kg) and SC21-SC14 (0.169 mg/kg) were lower than the reference site surface sediment concentration (0.406 mg/kg). Therefore, the results indicate that bioaccumulation of PCBs may be dependent upon more than the total PCB congener sediment concentration. In general, sediment concentrations in cores (SD036 and SD037, Figure 3-28) in the vicinity of the SC21-SCREF, were less than the PEC of 0.676 mg/kg. Although SC21-11 and SC21-14 surface samples were less than the PEC, there are other site samples with elevated

concentrations of PCBs collected in the vicinity of SC21-11 and SC21-14. Therefore, PCBs in pore water could be contributing to the higher tissue concentrations from site samples. It is also possible that the bioavailability of PCBs in the site sediment samples is higher compared to the reference sample.

4.3 INTERPRETATION OF TOXICITY TESTING RESULTS IN ACCORDANCE WITH EPA/USACE DREDGING GUIDANCE

Additional evaluation of the sediment toxicity data was completed to address criteria consistent with the testing specific to the Great Lakes: Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S.—Testing Manual (EPA and USACE 1998a) and Great Lakes Dredged Material Testing and Evaluation Manual (EPA and USACE 1998b). The reference criteria include:

- For both whole sediment toxicity bioassays, two criteria are required to designate a sediment as potentially toxic based on survival:

    1. mean mortality that was more than 10 percent greater (*H. azteca*) or 20 percent greater (*C. dilutes*) than mean mortality for the reference sediment (EPA and USACE 1998 a, b), and

    2. a statistically significant, lower mean survival compared to mean survival for the reference sediment.

- In addition, for the *C. dilutus* sublethal growth endpoint, the following criteria are required for a sediment to be designated as potentially toxic:

    1. mean individual dry weight for a given sediment treatment must be below 0.6 milligram, and

    2. be more than 10 percent less than, and statistically significant from, the reference sediment individual dry weight mean.

Results of this evaluation are included for informational purposes in Table 4-8a and b.

This manual is directed towards evaluation of proposed discharges of dredged material (associated with navigational dredging or dredging activities of essentially the same character as navigational dredging) in open water and does not necessarily value the benthos the same as a restoration focused dredging program.

4.4 SEDIMENT TOXICITY AND BIOACCUMULATION TESTING SUMMARY

The results of the toxicity and bioaccumulation testing indicated the following:

- Elutriate samples collected from Swan Creek were not acutely toxic to *Daphnia magna.*

- One of the 8 elutriate samples (SC21-COMP-07, collected from sample locations SC21-23 through SC21-26), was acutely toxic to *P. promelas* with a 96-hour LC50 of 96.1 percent (46 percent survival in 100 percent concentration).

- Site locations SC21-MR06, SC21-SC11, SC21-SC18, SC21-SC27, SC21-SC30, SC21-SC33 had an adverse effect on *C. dilutus* survival in the 10-day sediment exposures as determined by the laboratory control samples. When compared to the laboratory control and reference samples SC21-MR06, SC21-SC18 and SC21-SC33 had an adverse effect on *C. dilutus* survival in the 10-day sediment exposures.

- Sites SC21-MR06 and SC21-SC30 had an adverse effect on mean ash-free dry weight (growth) of *C. dilutus* exposures as determined by the laboratory control and reference samples. Therefore, these samples had an adverse effect on *C. dilutus* growth in the 10-day sediment exposures.

- Each of the 10 site sediments had an adverse effect on *H. azteca* survival in the 10-day sediment exposures, when compared to both the control and one or both reference samples. Each of the 10 site samples had an adverse effect on mean dry weight (growth) of *H. Azteca*, when compared to both the control and one or both reference samples.

- Overall, significantly inhibited survival when compared to Swan Creek and Maumee River reference samples was observed at 3 site locations (SC21-MR06, SC21-SC18, and SC21-SC33) for both *H. azteca* and *C. dilutus*.

- Overall, significantly inhibited growth when compared to reference samples was observed at 2 site locations (SC21-MR06 and SC21-SC30) for both *H. azteca* and *C. dilutus*.

- Total PCB concentrations in *L. variegatus* tissue were statistically different (higher) from the reference site and pre-test tissue concentrations for each tested location (SC21-SC11, SC21-SC14, and SC21-SC18). Surface sediment total PCB congener concentrations for SC21-SC11 (0.031 mg/kg) and SC21-SC14 (0.170 mg/kg) were lower than the reference site surface sediment concentration (0.406 mg/kg), SC21-SC18 and SC-18 (FD) were higher (8.4/17.3 mg/kg). Surface sediment total PCB aroclor concentrations for SC21-SC11 (0.224 mg/kg), SC21-SC14 (0.127 mg/kg) and SC21-SC18 (17 mg/kg) were higher than the reference site surface sediment concentration (0.06 mg/kg).

5. SUMMARY OF FINDINGS

The Swan Creek sediment assessment was conducted to obtain the data necessary to support conceptual design-level evaluations that will be presented as part of a focused feasibility study. EA completed a site characterization to evaluate the sediment quality in Swan Creek to delineate sediment contamination, to identify the potential for biological risks, and to provide data in support of evaluation of sediment disposal options. These efforts were conducted in coordination with EPA, Ohio EPA and USACE.

5.1 SITE INVESTIGATION

Sediment sampling was conducted from 2 through 10 November 2021. Samples were collected from a vibracoring vessel operated by Affiliated. Surface grab samples were collected using a Ponar sampler. A vibratory coring system was used to collect samples at depths up to 10 ft. Three surface water samples were successfully collected at locations in Swan Creek, Maumee River, and at the Port Authority CDF. In addition, 25 gallons of elutriate preparation water was collected from the surface water location in Swan Creek.

Analytical samples were submitted to Pace Analytical Services, LLC. Samples to be analyzed for SEM/AVS were shipped to ALS Environmental (a subcontractor to Pace). Samples analyzed for 34 PAHs were shipped to Battelle (Office of Research and Development contracted lab). Samples collected for bioassay testing and standard elutriate preparation were transported via refrigerated truck to EA's Ecotoxicology Laboratory in Hunt Valley, Maryland. Following bioaccumulation testing at EA's Ecotoxicology Laboratory, tissue samples were delivered to Eurofins TestAmerica.

Site characterization data from the Swan Creek sampling effort are summarized in Chapters 2, 3 and 4. Detected concentrations of constituents were compared to sediment screening criteria including Ohio SRV (Ohio EPA 2018) for metals only, TECs and PECs (MacDonald et al. 2000), Region 4 ESV (EPA Region 4 2018) for compounds other than metals without TECs and PECs (DRO-ORO), and Region 5 ECO (EPA 2003) for cyanide only. Results of the screening evaluation are provided in Tables 3-3 through 3-17, with a summary of PEC exceedances provided in Table 3-18. Results by compound are summarized in Figures 3-3 through 3-29; these figures include results from the current Swan Creek site characterization as well as samples collected in 2012 and 2014 (Weston Solutions, Inc. 2012; CH2M HILL 2014).

Figures 5-1a through 5-1c identify locations from the current Swan Creek site characterization where analytes were observed in sediment exceeding the SRV (for metals), TEC, and PEC values in each area of the site. Exceedances of the PEC values for metals in subsurface sediment were identified as far upstream as location SC21-SC03 and extending into the Maumee River through location SC21-MR06. Exceedances of the PEC for total 17 PAHs and PCBs are observed as far upstream as SC21-SC09 in both the surface and subsurface intervals and extending into the Maumee River through location SC21-MR06. A review of the 2012 and 2014 data (Figure 3-29) combined with the current data indicate total PAH concentrations exceeding PEC values beginning at S. Hawley Street (SC01-01RA), and PCBs just upstream of S. Hawley

Street at location SD048 (Figure 3-28). Whereas metals and PAH concentrations above PEC values are distributed throughout the creek, elevated levels of PCBs are generally located between SD021 and SD033 (railroad crossing downstream of S Hawley Street and S. Summit Street) (Figure 3-28).

A total of 51 discrete surface samples were submitted for SEM and AVS analysis and the SEM/AVS ratio was calculated (Table 3-4). The majority of samples produced SEM/AVS ratios less than 1, indicating a high probability that the metals are bound as sulfides and not bioavailable. Organic carbon content also can reduce bioavailability of metals. The sum of SEM – AVS difference was divided by fraction of organic carbon in sediment. Per EPA guidance (2005), if the result is <130 $\mu mol/g_{oc}$, then toxicity to benthic invertebrates is not anticipated. If the result is >3,000 $\mu mol/g_{oc}$, then toxicity is likely. If the result is between 130 and 3,000 $\mu mol/g_{oc}$, then toxicity is uncertain (Interstate Technology & Regulatory Council 2011). Of the 51 samples, one sample had a ratio greater than 130 $\mu mol/g_{oc}$ threshold; there were no samples with results exceeding the 3,000 $\mu mol/g_{oc}$. These results indicate metals toxicity to benthic invertebrates is not anticipated.

5.2 TOXICITY AND BIOACCUMULATION TESTING

Toxicity and bioaccumulation testing was conducted by EA's Ecotoxicology Laboratory located in Hunt Valley, Maryland. Toxicity testing included: water column bioassays with *Daphnia magna* (water flea) and *Pimephales promelas* (fathead minnow); 10-day whole sediment survival and growth toxicity tests with *Chironomus dilutus* (midge) and *Hyalella azteca* (amphipod); and 28-day bioaccumulation tests with *Lumbriculus variegatus* (Oligochaeta worm). Aquatic toxicity testing was conducted using elutriate generated from 8 composited site sediment samples and site surface water for future evaluations of sediment disposal options. Surface sediment samples were collected to evaluate sediment toxicity at 12 locations including 2 reference stations. These locations are shown as *"Coring and Surface Grab Sample Locations"*, and *"Surface Grab Sample Locations"* on Figure 2-1, sediment chemistry at each of the surface grab sample locations is provided on Figure 3-3.

The results of the toxicity and bioaccumulation testing indicated the following:

- Elutriate samples collected from Swan Creek were not acutely toxic to *Daphnia magna*.

- One of the 8 elutriate samples (SC21-COMP-07, collected from sample locations SC21-23 through SC21-26) was acutely toxic to *P. promelas* with a 96-hour LC50 of 96.1 percent (46 percent survival in 100 percent concentration).

- The survival and growth of *Chironomus dilutus* exposed to the site sediments were statistically compared to organisms exposed to the laboratory control and reference sediments (Table 4-3). The survival results (Figure 4-3) indicated that the organisms exposed to 3 site sediments were statistically different (p=0.05) from the laboratory control and at least one of the reference samples: SC21-MR06-SURF, SC21-SC18-

SURF, and SC21-SC33-SURF. Therefore, these samples had an adverse effect on *C. dilutus* survival in the 10-day sediment exposures.

- Mean ash free dry weight indicated that 2 site sediment samples (SC21-MR06-SURF and SC21-SC30-SURF) were significantly different from the laboratory control and at least one of the reference samples (Figure 4-4). Therefore, these samples had an adverse effect on *C. dilutus* growth in the 10-day sediment exposures.

- The survival and growth of *H. azteca* exposed to the site sediments were statistically compared to organisms exposed to the laboratory control and reference sediments (Table 4-4). The results indicated that for survival the organisms exposed to each of the 10 site sediments were statistically different (p=0.05) from the laboratory control and at least one of the reference samples (Figure 4-3). Therefore, these samples had an adverse effect on *H. azteca* survival in the 10-day sediment exposures.

- Mean ash free dry weight indicated that each of the 10 site sediment samples were significantly different from the laboratory control and at least one of the reference samples (Figure 4-4). Therefore, these samples had an adverse effect on *H. azteca* growth in the 10-day sediment exposures.

Figure 4-6 depicts mean PCB congener concentrations in *L. variegatus* tissues (ND=0) exceedances compared to the reference and pre-test sample concentrations as well as the PCB congener surface sediment results. Each of the 3 site tissue samples was statistically different ($p < 0.05$) from the reference tissue lipid-normalized concentration and the pre-test tissue concentration. Surface sediment total PCB congener concentrations for SC21-SC11 (0.031 mg/kg) and SC21-SC14 (0.170 mg/kg) were lower than the reference site surface sediment concentration (0.406 mg/kg), SC21-SC18 and SC-18 (FD) were higher (8.4/17.3 mg/kg). Surface sediment total PCB aroclor concentrations for SC21-SC11 (0.224 mg/kg), SC21-SC14 (0.127 mg/kg) and SC21-SC18 (17 mg/kg) were higher than the reference site surface sediment concentration (0.06 mg/kg).

Table 5-1 summarizes results of the sediment toxicity testing and co-located Ponar surface sediment sample results. In each of the 9 samples collected in Swan Creek and the 1 sample collected in the Maumee River, 1 or more compounds exceeded background or threshold level effects concentrations. At 8 of the 10 locations the PEC was also exceeded. At each of the 4 locations (SC21-SC18, SC21-SC30, SC21-SC33, SC21-MR06) where significance for survival or growth was observed in the *C. dilutus*, exceedances of the PEC for organics was also observed. However, significance for survival or growth was not observed at all locations where concentrations exceeded the PEC. Results of the *H. azteca* testing indicated significance for survival and growth was observed in each of the 10 samples. The SEM/AVS ratio was > 1 at location SC21-SC01; however, when normalized for TOC the results were below the threshold value of 130 $\mu mole/g_{oc}$. Metals were not observed above the PEC at this location.

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Figures

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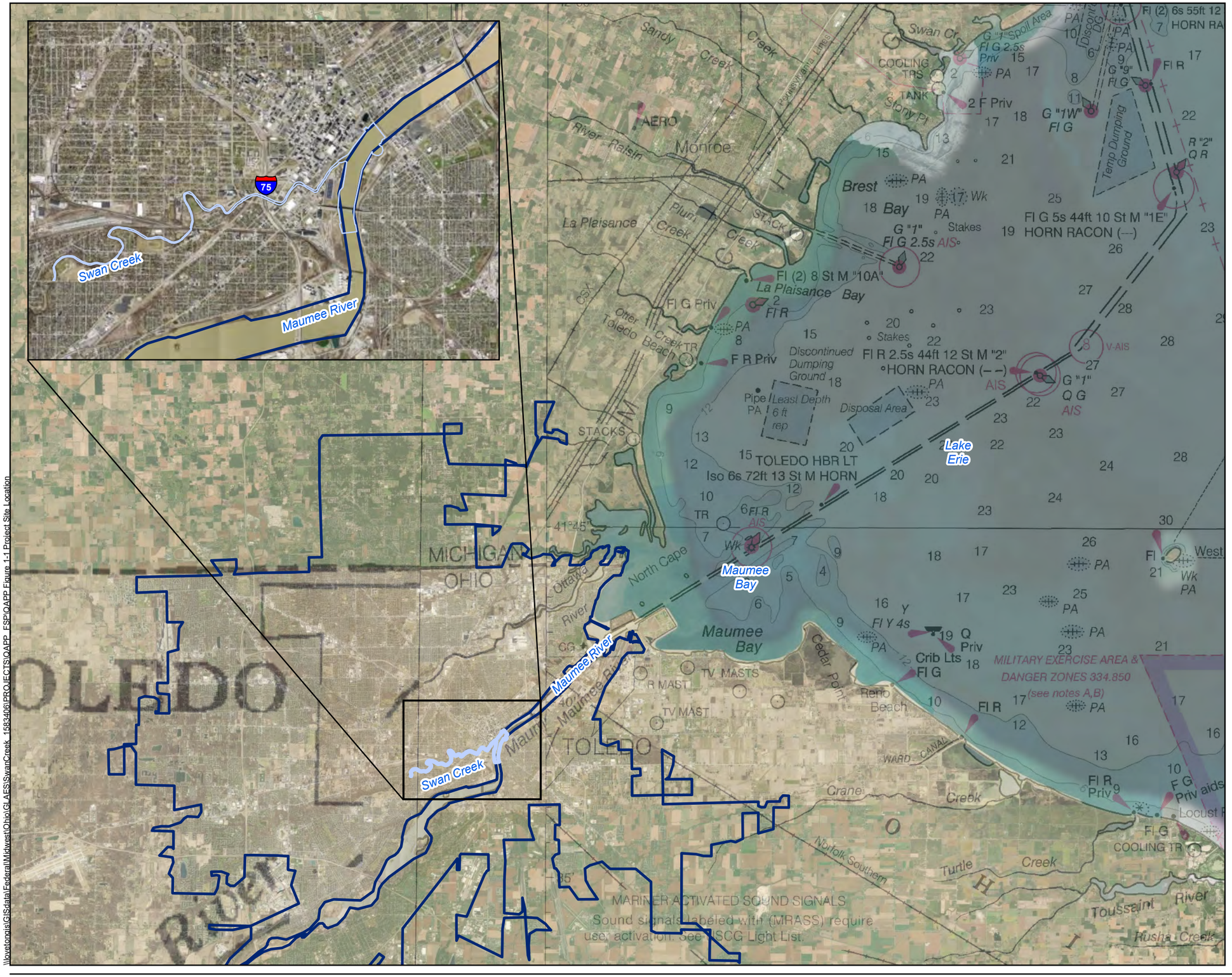


VICINITY MAP

Legend

- Swan Creek Project Area
- City of Toledo

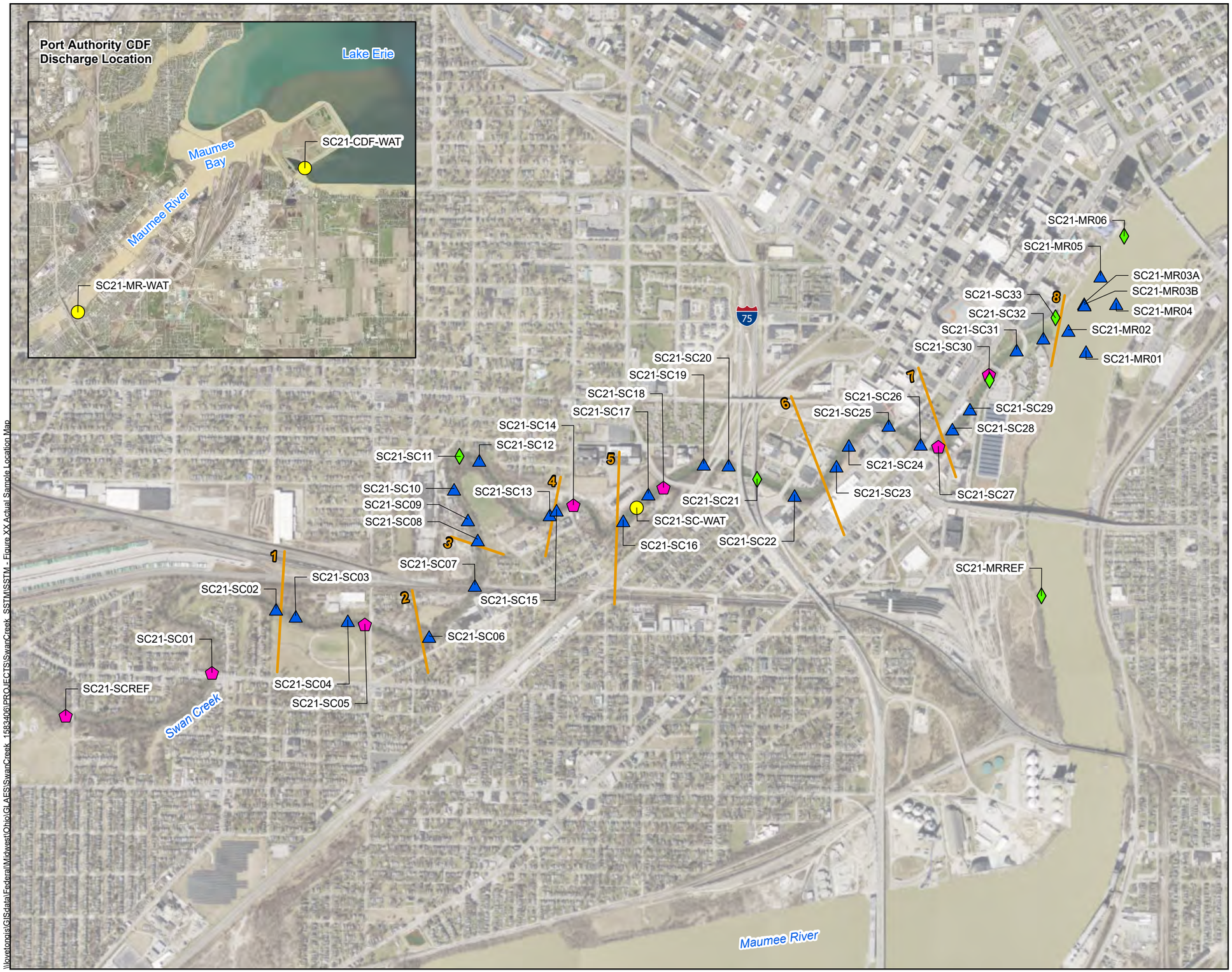
Map Date: 10/27/2021
Source: ESRI Basemap 2018, NOAA 2018
Projection: NAD 1983 State Plane Ohio North US Foot

N

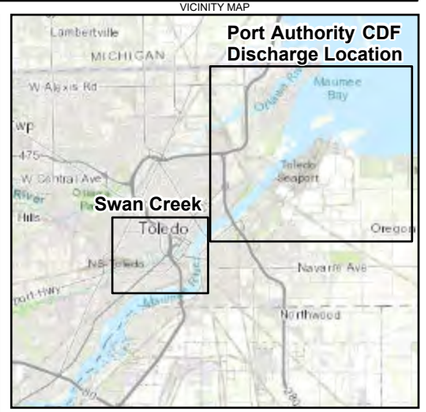
0 2 4
Miles

Figure 1-1
Project Site Location
Maumee AOC
Toledo, Ohio

\\lovetonjas\GIS\data\Federal\Midwest\Ohio\GLAFES\SwanCreek_1683406\PROJECTS\QAPP_FSP\QAPP Figure 1-1 Project Site Location



VICINITY MAP



Legend

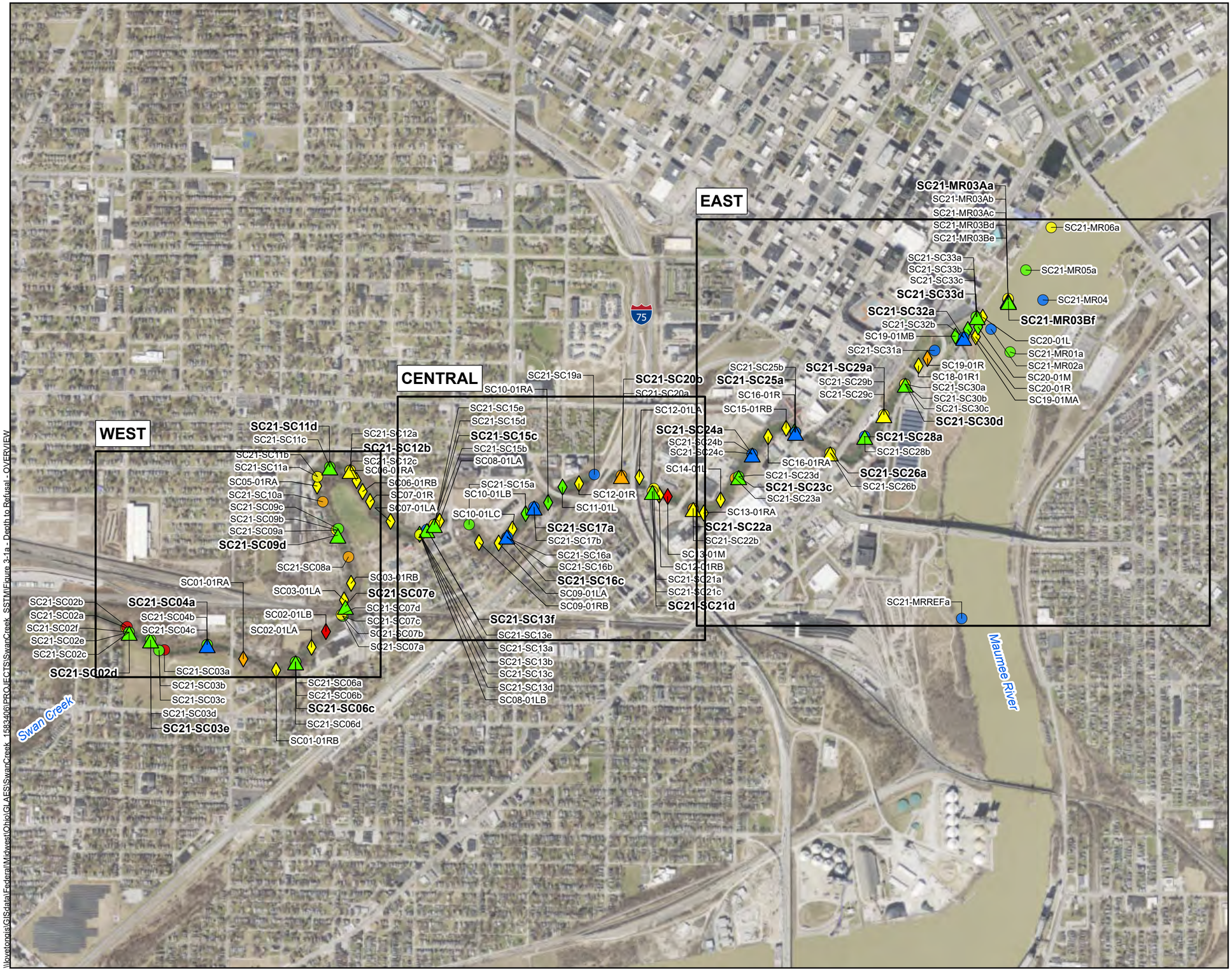
- Coring Location
- Coring and Surface Grab Sample Location
- Surface Grab Sample Location
- Surface Water Sample Location
- Sampling Unit

Map Date: 5/23/2022
Source: ESRI Basemap 2018, NOAA 2018
Projection: NAD 1983 State Plane Ohio North US Foot

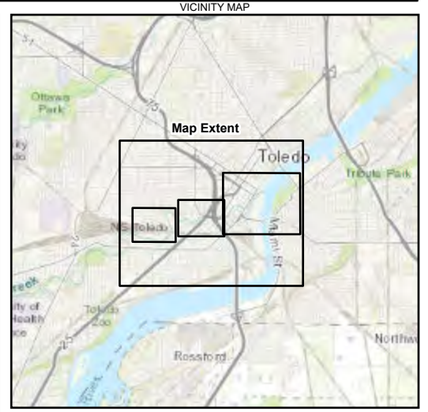
0 100 200 300 400
Feet

Figure 2-1
Actual Sampling Locations in Swan Creek
Maumee River AOC
Toledo, Ohio

\\lovetongis\GISdata\Federal\Midwest\Ohio\GLAES\SwanCreek_158340\6\PROJECTS\SwanCreek_SSTM\SSTM - Figure XX Actual Sample Location Map



VICINITY MAP



Legend

- Core Used for Discrete Sampling
- Core Not Used for Discrete Sampling
- 2012 Weston Discrete Sampling

Depth to Refusal

- 0 - 1'
- 1' - 2'
- 2' - 4'
- 4' - 6'
- 6' - 8'

SC21-SC25a - Sample ID of Core Used for Discrete Interval Sampling

SC21-SC25b - Sample ID for Core Not Used for Discrete Interval Sampling

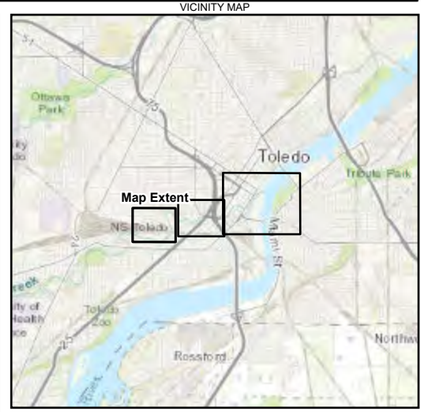
Map Date: 5/11/2022
Source: ESRI Basemap 2020
Projection: NAD 1983 State Plane Ohio North US Foot

0 500 1,000 1,500
Feet

Figure 3-1a
Depth to Refusal - Overview
Swan Creek, Maumee Area of Concern
Toledo, Ohio

\\lovetonois\GISdata\Federal\Midwest\Ohio\GLAES\SwanCreek_158340616\PROJECTS\SwanCreek_SSTM\Figure 3-1a - Depth to Refusal - OVERVIEW

VICINITY MAP



Legend

- Core Used for Discrete Sampling
- Core Not Used for Discrete Sampling
- 2012 Weston Discrete Sampling

Depth to Refusal

- 0 - 1'
- 1' - 2'
- 2' - 4'
- 4' - 6'
- 6' - 8'

SC21-SC25a - Sample ID of Core Used for Discrete Interval Sampling

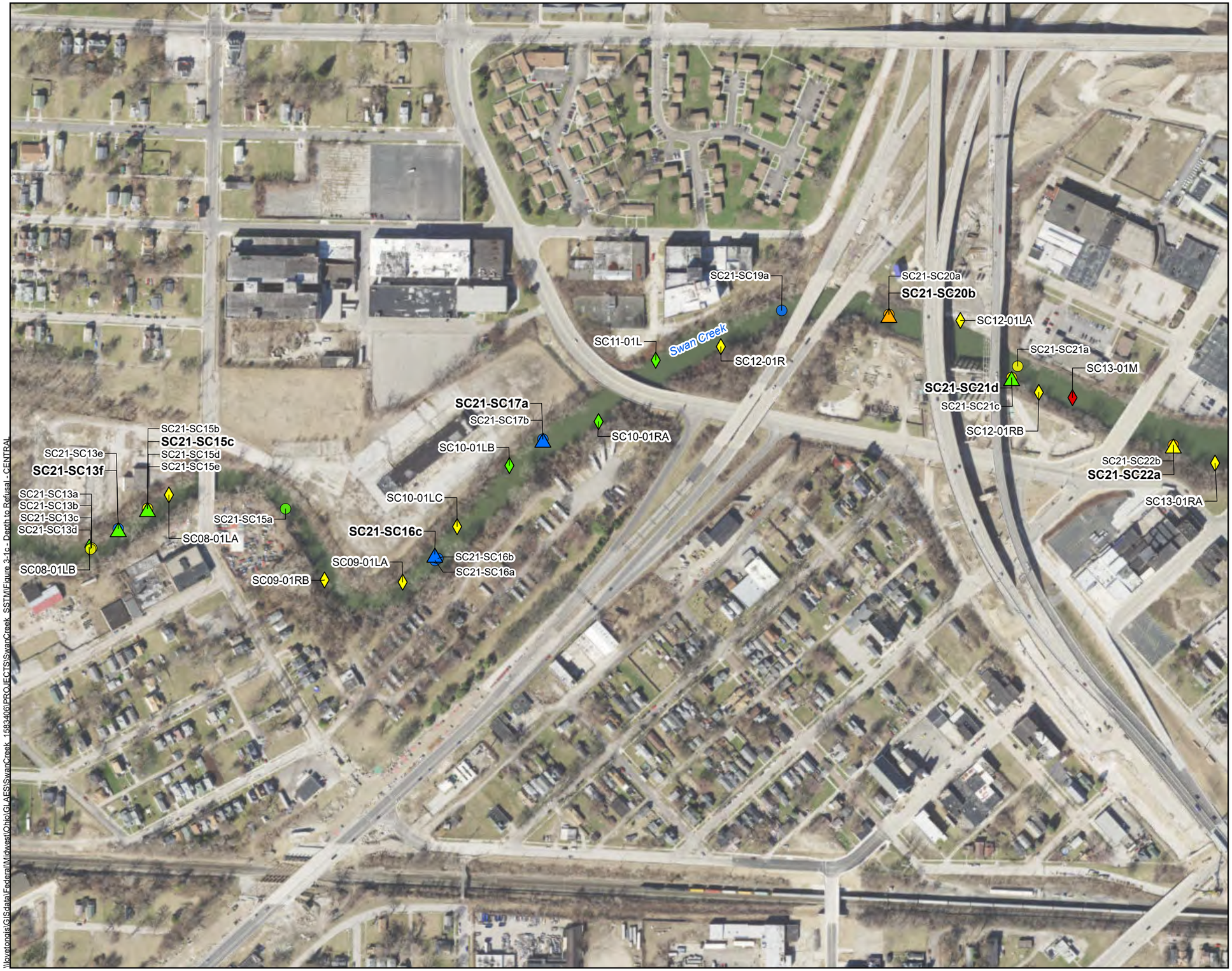
SC21-SC25b - Sample ID for Core Not Used for Discrete Interval Sampling

Map Date: 5/11/2022
Source: ESRI Basemap 2020
Projection: NAD 1983 State Plane Ohio North US Foot

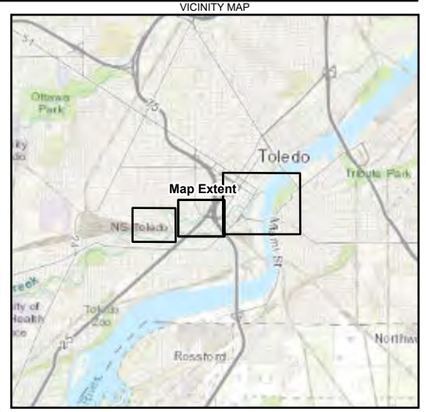
0 100 200 300
Feet

Figure 3-1b
Depth to Refusal - West
Swan Creek, Maumee Area of Concern
Toledo, Ohio

\\lovetongis\GISdata\Federal\Midwest\Ohio\GLAES\SwanCreek_1583406\PROJECTS\SwanCreek_SSTM\Figure 3-1b - Depth to Refusal - WEST



VICINITY MAP



Legend

- Core Used for Discrete Sampling
- Core Not Used for Discrete Sampling
- 2012 Weston Discrete Sampling

Depth to Refusal

- 0 - 1'
- 1' - 2'
- 2' - 4'
- 4' - 6'
- 6' - 8'

SC21-SC25a - Sample ID of Core Used for Discrete Interval Sampling

SC21-SC25b - Sample ID for Core Not Used for Discrete Interval Sampling

Map Date: 5/11/2022
Source: ESRI Basemap 2020
Projection: NAD 1983 State Plane Ohio North US Foot

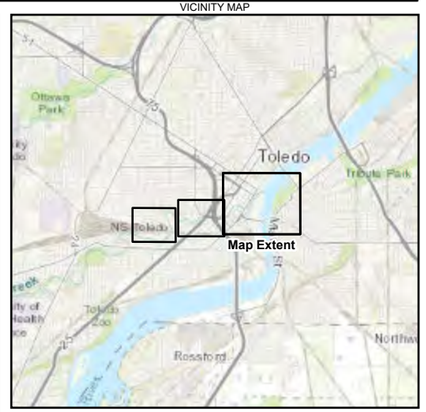
0 100 200 300
Feet

Figure 3-1c
Depth to Refusal - Central
Swan Creek, Maumee Area of Concern
Toledo, Ohio

\\ovetongis\GISdata\Federal\Midwest\Ohio\GLAES\SwanCreek_1583406\PROJECTS\SwanCreek_SSTM\Figure 3-1c - Depth to Refusal - CENTRAL

SC21-MR06a
SC21-MR05a
SC21-MR03Ac
SC21-MR03Aa
SC21-MR03Ab
SC21-MR03Bd
SC21-MR03Be
SC21-MR04
SC21-MR03Bf
SC21-SC33a
SC21-SC33b
SC21-SC33c
SC20-01L
SC21-SC33d
SC21-MR02a
SC19-01MA
SC20-01M
SC20-01R
SC21-SC32a
SC21-SC31a
SC21-SC32b
SC21-MR01a
SC19-01R
SC19-01MB
SC18-01R1
SC21-SC30a
SC21-SC30b
SC21-SC30c
SC21-SC30d
Swan Creek
SC21-SC28a
SC21-SC28b
SC21-SC29a
SC16-01R
SC21-SC29b
SC21-SC25a
SC21-SC29c
SC15-01RB
SC21-SC25b
Maumee River
SC16-01RA
SC21-SC24a
SC21-SC24b
SC21-SC24c
SC21-SC26a
SC21-SC26b
SC21-SC23d
SC21-SC23c
SC21-SC23a
SC14-01L
SC13-01RA
SC21-MRREFa

VICINITY MAP



Legend

- Core Used for Discrete Sampling
- Core Not Used for Discrete Sampling
- 2012 Weston Discrete Sampling

Depth to Refusal

- 0 - 1'
- 1' - 2'
- 2' - 4'
- 4' - 6'
- 6' - 8'

SC21-SC25a - Sample ID of Core Used for Discrete Interval Sampling

SC21-SC25b - Sample ID for Core Not Used for Discrete Interval Sampling

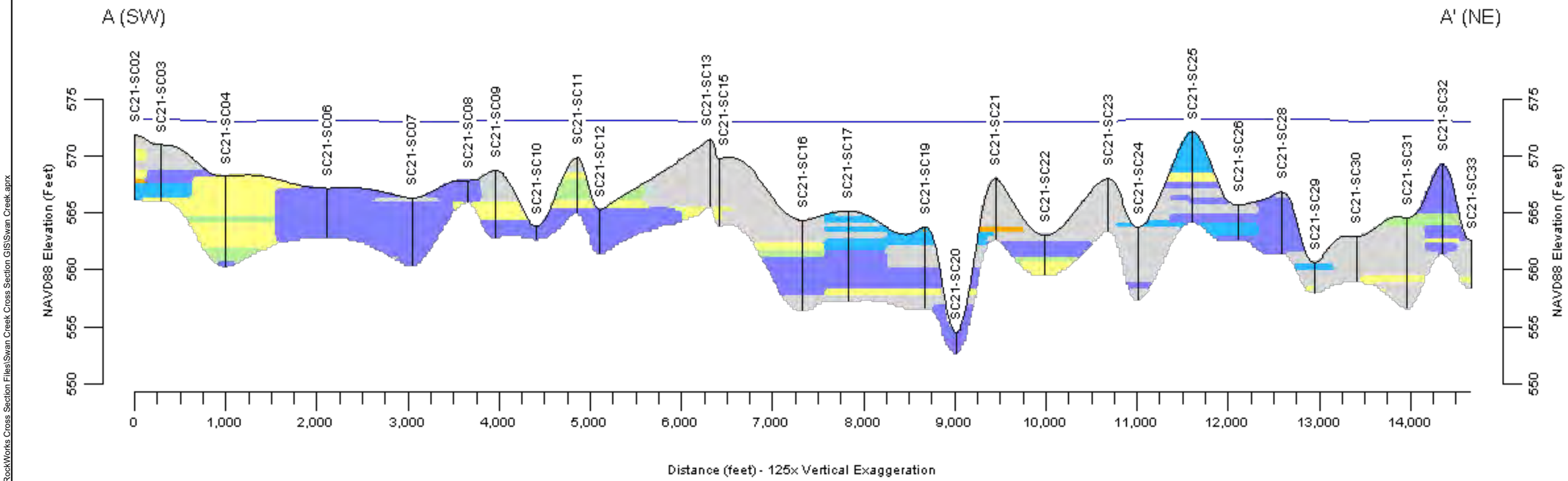
Map Date: 5/16/2022
Source: ESRI Basemap 2020
Projection: NAD 1983 State Plane Ohio North US Foot

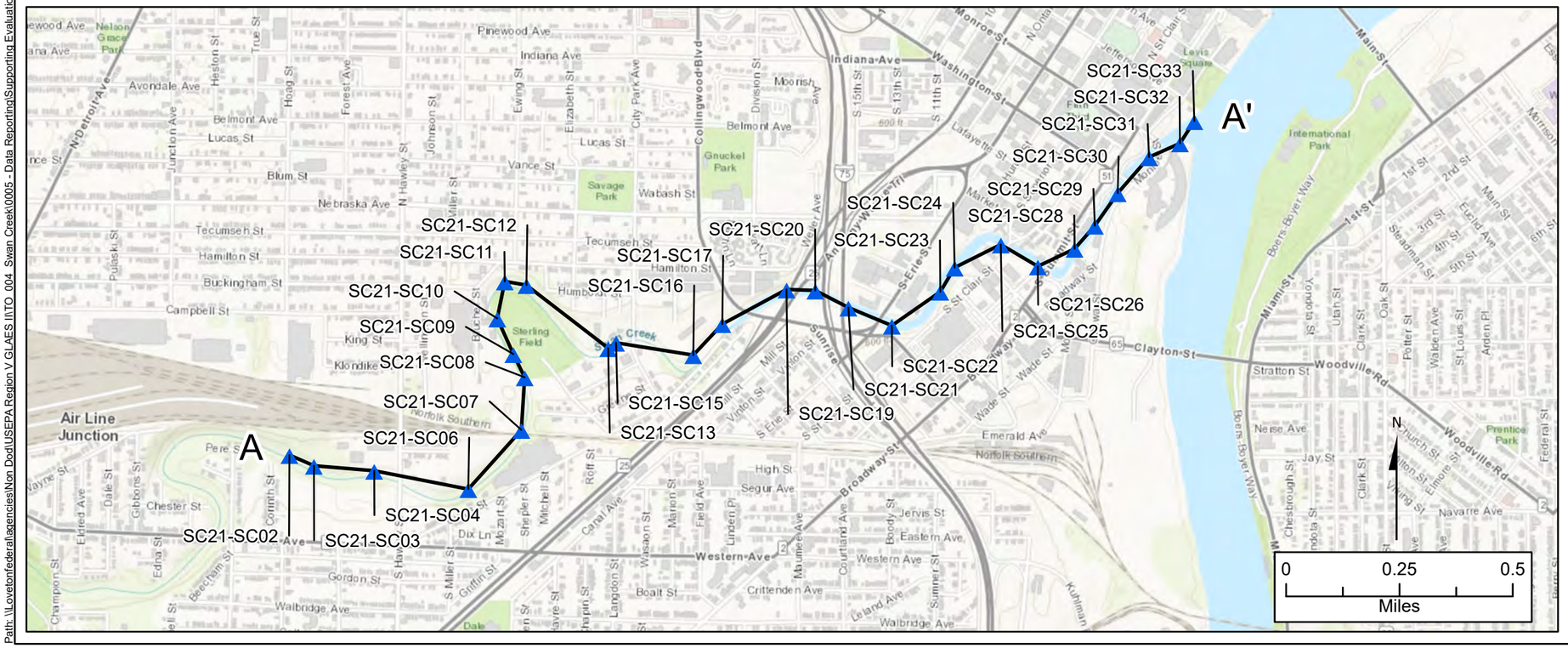
N

0 200 400 600
Feet

Figure 3-1d
Depth to Refusal - East
Swan Creek, Maumee Area of Concern
Toledo, Ohio

\\lovetongis\GIS\data\Federal\Midwest\Ohio\GI_AES\SwanCreek_168340\PROJECTS\SwanCreek_SSTM\Figure 3-1d - Depth to Refusal - EAST





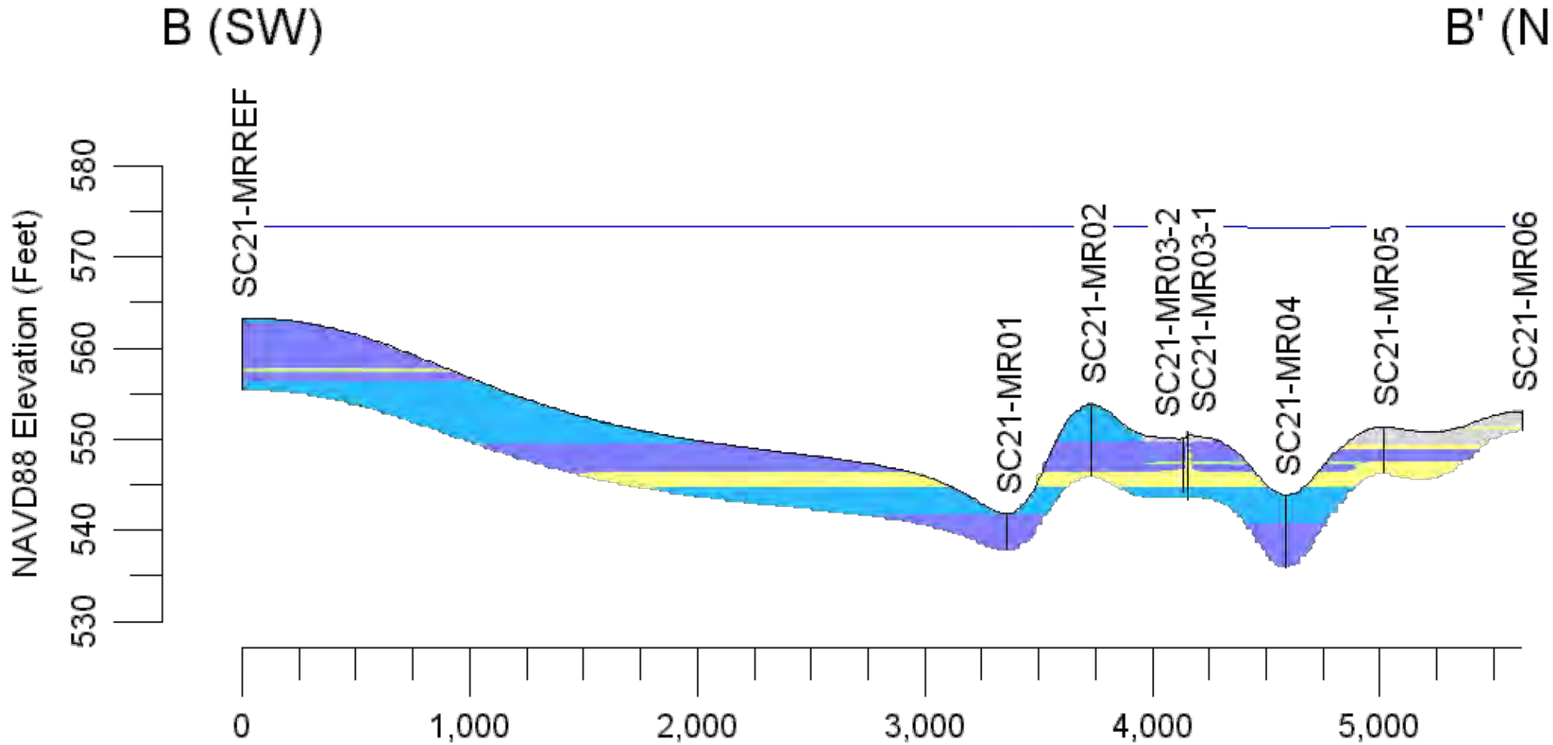
Legend

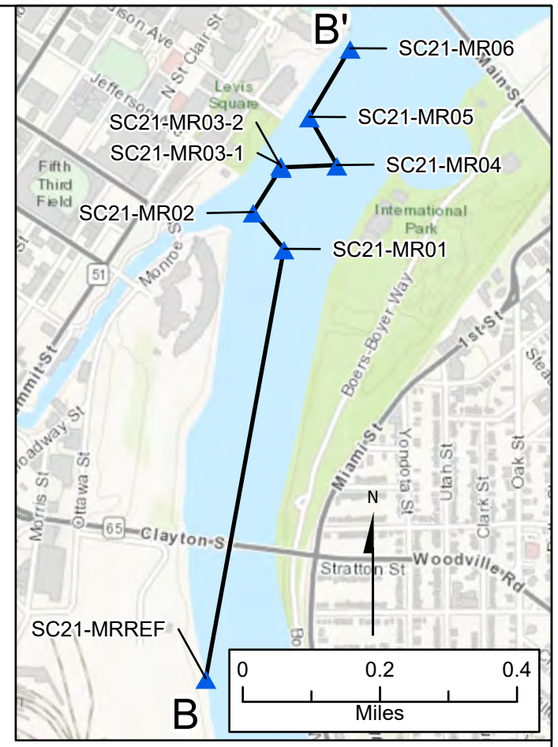
- Coring Location
- Transect Line
- Surface Water
- Sediment Surface

Primary Lithology

- Organic Clays and Silts
- Clay (High-Plasticity)
- Clay (Low-Med Plasticity)
- Silt
- Sand and Sand-Fine Mixtures
- Gravel and Gravel-Fine Mixtures

Figure 3-2a
Swan Creek Geologic Cross-Section
Swan Creek, Maumee Area of Concern
Toledo, Ohio





Legend

- Coring Location
- Transect Line
- Surface Water
- Sediment Surface

Primary Lithology

- Organic Clays and Silts
- Clay (High-Plasticity)
- Clay (Low-Med Plasticity)
- Silt
- Sand and Sand-Fine Mixtures
- Gravel and Gravel-Fine Mixtures

Figure 3-2b
Maumee River Geologic Cross-Section
Swan Creek, Maumee Area of Concern
Toledo, Ohio

SC21-SC05	Unit	Result
Arsenic	mg/kg	4.7
Cadmium	mg/kg	0.2
Chromium	mg/kg	7.7
Copper	mg/kg	34.1
Lead	mg/kg	32.8
Mercury	mg/kg	0.021
Nickel	mg/kg	7.5
Zinc	mg/kg	75.3
Total 34PAHs (ND=1/2 RL)	mg/kg	6.51
Total PCB Aroclors (ND=0)	mg/kg	0.07
Total PCB Congeners (ND=0)	mg/kg	NS

SC21-SC11	Unit	Result
Arsenic	mg/kg	9
Cadmium	mg/kg	0.59
Chromium	mg/kg	25.7
Copper	mg/kg	44.1
Lead	mg/kg	40.8
Mercury	mg/kg	0.055
Nickel	mg/kg	24.3
Zinc	mg/kg	167
Total 34PAHs (ND=1/2 RL)	mg/kg	14.79
Total PCB Aroclors (ND=0)	mg/kg	0.224
Total PCB Congeners (ND=0)	mg/kg	0.031

SC21-SC18	Unit	Result
Arsenic	mg/kg	10
Cadmium	mg/kg	2.5
Chromium	mg/kg	33.1
Copper	mg/kg	110
Lead	mg/kg	**211**
Mercury	mg/kg	0.44
Nickel	mg/kg	28.4
Zinc	mg/kg	289
Total 34PAHs (ND=1/2 RL)	mg/kg	**231.96**
Total PCB Aroclors (ND=0)	mg/kg	**17**
Total PCB Congeners (ND=0)	mg/kg	**8.4**

SC21-SC33	Unit	Result
Arsenic	mg/kg	6.4
Cadmium	mg/kg	0.45
Chromium	mg/kg	17.4
Copper	mg/kg	31
Lead	mg/kg	30.6
Mercury	mg/kg	0.061
Nickel	mg/kg	15.4
Zinc	mg/kg	117
Total 34PAHs (ND=1/2 RL)	mg/kg	**27.49**
Total PCB Aroclors (ND=0)	mg/kg	NS
Total PCB Congeners (ND=0)	mg/kg	NS

SC21-MR06	Unit	Result
Arsenic	mg/kg	28
Cadmium	mg/kg	0.59
Chromium	mg/kg	15.5
Copper	mg/kg	46.2
Lead	mg/kg	116
Mercury	mg/kg	**4.3**
Nickel	mg/kg	16.3
Zinc	mg/kg	234
Total 34PAHs (ND=1/2 RL)	mg/kg	**141.97**
Total PCB Aroclors (ND=0)	mg/kg	NS
Total PCB Congeners (ND=0)	mg/kg	NS

SC21-SC30	Unit	Result
Arsenic	mg/kg	8.7
Cadmium	mg/kg	0.58
Chromium	mg/kg	24.9
Copper	mg/kg	34.8
Lead	mg/kg	32.6
Mercury	mg/kg	0.082
Nickel	mg/kg	22.3
Zinc	mg/kg	157
Total 34PAHs (ND=1/2 RL)	mg/kg	**36.53**
Total PCB Aroclors (ND=0)	mg/kg	0.14
Total PCB Congeners (ND=0)	mg/kg	NS

SC21-SCREF	Unit	Result
Arsenic	mg/kg	4.3
Cadmium	mg/kg	0.16
Chromium	mg/kg	8
Copper	mg/kg	10.9
Lead	mg/kg	11.2
Mercury	mg/kg	0.14
Nickel	mg/kg	7.3
Zinc	mg/kg	50.5
Total 34PAHs (ND=1/2 RL)	mg/kg	11.47
Total PCB Aroclors (ND=0)	mg/kg	0.06
Total PCB Congeners (ND=0)	mg/kg	0.406

SC21-SC01	Unit	Result
Arsenic	mg/kg	13.1
Cadmium	mg/kg	0.16
Chromium	mg/kg	9.4
Copper	mg/kg	25.6
Lead	mg/kg	20.8
Mercury	mg/kg	0.12
Nickel	mg/kg	15.6
Zinc	mg/kg	65.2
Total 34PAHs (ND=1/2 RL)	mg/kg	5.12
Total PCB Aroclors (ND=0)	mg/kg	NS
Total PCB Congeners (ND=0)	mg/kg	NS

SC21-SC14	Unit	Result
Arsenic	mg/kg	8
Cadmium	mg/kg	0.51
Chromium	mg/kg	21.1
Copper	mg/kg	45.4
Lead	mg/kg	49.4
Mercury	mg/kg	0.049
Nickel	mg/kg	19
Zinc	mg/kg	153
Total 34PAHs (ND=1/2 RL)	mg/kg	22.41
Total PCB Aroclors (ND=0)	mg/kg	0.127
Total PCB Congeners (ND=0)	mg/kg	0.169

SC21-SC21	Unit	Result
Arsenic	mg/kg	7
Cadmium	mg/kg	0.49
Chromium	mg/kg	18.5
Copper	mg/kg	42.1
Lead	mg/kg	43
Mercury	mg/kg	0.043
Nickel	mg/kg	17
Zinc	mg/kg	139
Total 34PAHs (ND=1/2 RL)	mg/kg	**23.87**
Total PCB Aroclors (ND=0)	mg/kg	0.6
Total PCB Congeners (ND=0)	mg/kg	NS

SC21-SC27	Unit	Result
Arsenic	mg/kg	6
Cadmium	mg/kg	0.5
Chromium	mg/kg	19.2
Copper	mg/kg	28.8
Lead	mg/kg	30.8
Mercury	mg/kg	0.049
Nickel	mg/kg	16.6
Zinc	mg/kg	134
Total 34PAHs (ND=1/2 RL)	mg/kg	**28.92**
Total PCB Aroclors (ND=0)	mg/kg	0.18
Total PCB Congeners (ND=0)	mg/kg	NS

SC21-MRREF	Unit	Result
Arsenic	mg/kg	7.1
Cadmium	mg/kg	0.57
Chromium	mg/kg	27.9
Copper	mg/kg	27.9
Lead	mg/kg	18
Mercury	mg/kg	0.041
Nickel	mg/kg	28.1
Zinc	mg/kg	105
Total 34PAHs (ND=1/2 RL)	mg/kg	2.48
Total PCB Aroclors (ND=0)	mg/kg	NS
Total PCB Congeners (ND=0)	mg/kg	NS

VICINITY MAP

Legend

Sampling Location

Notes:
1. **Bolded and Shaded Detected Values Exceed the PEC.**

NS = Not Sampled
mg/kg = milligrams per kilogram

Map Date: 6/2/2022
Source: ESRI Basemap 2018, NOAA 2018
Projection: NAD 1983 State Plane Ohio North US Foot

N

0 100 200 300 400
Feet

Figure 3-3
Ponar Surface Results
Swan Creek, Maumee Area of Concern
Toledo, Ohio

G:\Federal\Midwest\Ohio\GLAES\SwanCreek_158340\PROJECTS\Curr_Hist_Metals\Curr_Hist_Metals.aprx cbressi

Legend

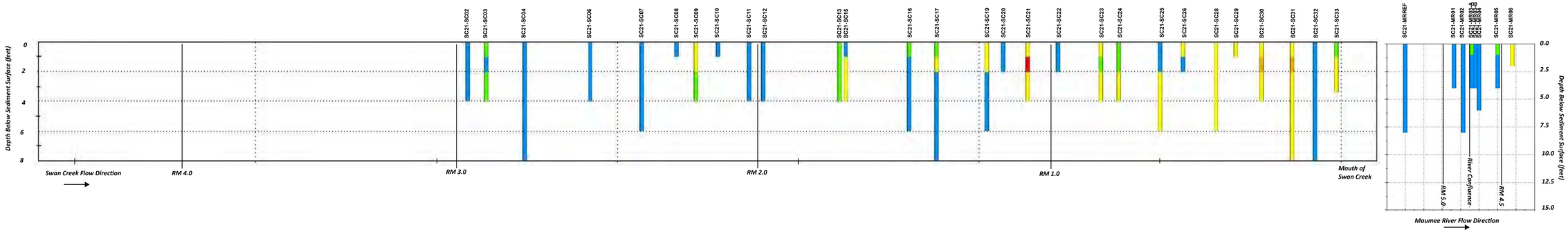
- Sample Location
- Fish Sampling Location
- CSO Location - 10/2013
- ORD's Benthic/Passive Sample Locations - Sept 2021
- River Mile Marker
- 0.5 Mile Marker

TPH (C10 to C40)

- >4400 mg/kg
- >3600 mg/kg to <=4400 mg/kg
- >1000 mg/kg to <=3600 mg/kg
- >500 mg/kg to <=1000 mg/kg
- >ND to <=500 mg/kg
- Non-Detect

- Label box indicates the maximum concentration and the depth interval in which it occurred. The sample location color indicates the concentration of the surface interval.

Profile Graphs shown separately in areas of clustered sample locations.



0 250 500 750 1,000
Feet

Map Date: 5/20/2022
Basemap: ESRI 2020

FIGURE 3-4a
Total Petroleum Hydrocarbon Concentrations (C10 to C40) (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

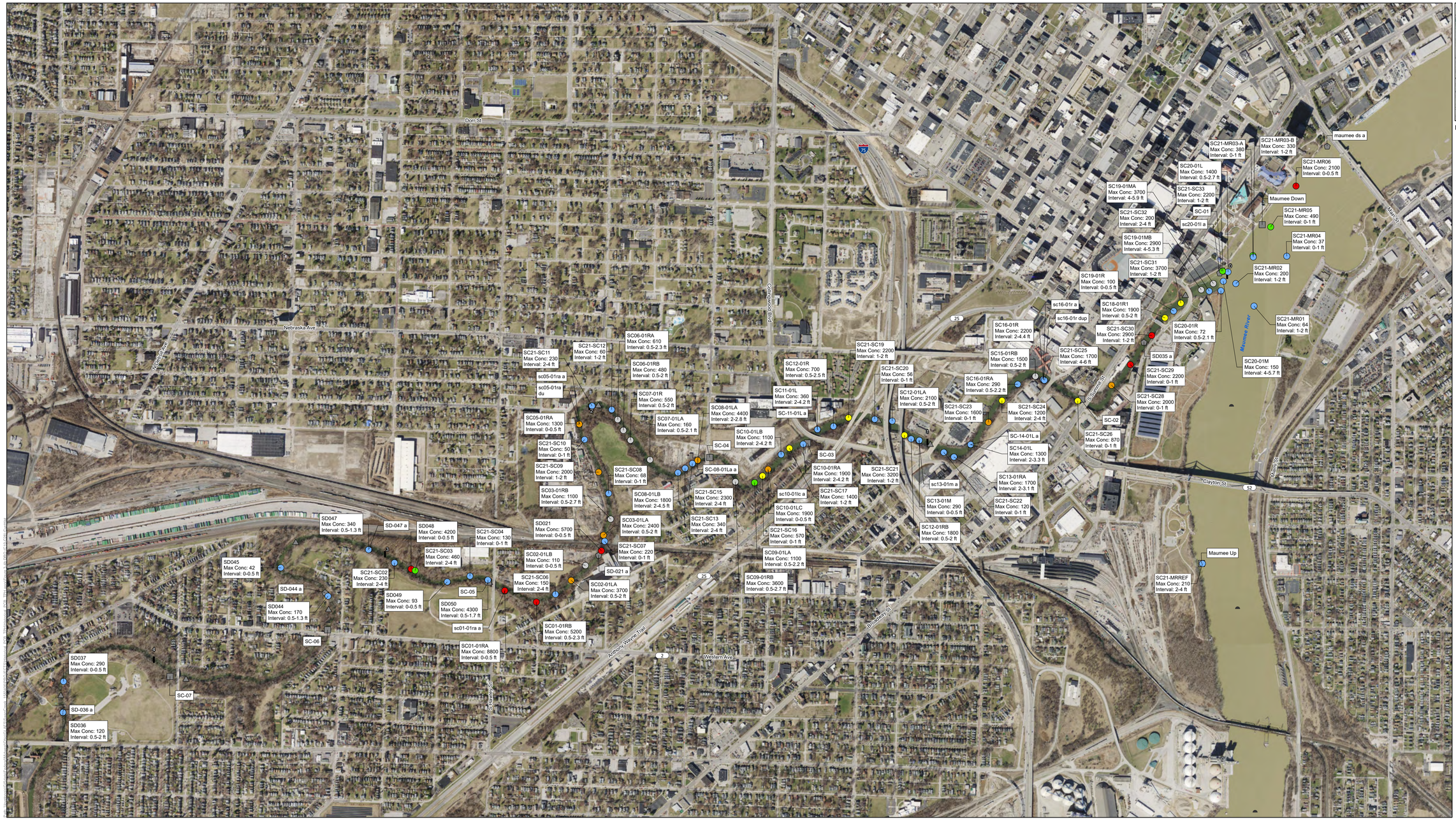


FIGURE 3-4b
Diesel Range Organics Concentrations (C10 to C28) (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

Legend

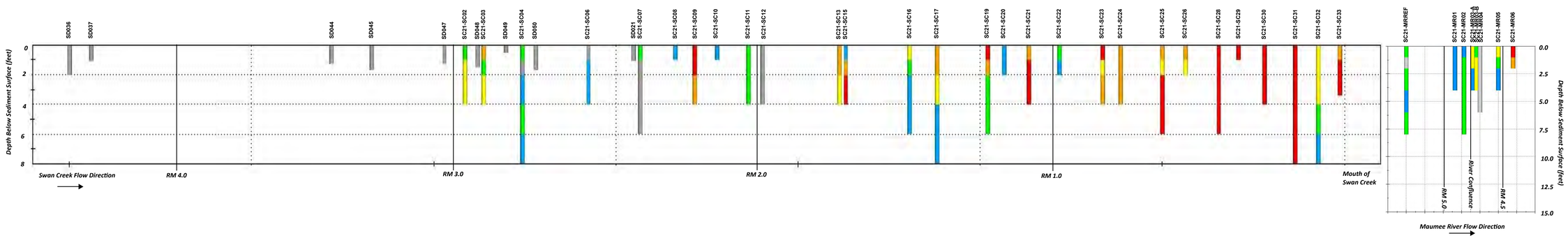
- Sample Location
- Fish Sampling Location
- CSO Location - 10/2013
- ORD's Benthic/Passive Sample Locations - Sept 2021
- River Mile Marker
- 0.5 Mile Marker

ORO (C28 to C40)

- >414 mg/kg
- >192 mg/kg to <= 414 mg/kg
- >89.2 mg/kg to <=192 mg/kg
- >30.4 mg/kg to <= 89.2 mg/kg
- >ND to <= 30.4 mg/kg
- Non-Detect

- Label box indicates the maximum concentration and the depth interval in which it occurred. The sample location color indicates the concentration of the surface interval.

Profile Graphs shown separately in areas of clustered sample locations.



0 250 500 750 1,000
Feet

Map Date: 5/20/2022
Basemap: ESRI 2020

FIGURE 3-4c
Oil Range Organics Concentrations (C28 to C40) (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

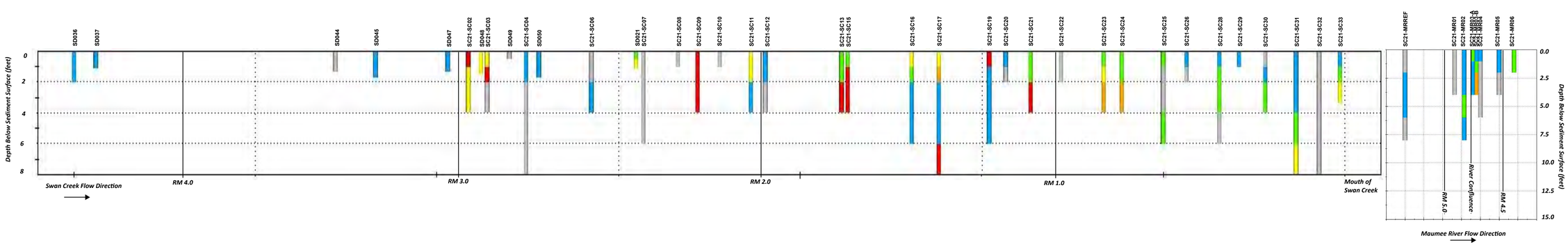


FIGURE 3-5
Oil and Grease Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

Legend

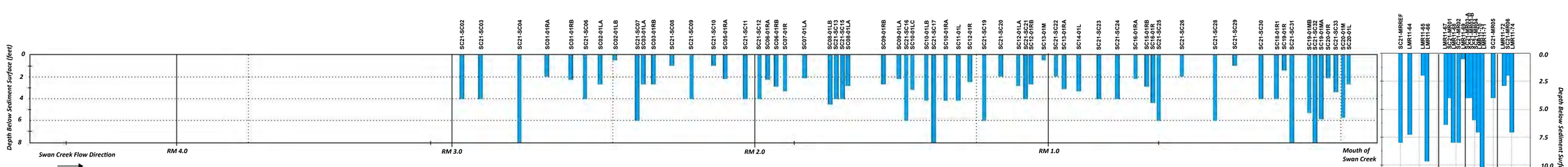
- Sample Location
- Fish Sampling Location
- CSO Location - 10/2013
- ORD's Benthic/Passive Sample Locations - Sept 2021
- River Mile Marker
- 0.5 Mile Marker

Aluminum

- >10X SRV (420,000 mg/kg)
- >5X SRV (210,000 mg/kg) and <=10X SRV (420,000 mg/kg)
- >2x SRV (84,000 mg/kg) and <=5X SRV (210,000 mg/kg)
- >SRV (42,000 mg/kg) and <=2X SRV (84,000 mg/kg)
- >ND and <=SRV (42,000 mg/kg)
- Non-Detect

- Label box indicates the maximum concentration and the depth interval in which it occurred. The sample location color indicates the concentration of the surface interval.

Profile Graphs shown separately in areas of clustered sample locations



0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-6
Aluminum Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

Legend

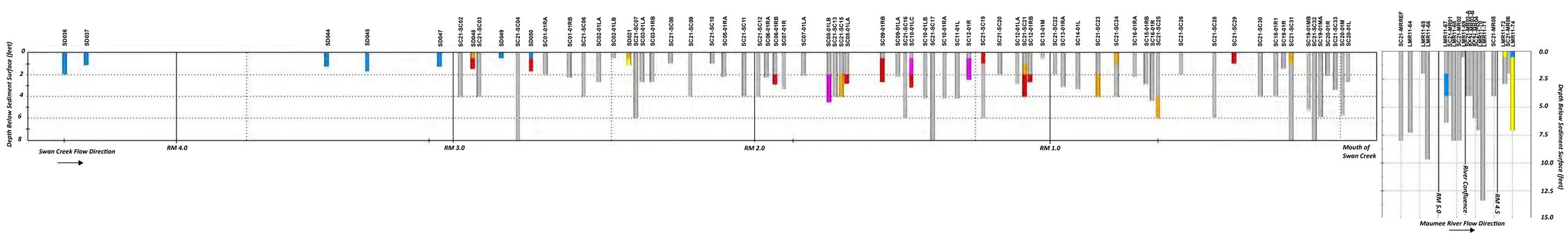
- Sample Location
- Fish Sampling Location
- CSO Location - 10/2013
- ORD's Benthic/Passive Sample Locations - Sept 2021
- River Mile Marker
- 0.5 Mile Marker

Antimony

- >10X SRV (8.4 mg/kg)
- >5X SRV (4.2 mg/kg) and <=10X SRV (8.4 mg/kg)
- >2x SRV (1.68 mg/kg) and <=5X SRV (4.2 mg/kg)
- >SRV (0.84 mg/kg) and <=2X SRV (1.68 mg/kg)
- >ND and <=SRV (0.84 mg/kg)
- Non-Detect

- Label box indicates the maximum concentration and the depth interval in which it occurred. The sample location color indicates the concentration of the surface interval.

Profile Graphs shown separately in areas of clustered sample locations

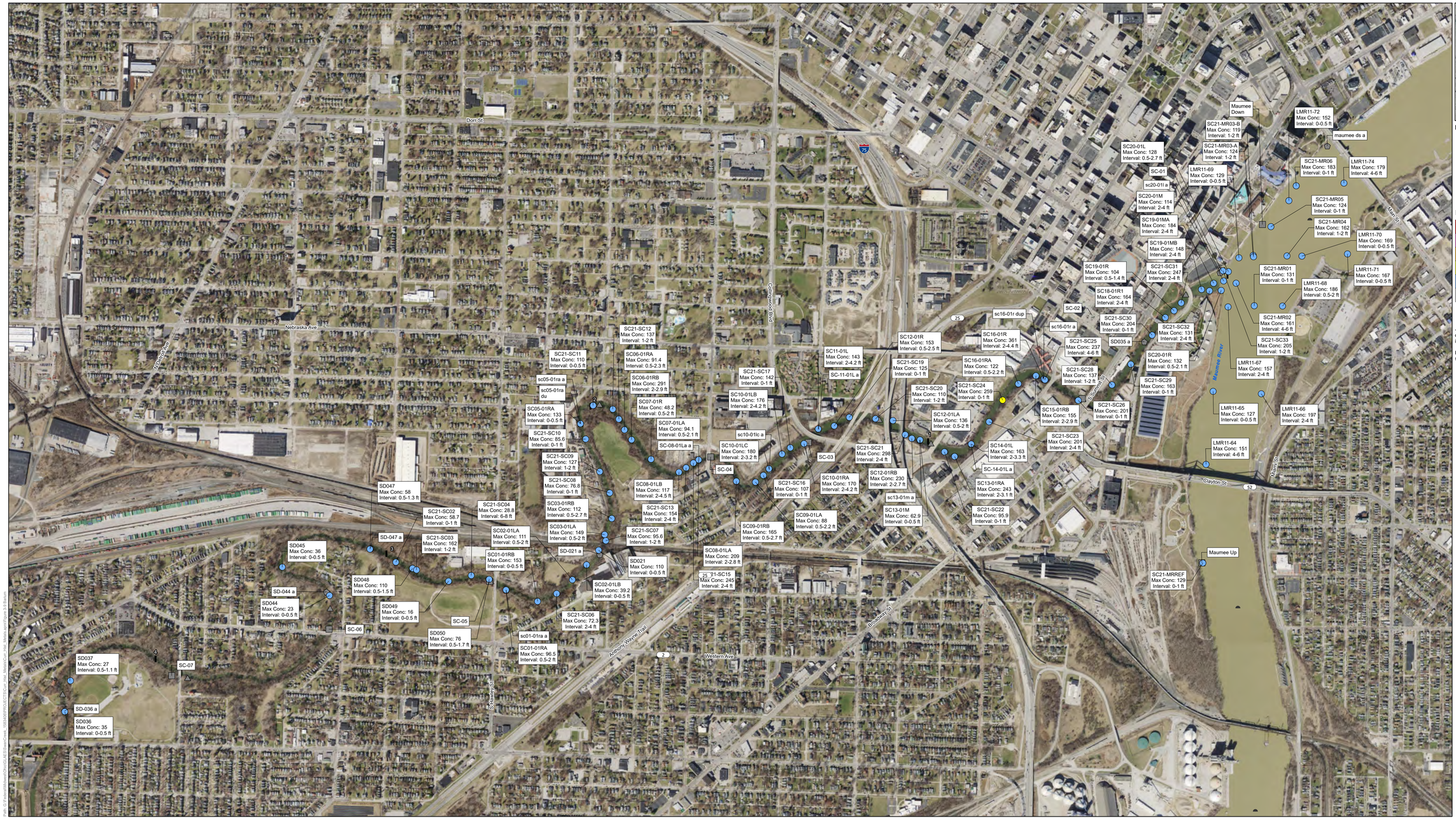


0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-7
Antimony Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

FIGURE 3-8
Arsenic Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio



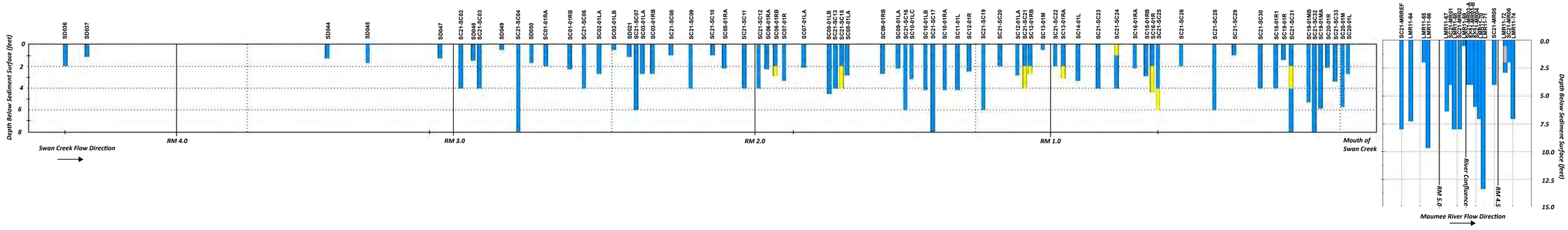
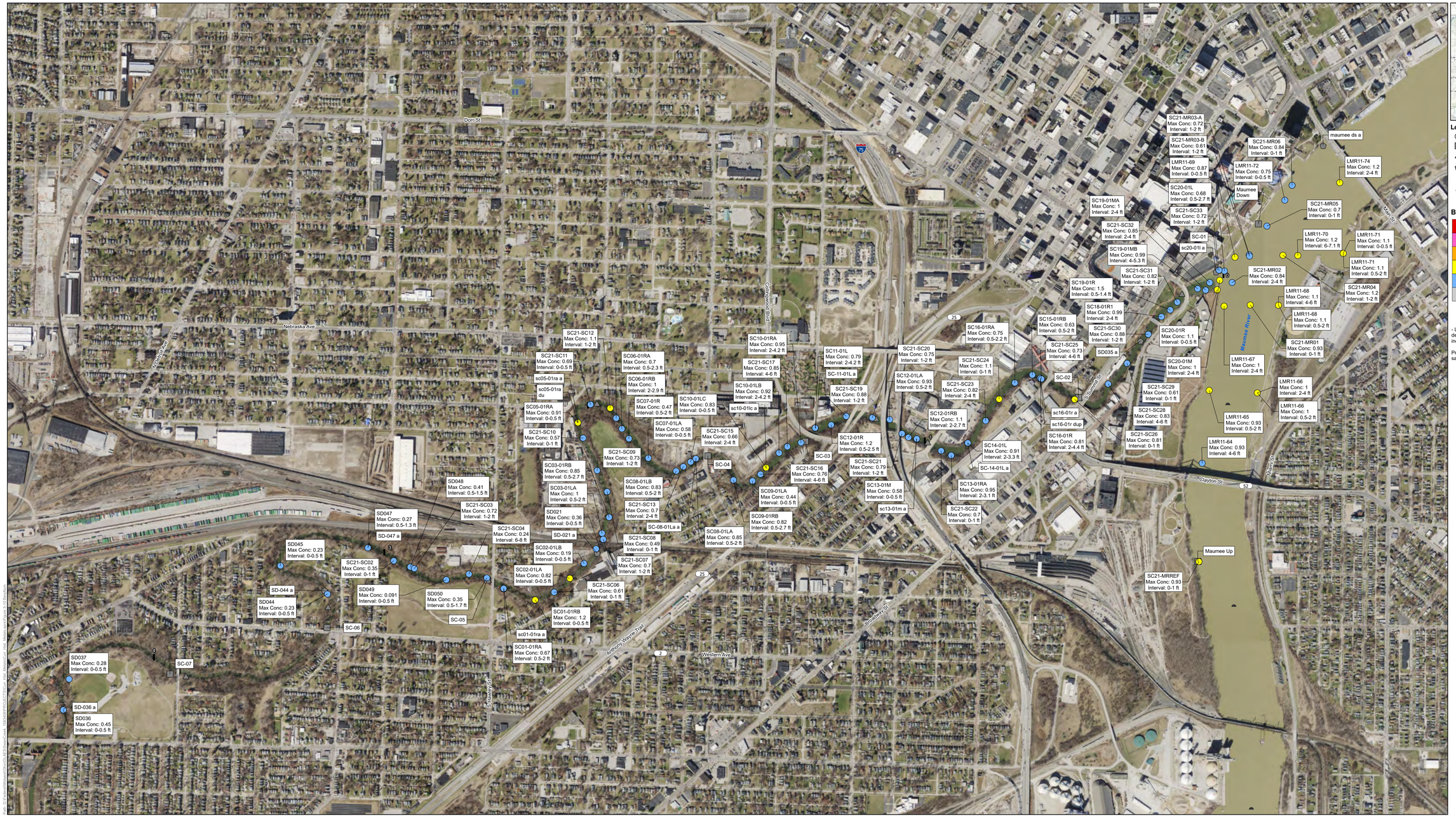


FIGURE 3-9
Barium Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio



Legend

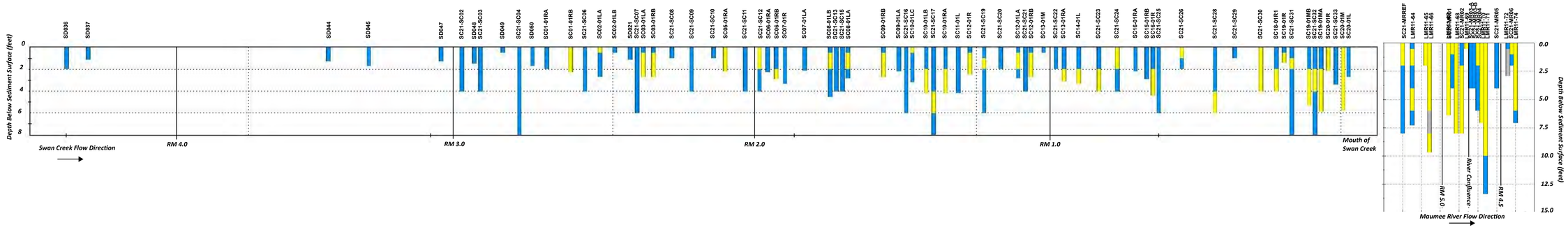
- Sample Location
- Fish Sampling Location
- CSO Location - 10/2013
- ORD's Benthic/Passive Sample Locations - Sept 2021
- River Mile Marker
- 0.5 Mile Marker

Beryllium

- >10X SRV (8 mg/kg)
- >5X SRV (4 mg/kg) and <=10X SRV (8 mg/kg)
- >2x SRV (1.6 mg/kg) and <=5X SRV (4 mg/kg)
- >SRV (0.8 mg/kg) and <=2X SRV (1.6 mg/kg)
- >ND and <=SRV (0.8 mg/kg)
- Non-Detect

- Label box indicates the maximum concentration and the depth interval in which it occurred. The sample location color indicates the concentration of the surface interval.

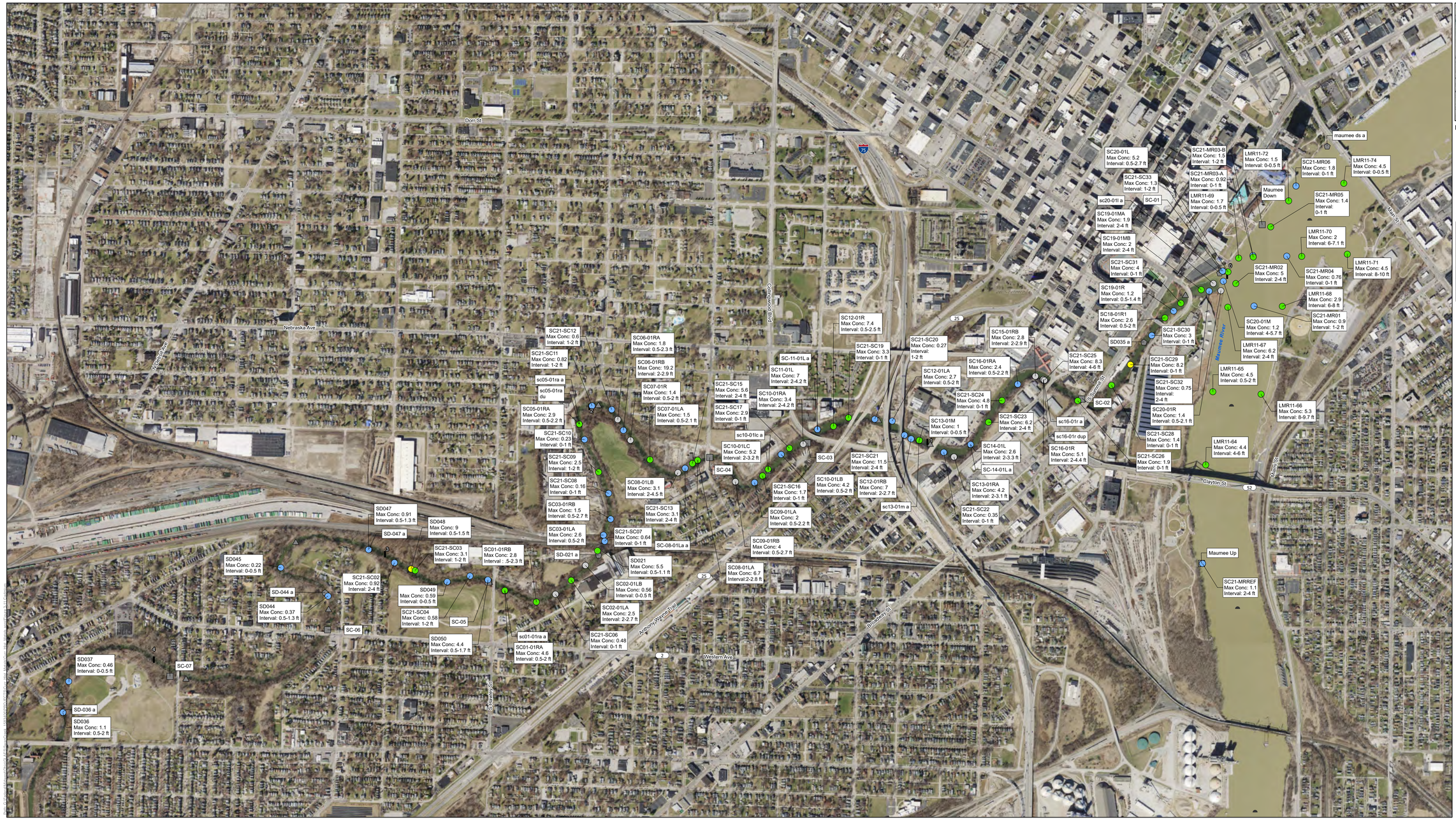
Profile Graphs shown separately in areas of clustered sample locations



0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-10
Beryllium Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio



Legend

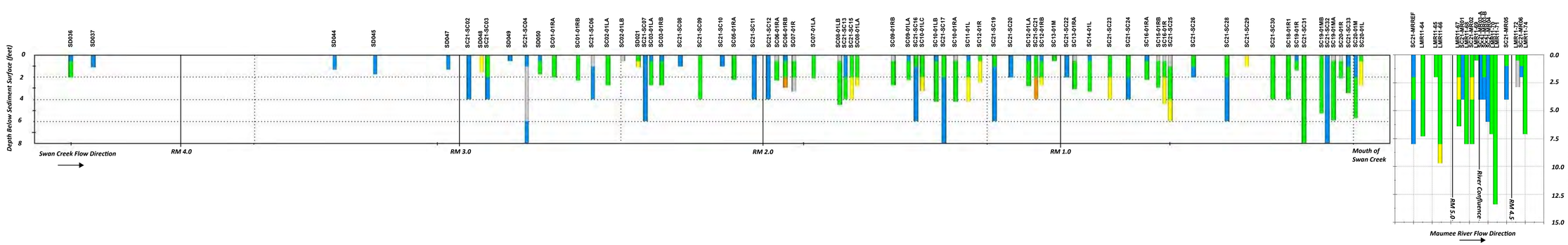
- Sample Location
- Fish Sampling Location
- CSO Location - 10/2013
- ORD's Benthic/Passive Sample Locations - Sept 2021
- River Mile Marker
- 0.5 Mile Marker

Cadmium

- > 10X PEC (49.8 mg/kg)
- >5X PEC (24.9 mg/kg) and <=10X PEC (49.8 mg/kg)
- >2x PEC (9.96 mg/kg) and <=5X PEC (24.9 mg/kg)
- >PEC (4.98 mg/kg) and <=2X PEC (9.96 mg/kg)
- >TEC (0.99 mg/kg) and <=PEC (4.98 mg/kg)
- >ND and <=TEC (0.99 mg/kg)
- Non-Detect

- Label box indicates the maximum concentration and the depth interval in which it occurred. The sample location color indicates the concentration of the surface interval.

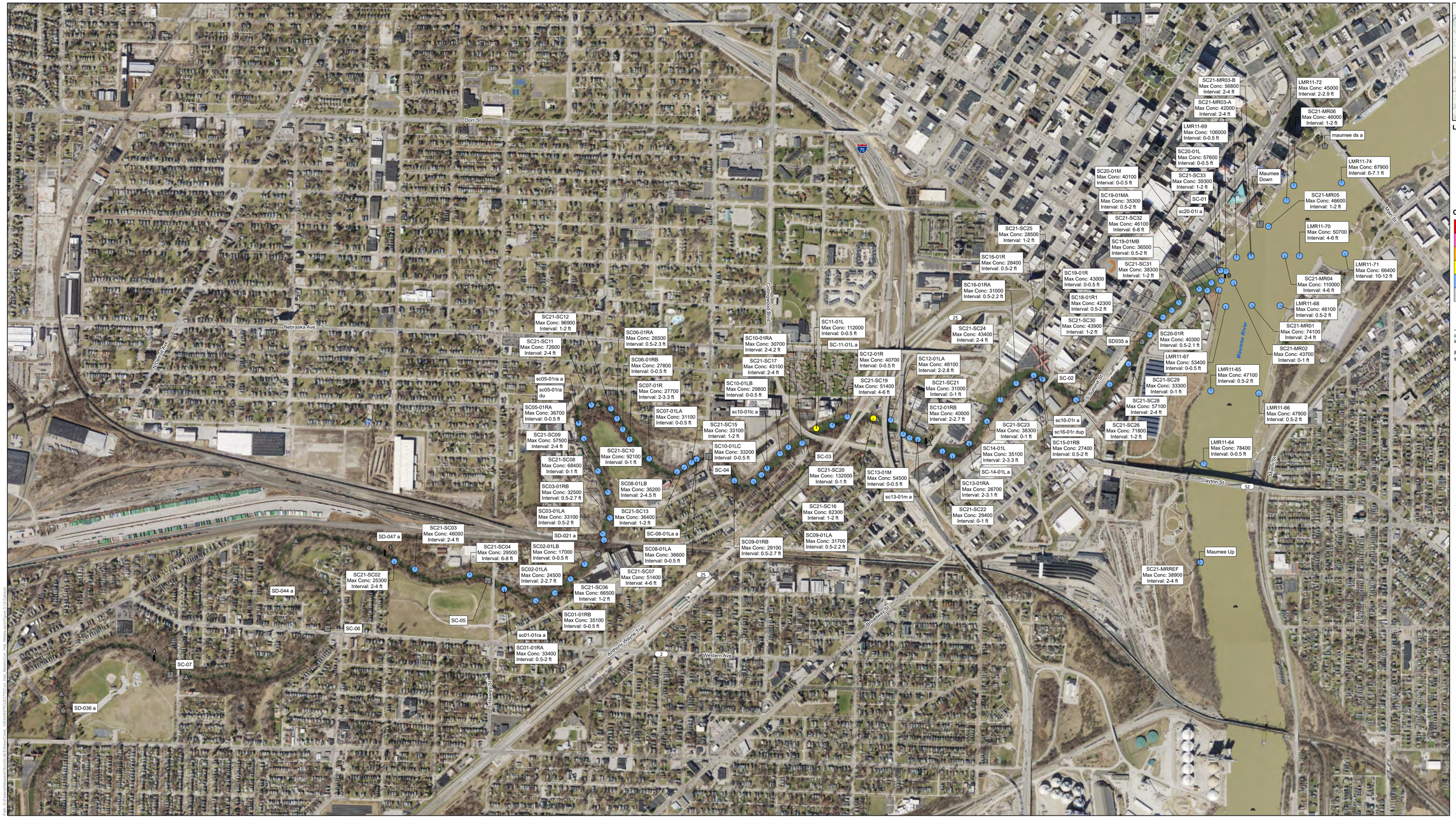
Profile Graphs shown separately in areas of clustered sample locations

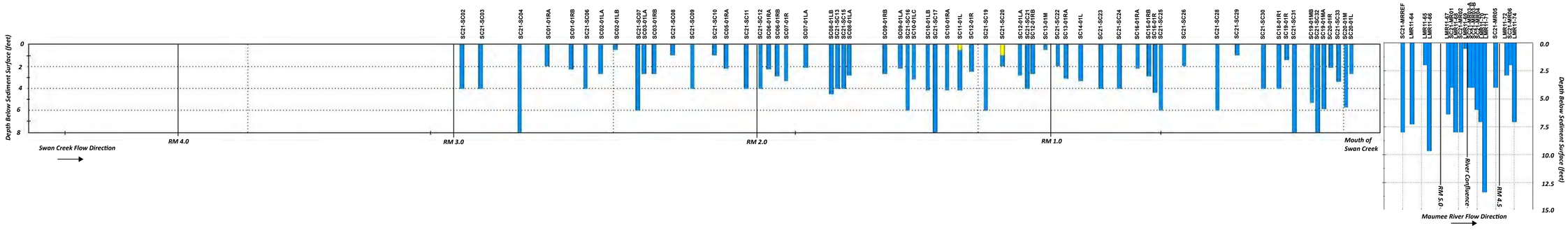


0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-11
Cadmium Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

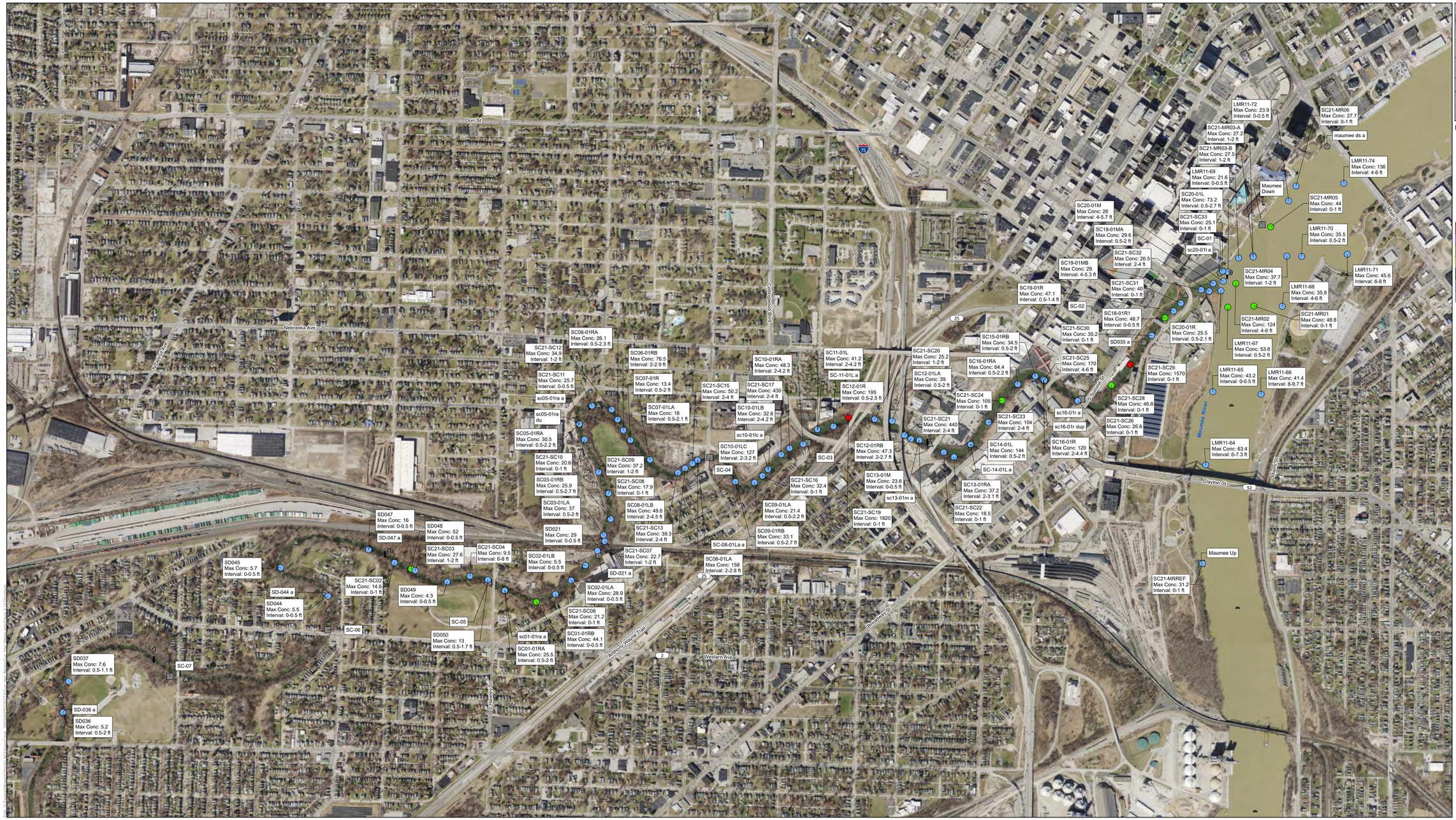


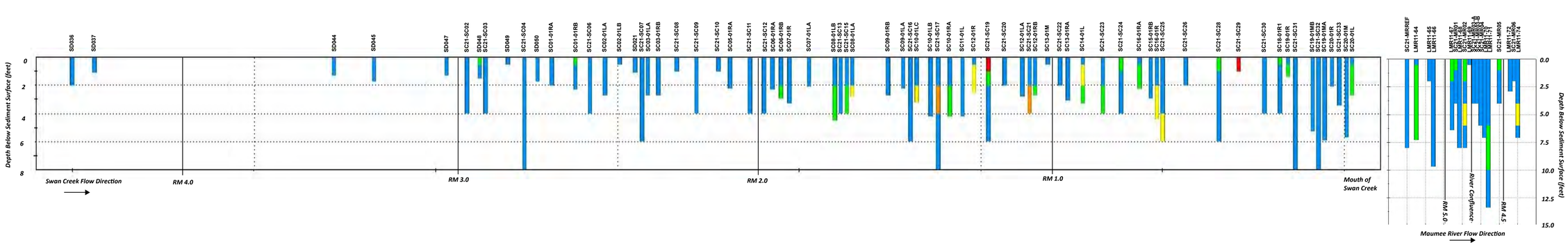


0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-12
Calcium Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

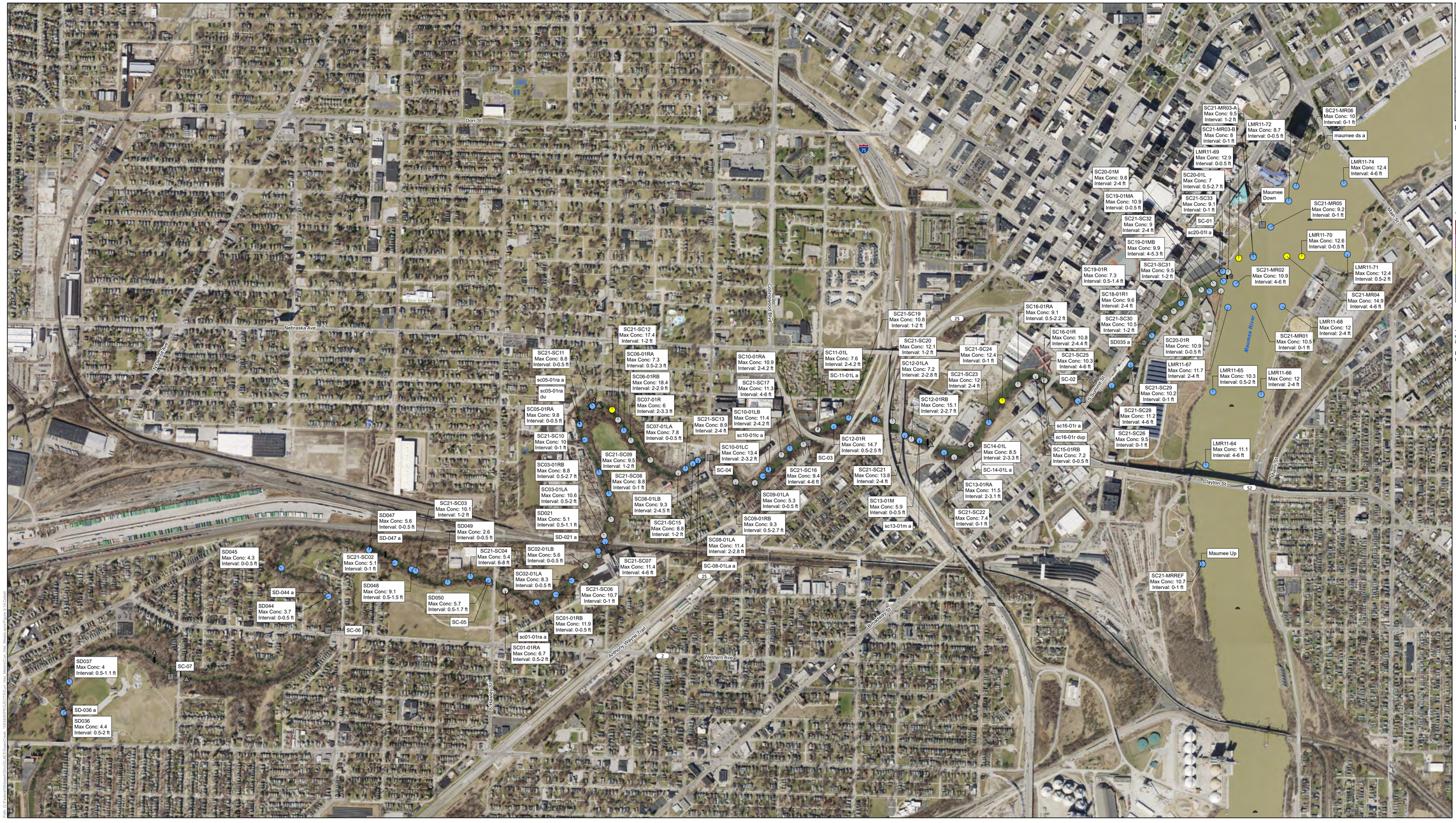




0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-13
Chromium Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Maumee River AOC
Toledo, Ohio



Legend

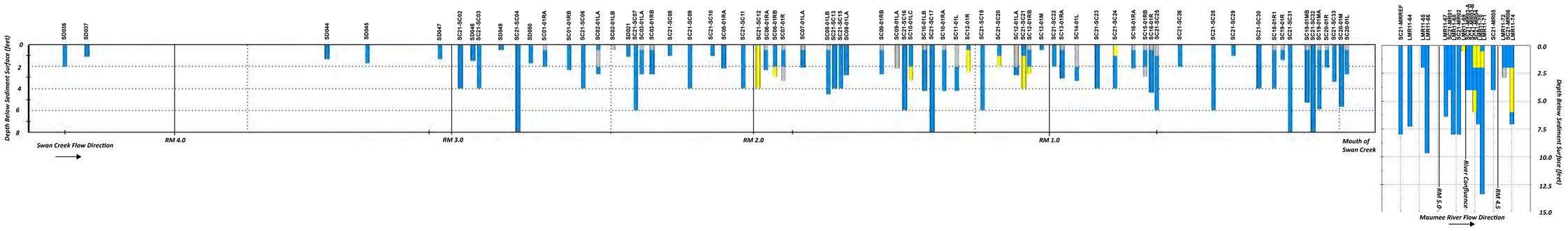
- Sample Location
- Fish Sampling Location
- CSO Location - 10/2013
- ORD's Benthic/Passive Sample Locations - Sept 2021
- River Mile Marker
- 0.5 Mile Marker

Cobalt

- >10X SRV (120 mg/kg)
- >5X SRV (60 mg/kg) and <=10X SRV (120 mg/kg)
- >2x SRV (24 mg/kg) and <=5X SRV (60 mg/kg)
- >SRV (12 mg/kg) and <=2X SRV (24 mg/kg)
- >ND and <=SRV
- Non-Detect

- Label box indicates the maximum concentration and the depth interval in which it occurred. The sample location color indicates the concentration of the surface interval.

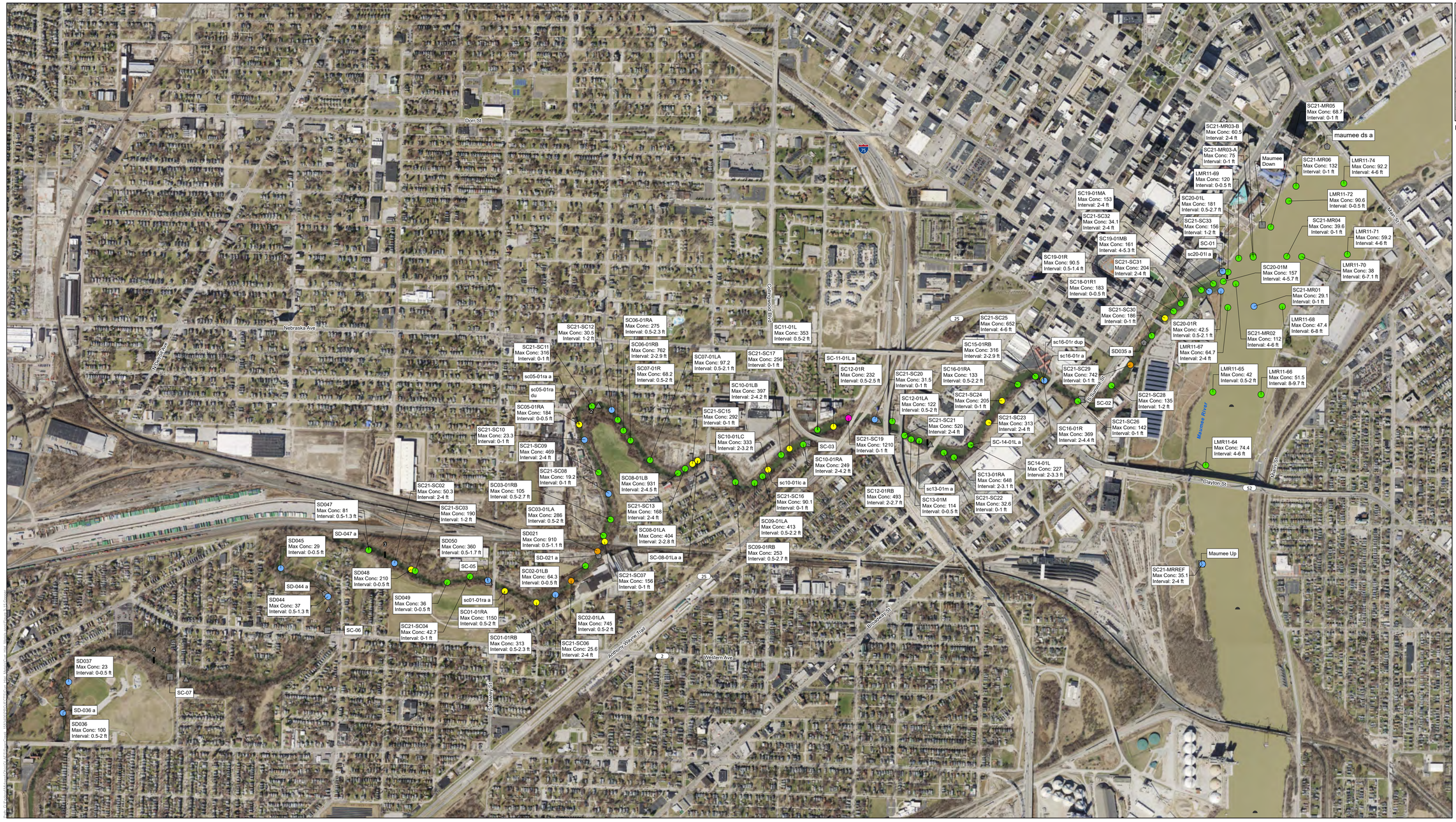
Profile Graphs shown separately in areas of clustered sample locations

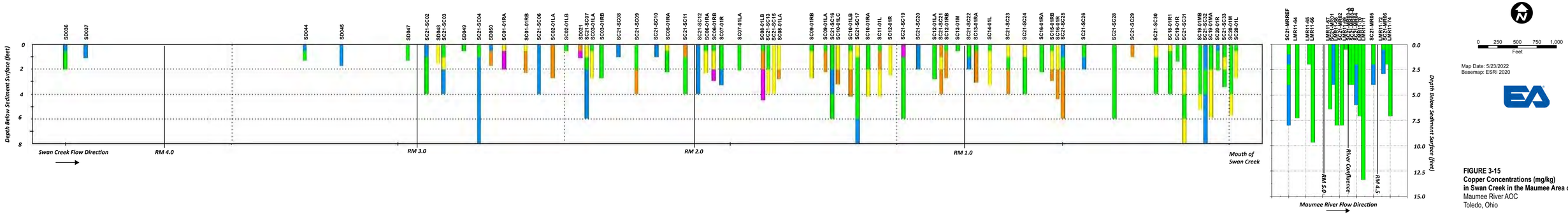


0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-14
Cobalt Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

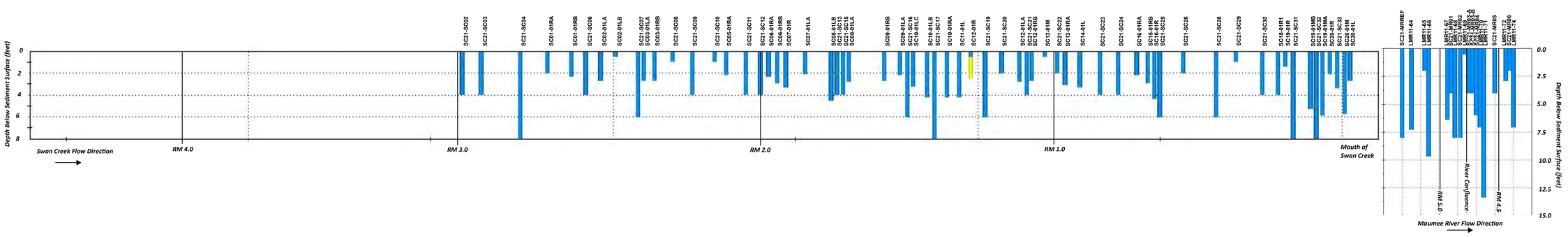




0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-15
Copper Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Maumee River AOC
Toledo, Ohio

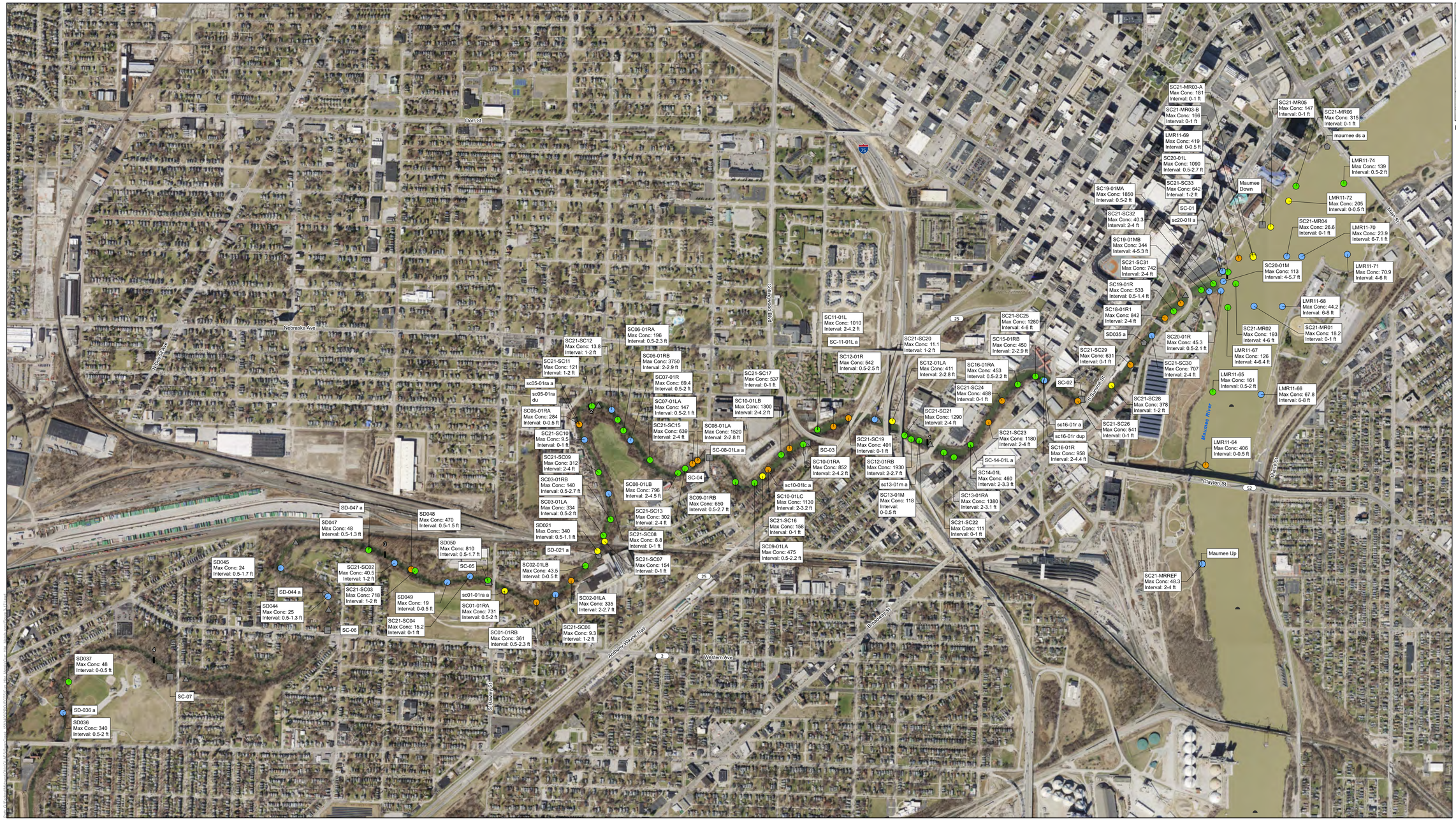


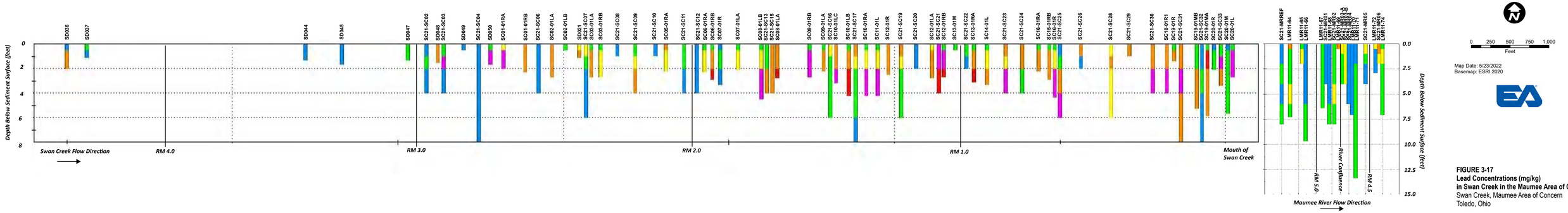
0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-16
Iron Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

Path: G:\Fabian\Mxds\ed2\mxd\LAER\SwanCreek_1583\MXP\ROUTES\Curr_Hist_Metals.aprx\Figure 3-16 Iron





0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-17
Lead Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

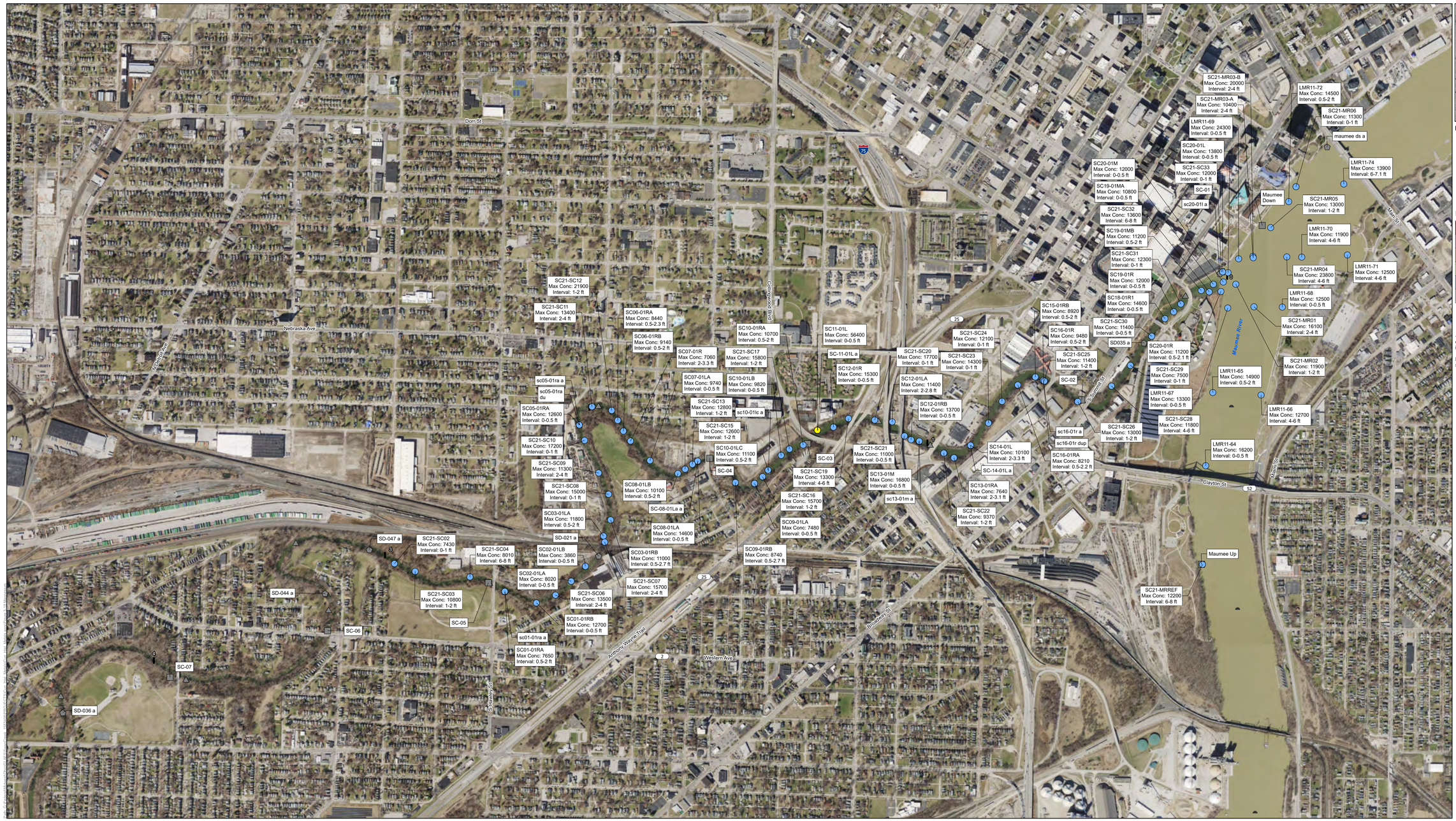


FIGURE 3-18
Magnesium Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

Legend

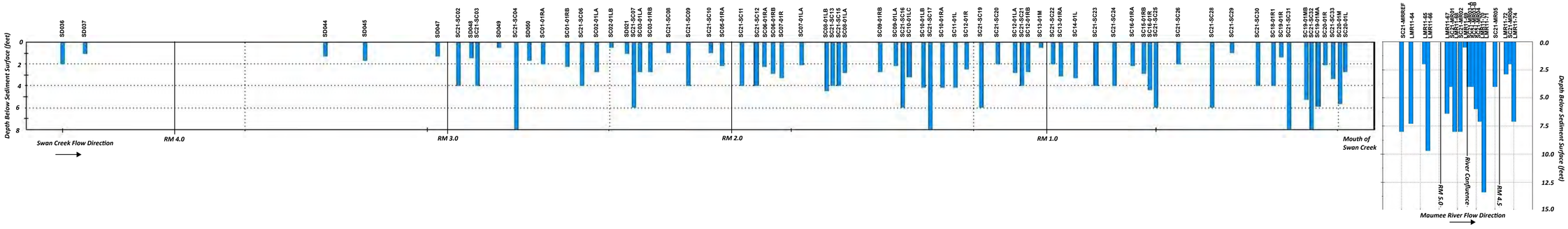
- Sample Location
- Fish Sampling Location
- CSO Location - 10/2013
- ORD's Benthic/Passive Sample Locations - Sept 2021
- River Mile Marker
- 0.5 Mile Marker

Manganese

- >10X SRV (10000 mg/kg)
- >5X SRV (5000 mg/kg) and <=10X SRV (10000 mg/kg)
- >2x SRV (2000 mg/kg) and <=5X SRV (5000 mg/kg)
- >SRV (1000 mg/kg) and <=2X SRV (2000 mg/kg)
- >ND and <=SRV
- Non-Detect

- Label box indicates the maximum concentration and the depth interval in which it occurred. The sample location color indicates the concentration of the surface interval.

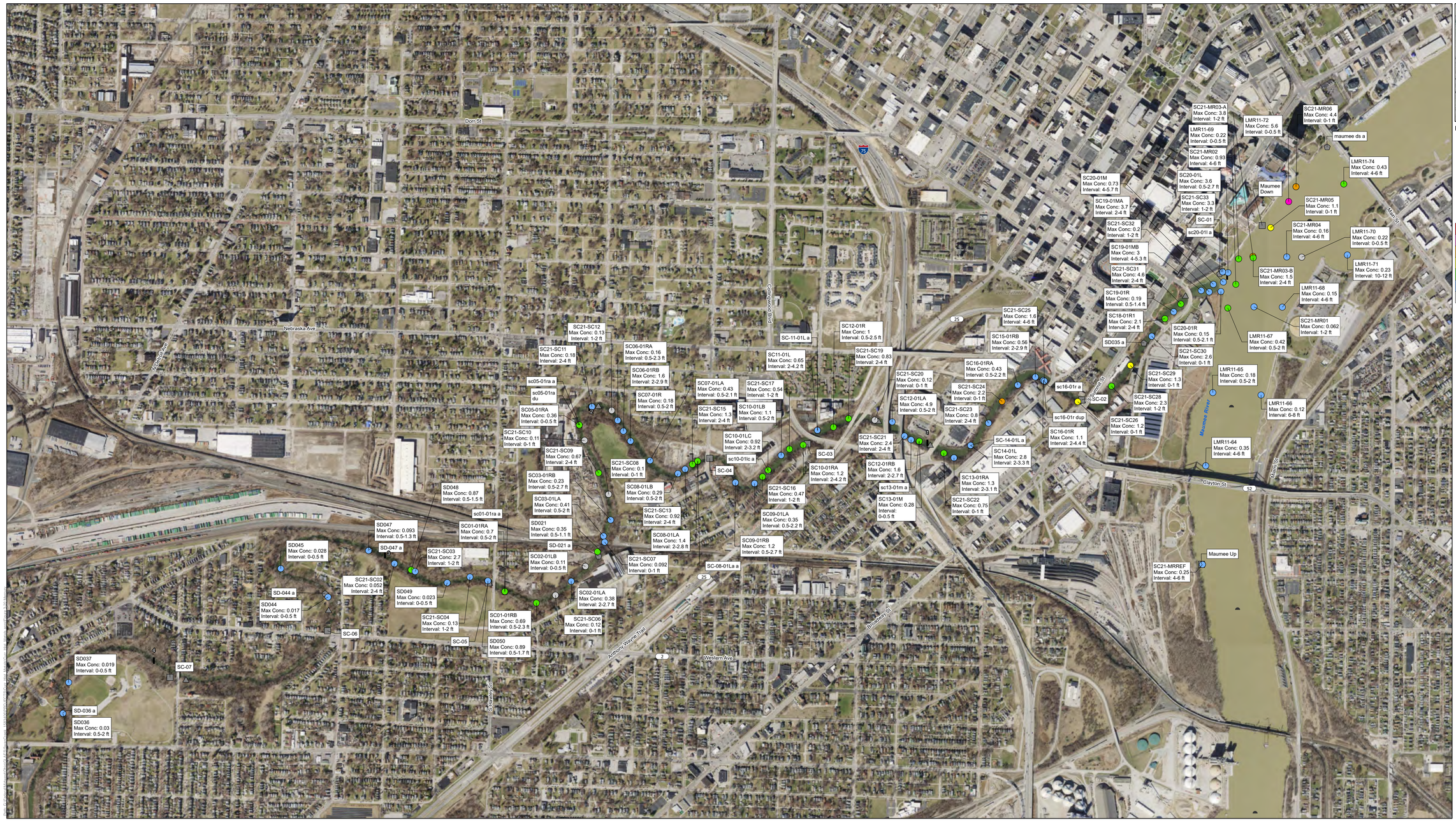
Profile Graphs shown separately in areas of clustered sample locations



0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-19
Manganese Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio



Legend

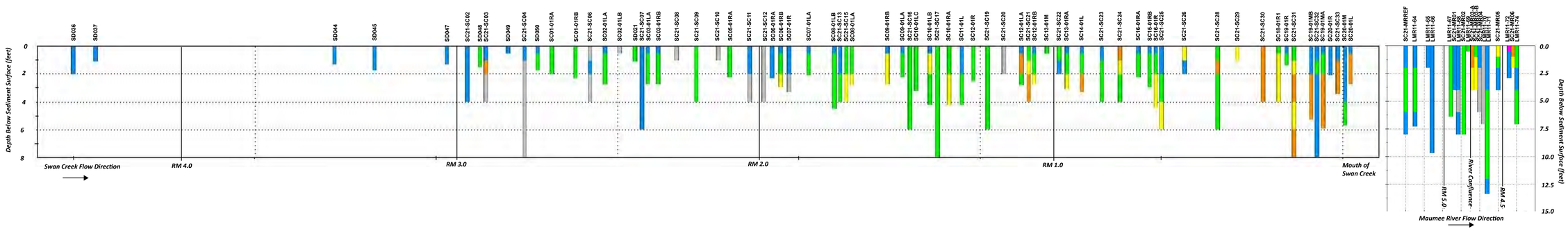
- Sample Location
- Fish Sampling Location
- CSO Location - 10/2013
- ORD's Benthic/Passive Sample Locations - Sept 2021
- River Mile Marker
- 0.5 Mile Marker

Mercury

- > 10X PEC (10.6 mg/kg)
- >5X PEC (5.3 mg/kg) and <=10X PEC (10.6 mg/kg)
- >2x PEC (2.12 mg/kg) and <=5X PEC (5.3 mg/kg)
- >PEC (1.06 mg/kg) and <=2X PEC (2.12 mg/kg)
- >TEC (0.18 mg/kg) and <=PEC (1.06 mg/kg)
- >ND and <=TEC (0.18 mg/kg)
- Non-Detect

- Label box indicates the maximum concentration and the depth interval in which it occurred. The sample location color indicates the concentration of the surface interval.

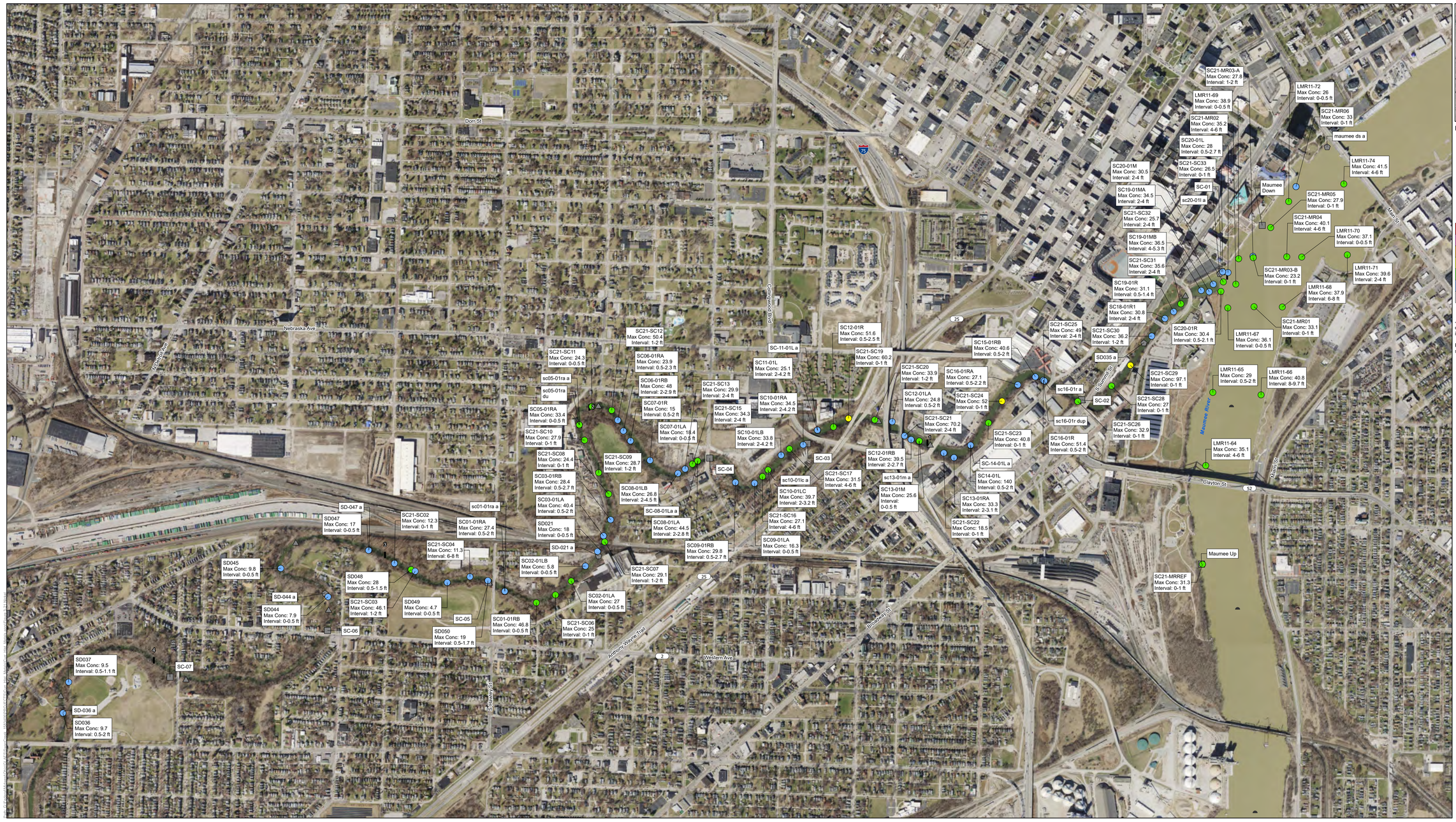
Profile Graphs shown separately in areas of clustered sample locations



0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-20
Mercury Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio



Legend

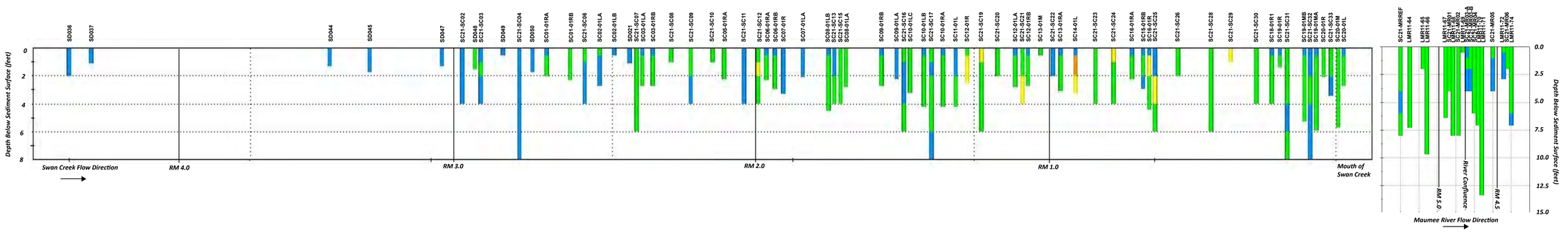
- Sample Location
- Fish Sampling Location
- CSO Location - 10/2013
- ORD's Benthic/Passive Sample Locations - Sept 2021
- River Mile Marker
- 0.5 Mile Marker

Nickel

- > 10X PEC (486 mg/kg)
- >5X PEC (243 mg/kg) and <=10X PEC (486 mg/kg)
- >2x PEC (97.2 mg/kg) and <=5X PEC (243 mg/kg)
- >PEC (48.6 mg/kg) and <=2X PEC (97.2mg/kg)
- >TEC (22.7 mg/kg) and <=PEC (48.6 mg/kg)
- >ND and <=TEC (22.7 mg/kg)
- Non-Detect

- Label box indicates the maximum concentration and the depth interval in which it occurred. The sample location color indicates the concentration of the surface interval.

Profile Graphs shown separately in areas of clustered sample locations



0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-21
Nickel Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

Legend

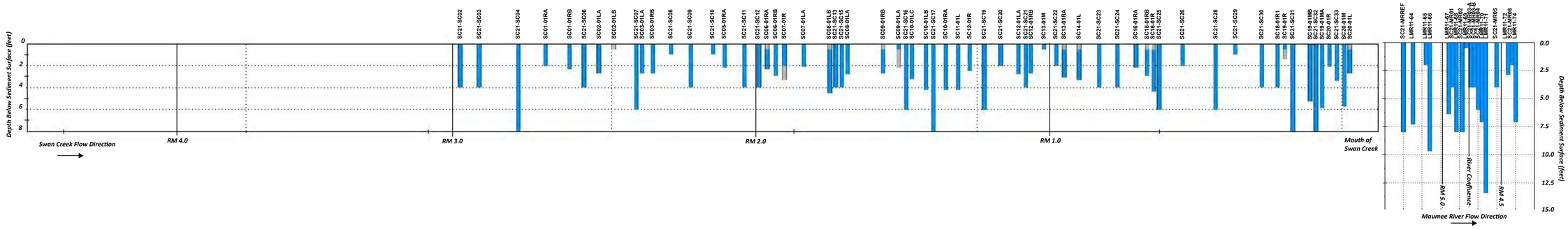
- Sample Location
- Fish Sampling Location
- CSO Location - 10/2013
- ORD's Benthic/Passive Sample Locations - Sept 2021
- River Mile Marker
- 0.5 Mile Marker

Potassium

- >10X SRV (120000 mg/kg)
- >5X SRV (60000 mg/kg) and <=10X SRV (120000 mg/kg)
- >2x SRV (24000 mg/kg) and <=5X SRV (60000 mg/kg)
- >SRV (12000 mg/kg) and <=2X SRV (24000 mg/kg)
- >ND and <=SRV
- Non-Detect

- Label box indicates the maximum concentration and the depth interval in which it occurred. The sample location color indicates the concentration of the surface interval.

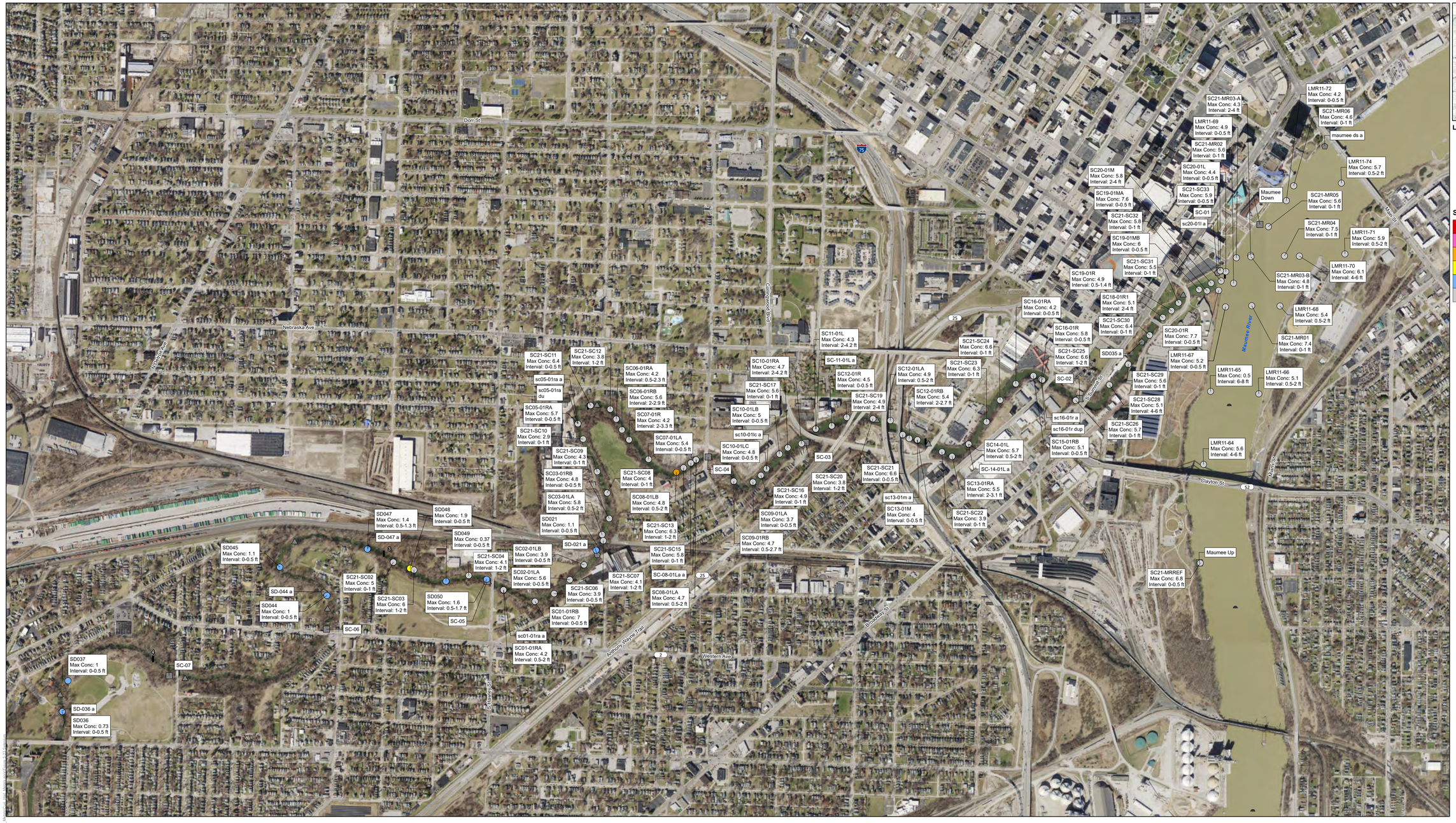
Profile Graphs shown separately in areas of clustered sample locations

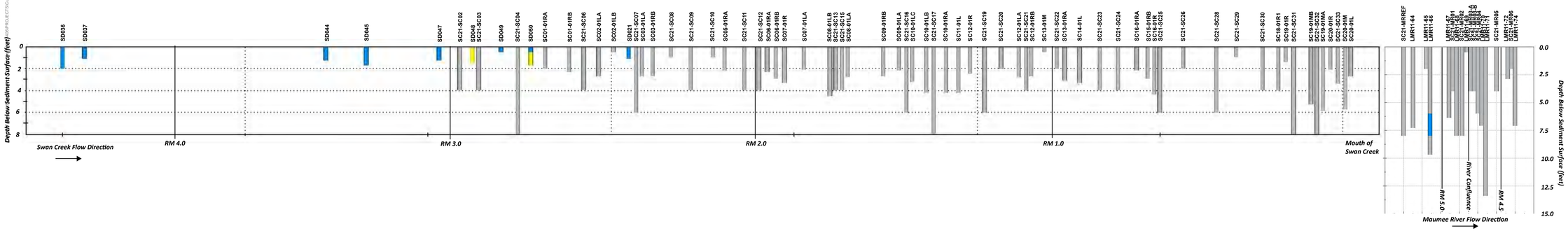


0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-22
Potassium Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

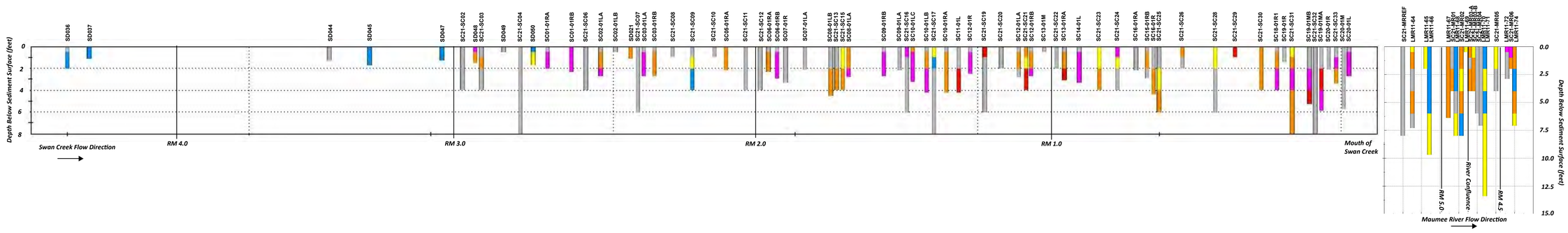




0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

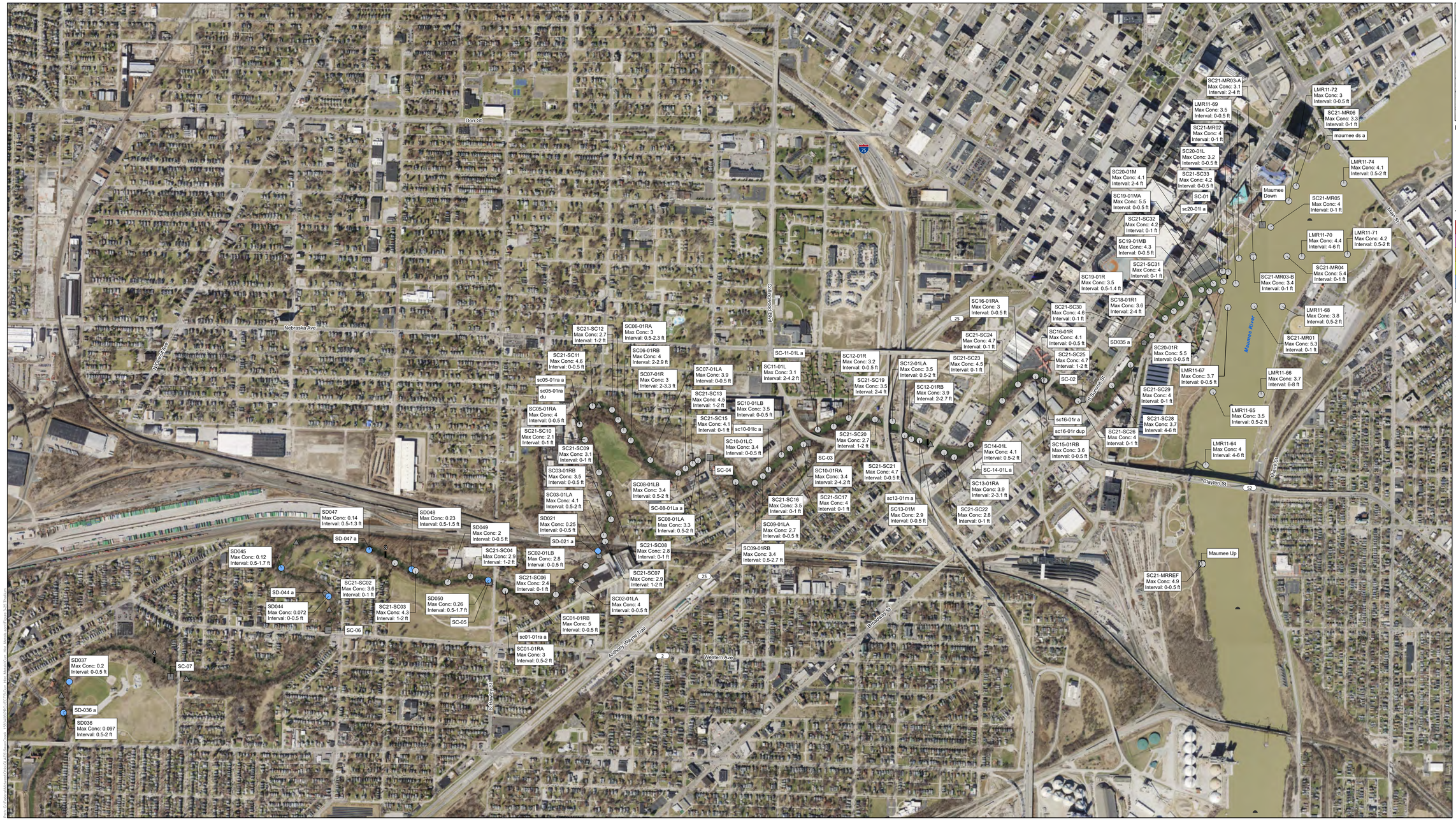
FIGURE 3-23
Selenium Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio



0 250 500 750 1,000
Feet

Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-24
Silver Concentrations (mg/kg)
in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio



Legend

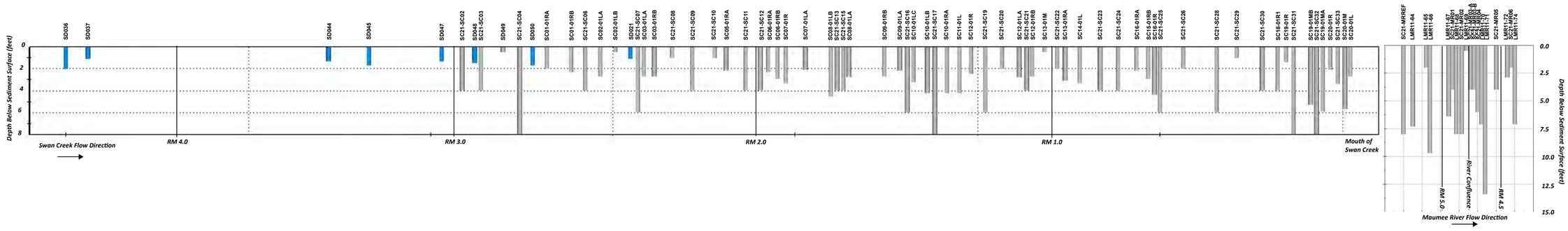
- Sample Location
- Fish Sampling Location
- CSO Location - 10/2013
- ORD's Benthic/Passive Sample Locations - Sept 2021
- River Mile Marker
- 0.5 Mile Marker

Thallium

- >10X SRV (47 mg/kg)
- >5X SRV (23.5 mg/kg) and <=10X SRV (47 mg/kg)
- >2x SRV (9.4 mg/kg) and <=5X SRV (23.5 mg/kg)
- >SRV (4.7 mg/kg) and <=2X SRV (9.4 mg/kg)
- >ND and <=SRV
- Non-Detect

- Label box indicates the maximum concentration and the depth interval in which it occurred. The sample location color indicates the concentration of the surface interval.

Profile Graphs shown separately in areas of clustered sample locations



Map Date: 5/23/2022
Basemap: ESRI 2020

FIGURE 3-25
Thallium Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

FIGURE 3-26
Vanadium Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

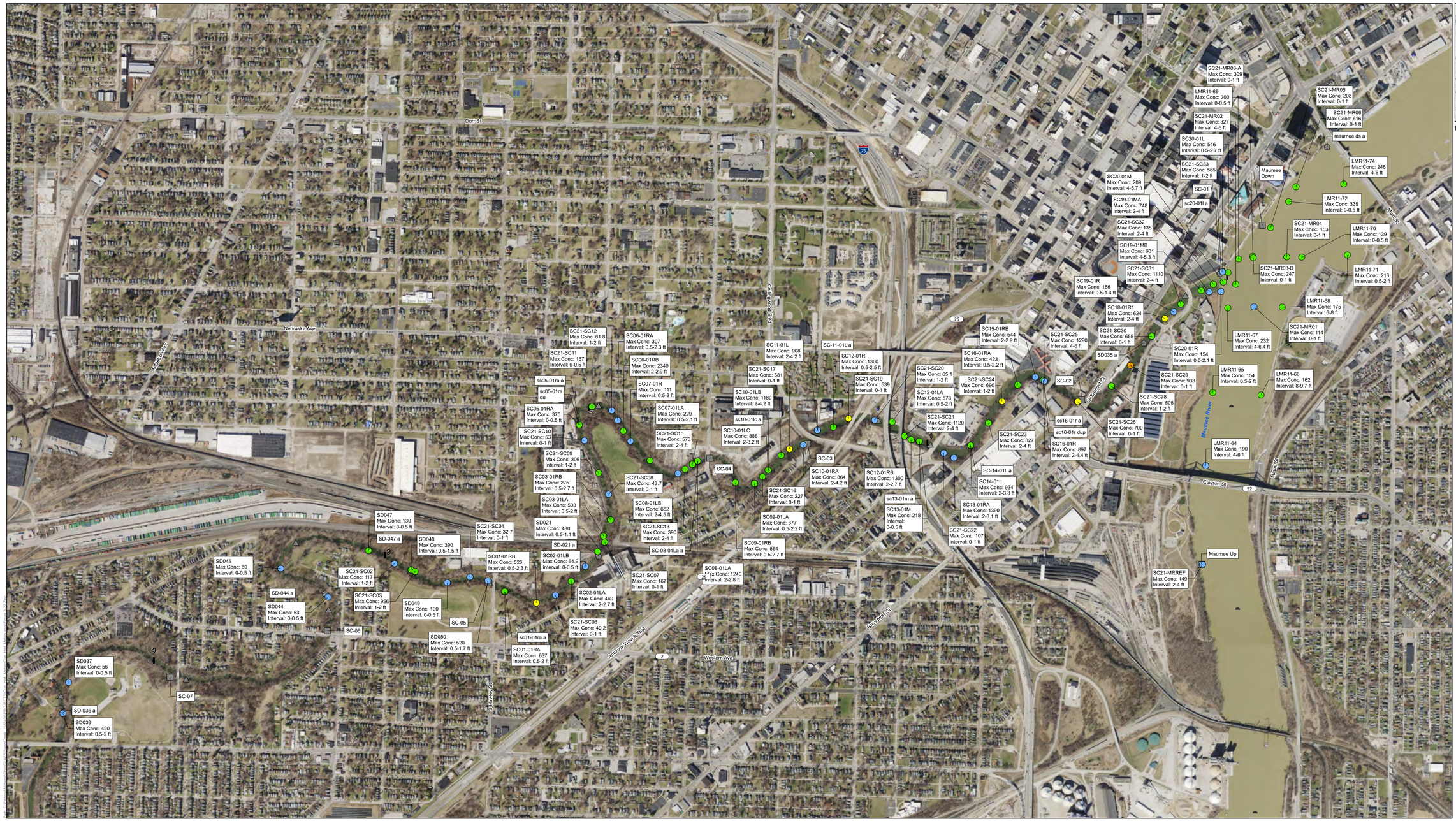


FIGURE 3-27
Zinc Concentrations (mg/kg)
in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

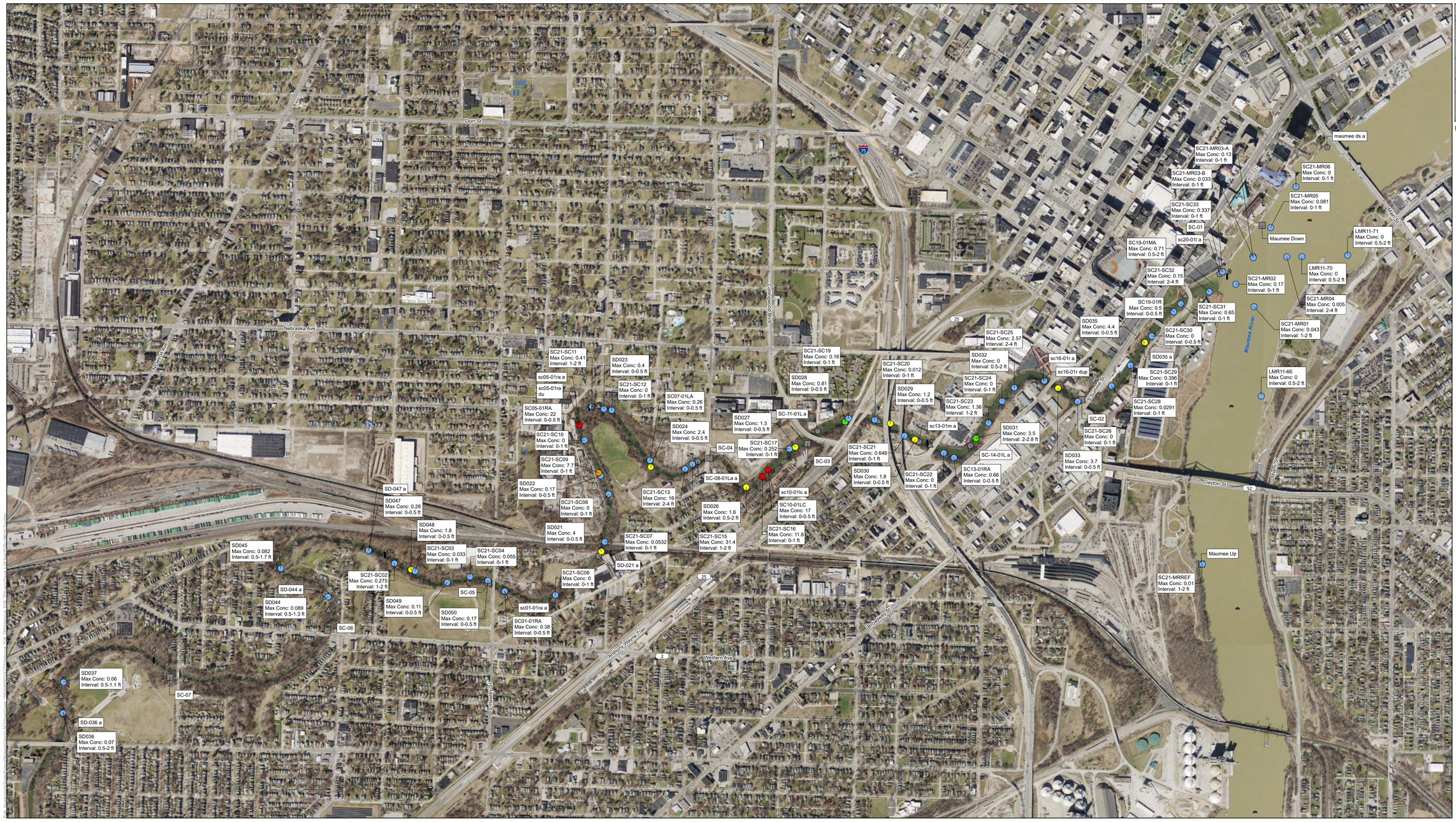
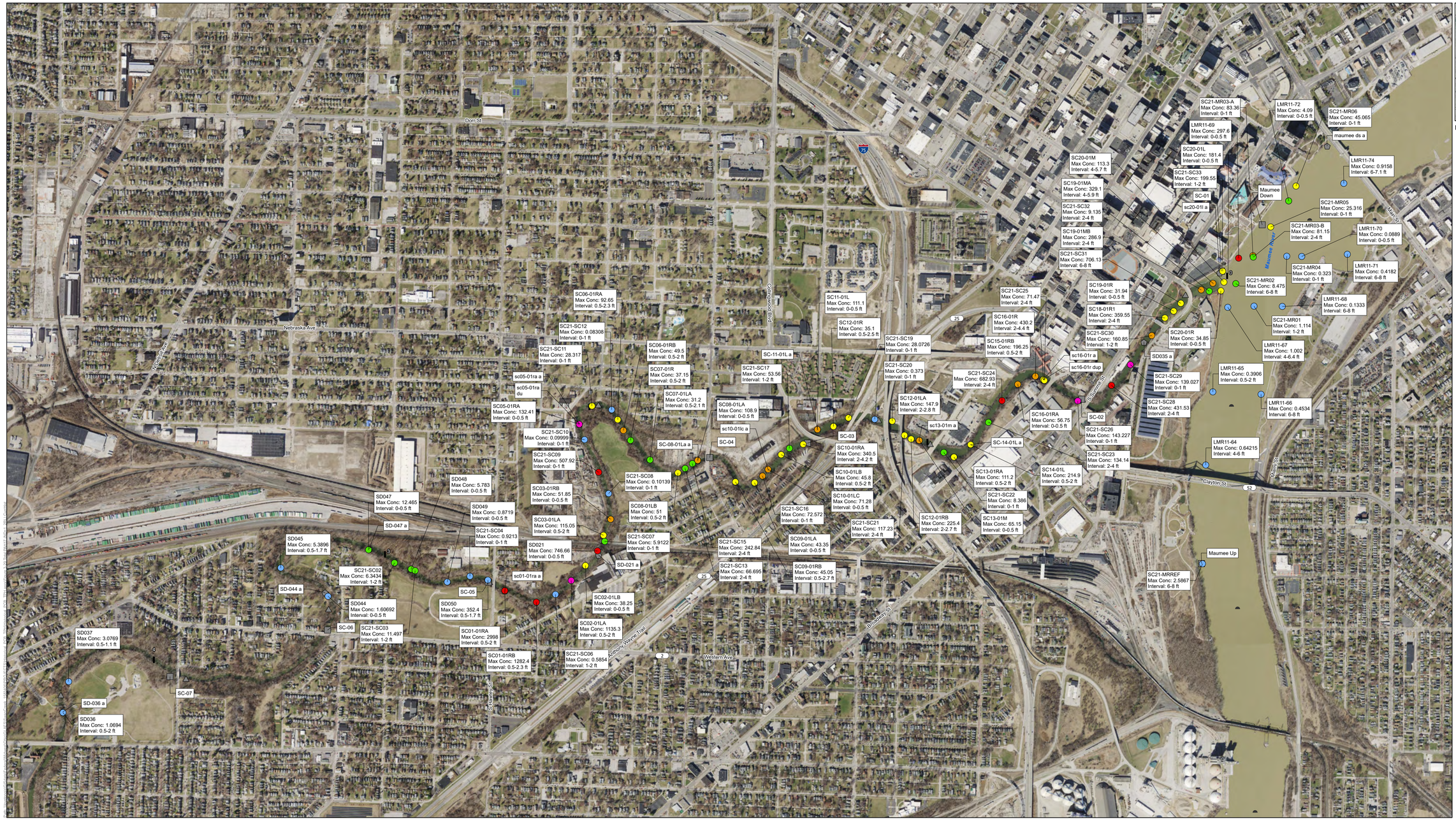


FIGURE 3-28
Total PCB Aroclor (ND=0) Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio



Legend

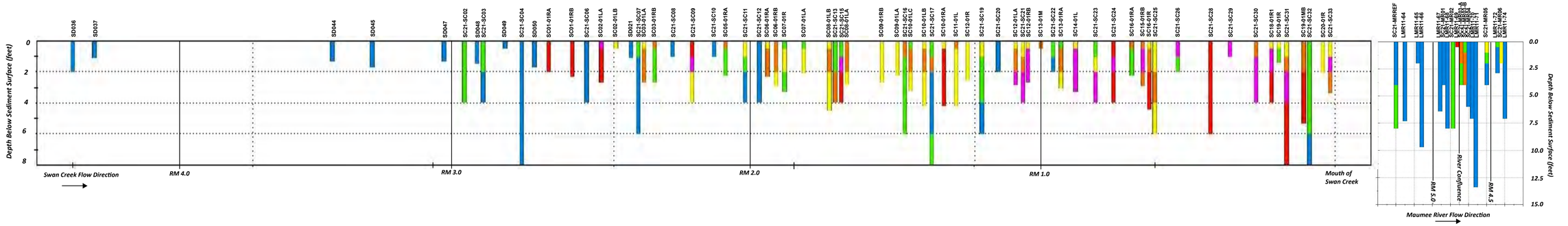
- Sample Location
- Fish Sampling Location
- CSO Location - 10/2013
- ORD's Benthic/Passive Sample Locations - Sept 2021
- River Mile Marker
- 0.5 Mile Marker

Total PAH17 ND=1/2RL

- >10x PEC (228 mg/kg)
- >5x PEC (114 mg/kg) and <= 10x PEC (228 mg/kg)
- >2x PEC (45.6 mg/kg) and <= 5x PEC (114 mg/kg)
- >PEC (22.8 mg/kg) and <= 2x PEC (45.6 mg/kg)
- >TEC (1.61 mg/kg) and <= PEC (22.8 mg/kg)
- <=TEC (1.61 mg/kg)

- Label box indicates the maximum concentration and the depth interval in which it occurred. The sample location color indicates the concentration of the surface interval.

Profile Graphs shown separately in areas of clustered sample locations.

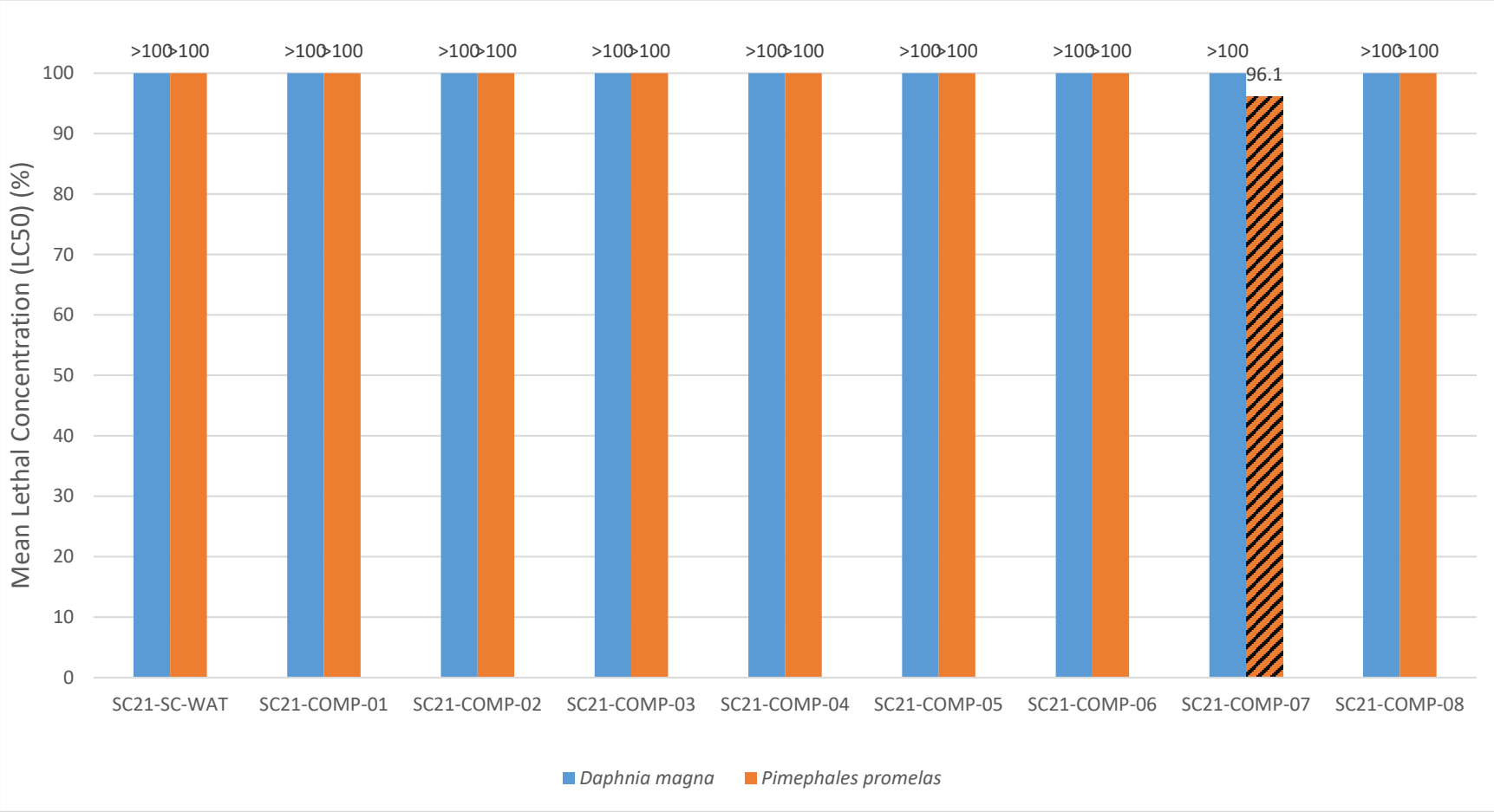


0 250 500 750 1,000
Feet

Map Date: 5/20/2022
Basemap: ESRI 2020

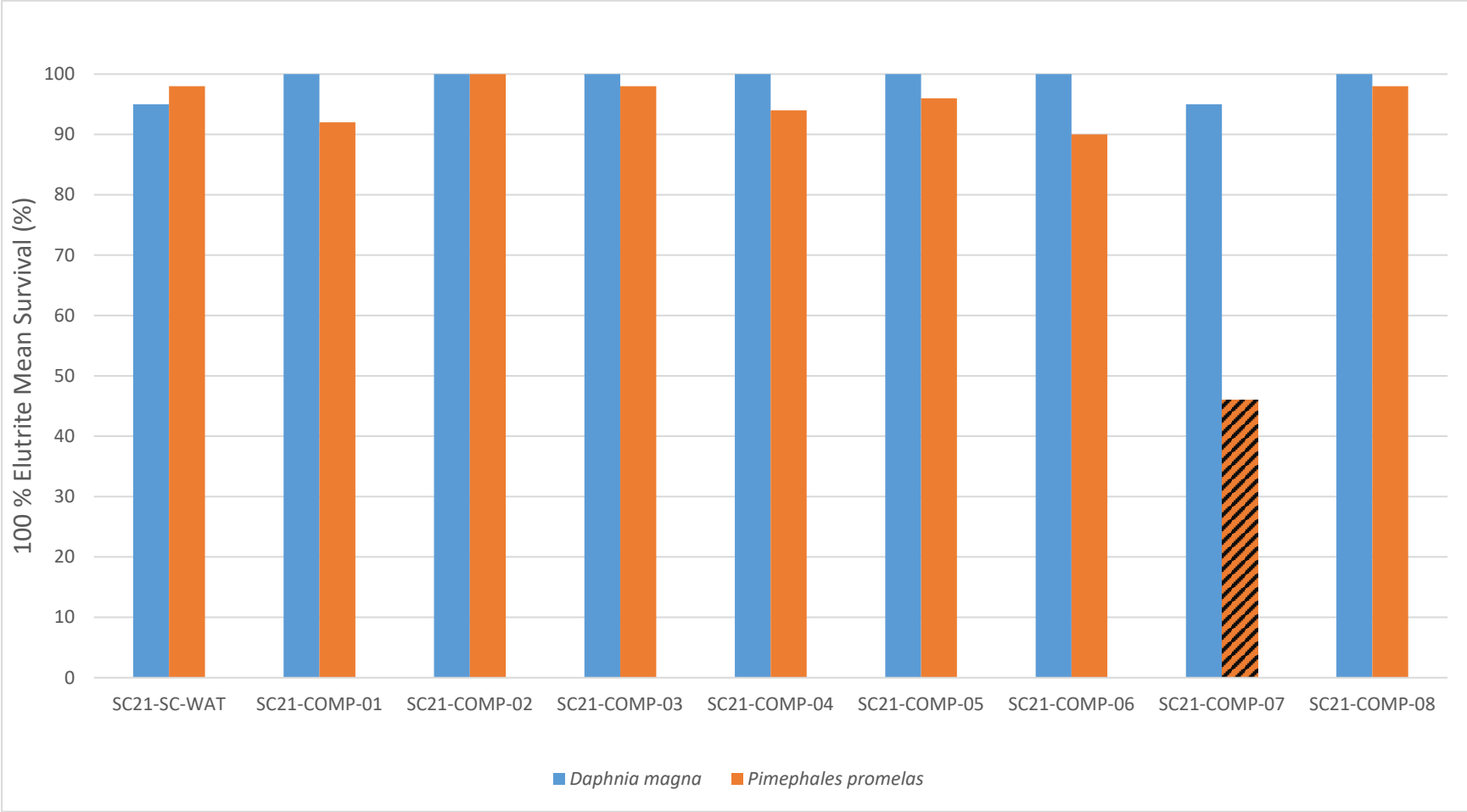
FIGURE 3-29
Total 17 PAHs (ND=1/2RL) Concentrations (mg/kg) in Swan Creek in the Maumee Area of Concern
Swan Creek, Maumee Area of Concern
Toledo, Ohio

Figure 4-1: Elutriate Toxicity Testing Mean Lethal Concentration (LC50) (%) Survival Results
Swan Creek, Maumee Area of Concern,
Toledo, Ohio



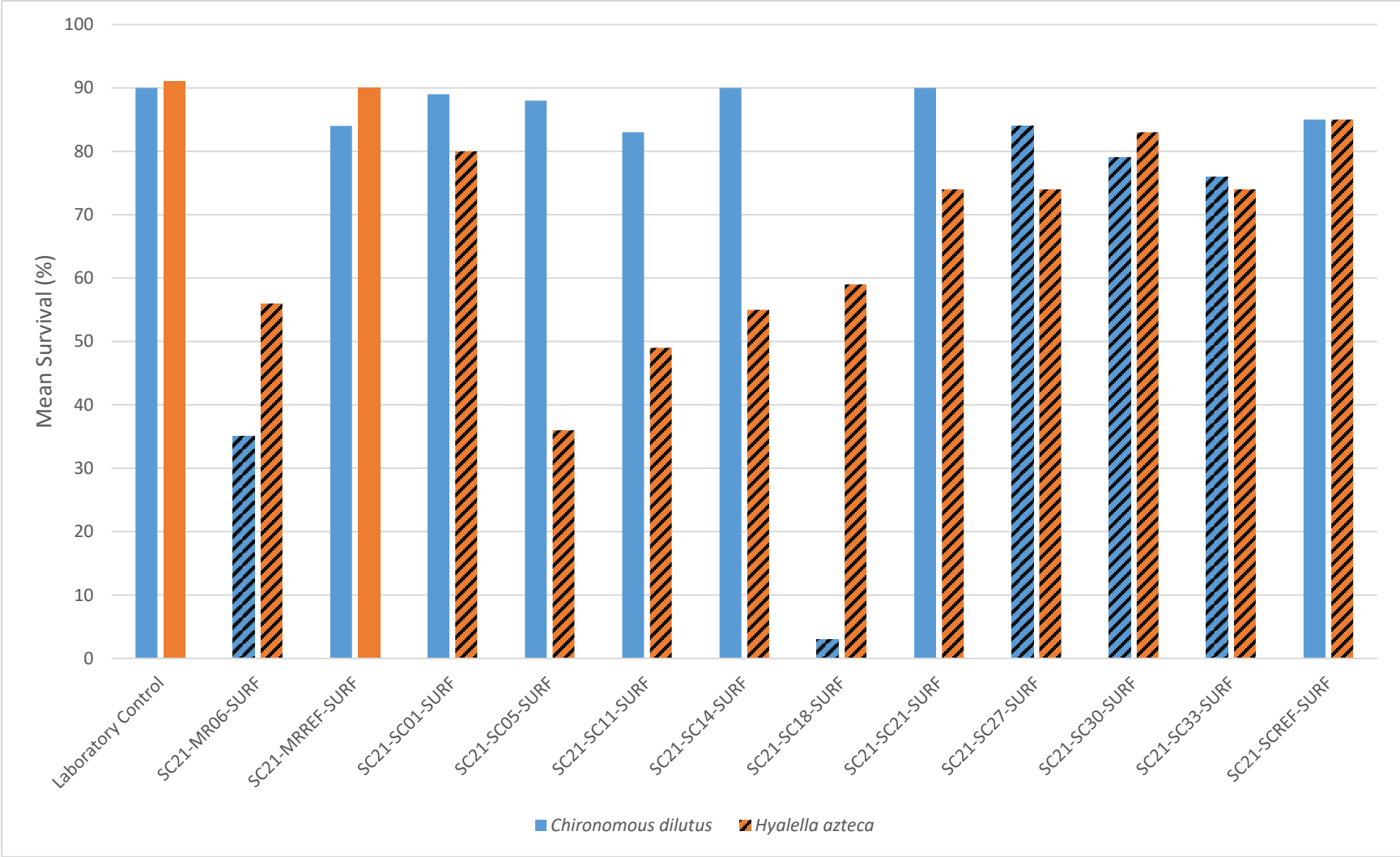
Note: Patterned cells are significantly different than at least one control or reference sample (p=0.05)

Figure 4-2: Elutriate Toxicity Testing Survival Results (100% Elutriate Mean Survival)
Swan Creek, Maumee Area of Concern,
Toledo, Ohio



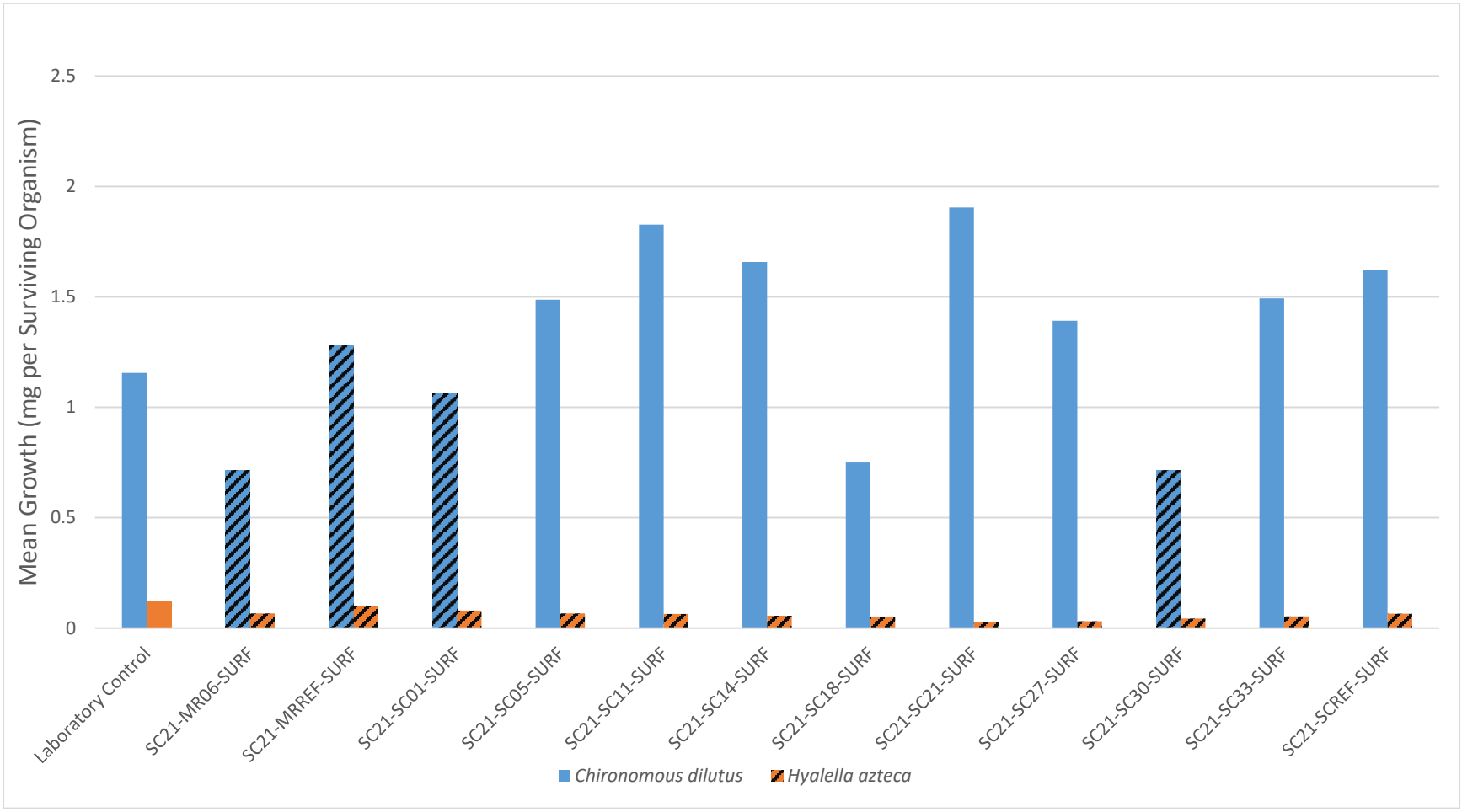
Note: Patterned cells are significantly different than at least one control or reference sample (p=0.05)

Figure 4-3: Sediment Toxicity Testing Survival Results
Swan Creek, Maumee Area of Concern,
Toledo, Ohio

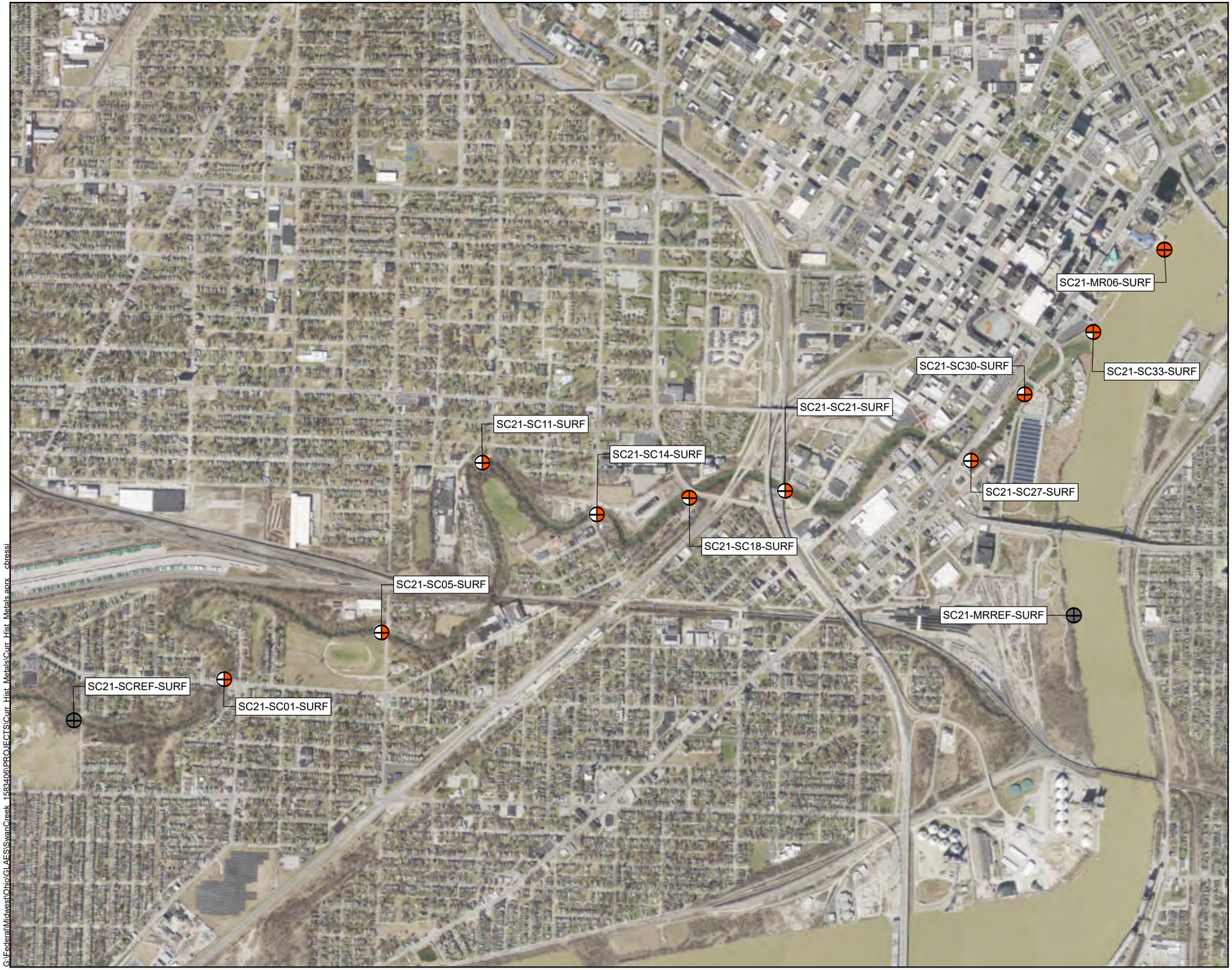


Note: Patterned cells are significantly different than at least one control or reference sample (p=0.05)

Figure 4-4: Sediment Toxicity Testing Growth Results
Swan Creek, Maumee Area of Concern,
Toledo, Ohio



Note: Patterned cells are significantly different than at least one control or reference sample (p=0.05)



VICINITY MAP

Legend

⊕ Sampling Location

1 = Survival Significance for *C. dilutus*
2 = Survival Significance for *H. azteca*
3 = Growth Significance for *C. dilutus*
4 = Growth Significance for *H. azteca*

Significance

- Significant [1] ($p \leq 0.05$)
- Not Significant ($p > 0.05$)
- Reference

Notes:
1. Toxicity results values represent statistical significance based on difference to one or more reference samples and the laboratory control.

Map Date: 7/20/2022
Source: ESRI Basemap 2018, NOAA 2018
Projection: WGS UTM Zone 17

0 100 200 300 400
Feet

Figure 4-5
Geographical Distribution of Bioassay Results for Survival and Growth
Swan Creek, Maumee Area of Concern
Toledo, Ohio

G:\Federal\Midwest\Ohio\GI_AES\SwanCreek_1583406\PROJECTS\Curr_Hist_Metals\Curr_Hist_Metals.aprx cbrassi

Pretest Tissue		
Total PCB Cogeners (ND=0)	**Unit**	**Result**
Whole Body Means	µg/kg	1.53
Lipid Normalized Means	µg/kg-%lipid	0.681

SC21-SC11			
Matrix	**Total PCB Cogeners (ND=0)**	**Units**	**Result**
Tissue	Whole Body Means	µg/kg	***462***
	Lipid Normalized Means	µg/kg-%lipid	***368***
Sediment	Ponar Surface Sample	mg/kg	0.031

SC21-SC18			
Matrix	**Total PCB Cogeners (ND=0)**	**Units**	**Result**
Tissue	Whole Body Means	µg/kg	***5,790***
	Lipid Normalized Means	µg/kg-%lipid	***2,870***
Sediment	Ponar Surface Sample	mg/kg	8.4

SC21-SC14			
Matrix	**Total PCB Cogeners (ND=0)**	**Units**	**Result**
Tissue	Whole Body Means	µg/kg	***168***
	Lipid Normalized Means	µg/kg-%lipid	***129***
Sediment	Ponar Surface Sample	mg/kg	0.170

SC21-SCREF			
Matrix	**Total PCB Cogeners (ND=0)**	**Units**	**Result**
Tissue	Whole Body Means	µg/kg	21.1
	Lipid Normalized Means	µg/kg-%lipid	19.6
Sediment	Ponar Surface Sample	mg/kg	0.406

VICINITY MAP

Legend

- Sampling Location

Tissue Concentrations

- > 10X Reference
- > 2X Reference
- > Reference
- ≤ Reference
- < Pre-Test/Control Sample
- Not Tested

Notes:
1. Bolded and italicized results statistically exceed pre-test tissue concentrations.
2. Bolded, italicized, and gray shaded results statistically exceed pre-test and reference area tissue concentrations.
3. Tissue Concentrations based on wet weight.

µg/kg = micrograms per kilogram
n = 5 Tissue Reps Used for the Mean

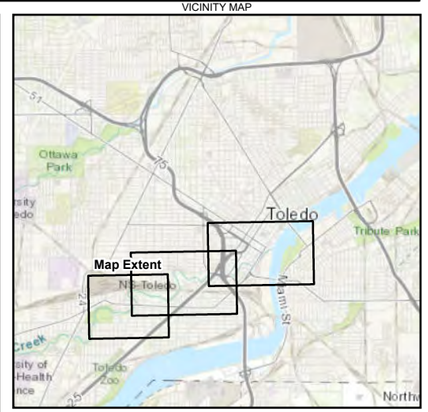
Map Date: 7/20/2022
Source: ESRI Basemap 2018, NOAA 2018
Projection: NAD 1983 State Plane Ohio North US Foot

0 100 200 300 400
Feet

G:\Federal\Midwest\Ohio\GLAES\SwanCreek_158340\6\PROJECTS\Curr_Hist_Metals\Curr_Hist_Metals.aprx cbressl

Figure 4-6
Mean Total Polychlorinated Biphenyl (PCB) Congener Concentrations (µg/kg) (ND=0) in *Lumbriculus variegatus* Tissues
Swan Creek, Maumee Area of Concern
Toledo, Ohio

VICINITY MAP



Legend

Exceedance

- No Exceedance
- TEC, Ohio SRV, or Region 4 Exceedance
- PEC Exceedance
- No Sample

Notes:
Top tier symbol indicates surface sample exceedance (0-1 ft).
Lower tier sy.mbol indicates subsurface sample exceedance.
Compounds listed in label exceed either the TEC, Ohio SRV, or Region 4 Criteria (yellow), or the PEC (red).

Map Date: 5/16/2022
Source: ESRI Basemap 2018, NOAA 2018
Projection: NAD 1983 State Plane Ohio North US Foot

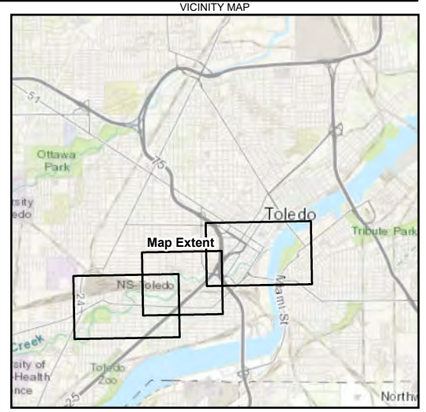
0 100 200 300 400
Feet

Figure 5-1a
Summary of Exceedances for Surface and Subsurface Constituents- West
Swan Creek, Maumee Area of Concern
Toledo, Ohio

\\lovetongis\GIS\data\Federal\Midwest\Ohio\GLAFES\SwanCreek_1583406\PROJECTS\Curr_Surface\Sub\Surface\Figure 5-1a - Surface Subsurface_WEST

SC21-SC11
COPPER, PAH17
COPPER, LEAD, MERCURY, PAH17, PCBs
SC21-SC12
BERYLLIUM, COBALT, NICKEL, VANADIUM
NICKEL
SC21-SC15
COPPER, LEAD
ARSENIC, CADMIUM, COPPER, LEAD, MERCURY, PAH17, PCBs, ZINC
SC21-SC10
SC21-SC09
PAH17, PCBs
COPPER, LEAD, PAH17, PCBs
SC21-SC08
SC21-SC13
COPPER, PAH17, PCBs
COPPER, LEAD, PAH17, PCBs
SC21-SC14
COPPER, LEAD, PCBs
SC21-SC18
LEAD, PCBs
SC21-SC16
LEAD, PAH17, PCBs
PCBs
SC21-SC19
CHROMIUM, COPPER, LEAD, NICKEL, PAH17, ZINC
LEAD
SC21-SC20
ARSENIC, CALCIUM
COBALT
SC21-SC17
COPPER, LEAD, ZINC
CHROMIUM, LEAD, PAH17
SC21-SC02
PAH17
COPPER, PAH17, PCBs
SC21-SC03
CADMIUM, COPPER, DRO, LEAD, PAH17
ARSENIC, COPPER, LEAD, MERCURY, ZINC
SC21-SC04
COPPER
SC21-SC05
PCBs
SC21-SC07
COPPER, LEAD
COPPER
SC21-SC06

VICINITY MAP



Legend

Exceedance

- No Exceedance
- TEC, Ohio SRV, or Region 4 Exceedance
- PEC Exceedance
- No Sample

Notes:
Top tier symbol indicates surface sample exceedance (0-1 ft).
Lower tier sy.mbol indicates subsurface sample exceedance.
Compounds listed in label exceed either the TEC, Ohio SRV, or Region 4 Criteria (yellow), or the PEC (red).

Map Date: 5/16/2022
Source: ESRI Basemap 2018, NOAA 2018
Projection: NAD 1983 State Plane Ohio North US Foot

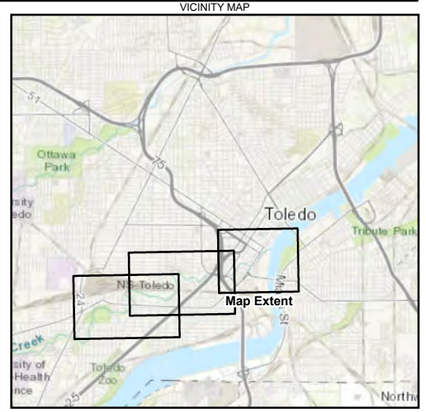
0 100 200 300 400
Feet

Figure 5-1b
Summary of Exceedances for Surface and Subsurface Constituents- Central
Swan Creek, Maumee Area of Concern
Toledo, Ohio

\\toledonas\GIS\data\Federal\Midwest\Ohio\GLAES\SwanCreek_1583406\PROJECTS\Curr_Surface\SubSurface\Figure 6-1b - Surface Subsurface- CENTRAL

SC21-MR05
LEAD, MERCURY, PAH17
ARSENIC, COPPER, LEAD, MERCURY, SILVER, PAH17
SC21-MR06
ARSENIC, LEAD, MERCURY, PAH17, ZINC
LEAD, MERCURY, PAH17
SC21-MR03-A
LEAD, MERCURY, PAH17
SC21-MR03-B
MERCURY, PAH17
LEAD
SC21-MR04
BERYLLIUM, COBALT, VANADIUM
ARSENIC, BERYLLIUM, CALCIUM, COBALT, NICKEL, VANADIUM
SC21-SC33
PAH17
SC21-SC31
LEAD, PAH17
ARSENIC, COPPER, LEAD, MERCURY, PAH17, ZINC
ARSENIC, COPPER, LEAD, MERCURY, PAH17, ZINC
SC21-SC29
CADMIUM, CHROMIUM, COPPER, LEAD, MERCURY, NICKEL, PAH17, ZINC
SC21-SC32
PAH17, PCBs
BERYLLIUM, MERCURY, PAH17, PCBs
SC21-MR02
ARSENIC, CADMIUM, COPPER, LEAD, MERCURY, SILVER, PAH17, PCBs
CADMIUM, CHROMIUM, LEAD
SC21-SC30
ARSENIC, COPPER, LEAD, MERCURY, PAH17, ZINC
ARSENIC, LEAD, MERCURY, PAH17, ZINC
SC21-MR01
BERYLLIUM, VANADIUM
SILVER
SC21-SC25
PAH17
CADMIUM, CHROMIUM, COPPER, LEAD, MERCURY, NICKEL, PAH17, PCBs, ZINC
SC21-SC24
ARSENIC, COPPER, LEAD, MERCURY, NICKEL, PAH17, ZINC
SC21-SC21
COPPER, LEAD, PAH17, ZINC
ARSENIC, CADMIUM, CHROMIUM, COPPER, LEAD, MERCURY, NICKEL, PAH17, ZINC
ARSENIC, LEAD, MERCURY, PAH17, ZINC
SC21-SC27
PCBs
SC21-SC28
LEAD, PAH17
ARSENIC, LEAD, MERCURY, PAH17, ZINC
SC21-SC26
ARSENIC, LEAD, MERCURY, PAH17, ZINC
ARSENIC, DRO, MERCURY, PAH17
SC21-SC23
COPPER, LEAD
CADMIUM, COPPER, LEAD, PAH17, PCBs, ZINC
SC21-SC22
LEAD, MERCURY, PAH17
SC21-MRREF
BERYLLIUM, VANADIUM
ARSENIC, BERYLLIUM, CADMIUM, LEAD, MERCURY, PAH17, VANADIUM

VICINITY MAP



Legend

Exceedance

- No Exceedance
- TEC, Ohio SRV, or Region 4 Exceedance
- PEC Exceedance
- No Sample

Notes:
Top tier symbol indicates surface sample exceedance (0-1 ft).
Lower tier sy.mbol indicates subsurface sample exceedance.
Compounds listed in label exceed either the TEC, Ohio SRV, or Region 4 Criteria (yellow), or the PEC (red).

Map Date: 5/16/2022
Source: ESRI Basemap 2018, NOAA 2018
Projection: NAD 1983 State Plane Ohio North US Foot

0 100 200 300 400
Feet

Figure 5-1c
Summary of Exceedances for Surface and Subsurface Constituents- East
Swan Creek, Maumee Area of Concern
Toledo, Ohio

\\lovetongis\GISdata\Federal\Midwest\Ohio\GLAES\SwanCreek_1583406\PROJECTS\Curr_SurfaceSubSurface\Figure 6-1c - Surface Subsurface- EAST

Tables

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Table 2-1. Core Sample Coordinates,
Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

Location ID	Date Collected	Time Collected (local)	Target Coordinates		Actual Coordinates		Distance from Target Coordinates (feet)
			Y	X	Y	X	
			NAD 1983 StatePlane Ohio North FIPS 3401 Feet		NAD83 State Plane Ohio North (US Feet)		
SC21-SC02	11/5/2021	1215	719869.35	1675433.89	719809.19	1675482.76	78
SC21-SC03	11/7/2021	1220	719582.72	1675906.11	719714.34	1675748.99	205
SC21-SC04	11/5/2021	1455	719647.71	1676448.08	719655.78	1676450.93	9
SC21-SC06	11/7/2021	1130	719444.29	1677549.25	719442.16	1677548.22	2
SC21-SC07	11/7/2021	1340	720008.97	1678125.09	720131.49	1678165.81	129
SC21-SC08	11/2/2021	1040	720753.05	1678204.00	720744.11	1678204.84	9
SC21-SC09	11/8/2021	955	721083.01	1678037.61	721014.10	1678072.25	77
SC21-SC10	11/4/2021	1140	721424.63	1677871.02	721428.00	1677885.16	15
SC21-SC11*	11/8/21	1120	721731.56	1677804.10	721860.22	1677972.68	212
SC21-SC12	11/8/21	1155	721815.12	1678212.38	721816.97	1678225.39	13
SC21-SC13	11/8/21	1255	721024.67	1679086.33	721082.56	1679177.17	108
SC21-SC15	11/6/21	1610	721207.51	1679641.39	721145.65	1679268.86	378
SC21-SC16	11/5/21	1635	720975.82	1680167.30	721002.86	1680168.36	27
SC21-SC17	11/4/21	1310	721362.95	1680504.24	721362.85	1680506.72	2
SC21-SC19	11/4/21	1035	721767.25	1681255.06	721765.85	1681254.50	2
SC21-SC20	11/4/21	1220	721760.85	1681555.92	721753.27	1681590.08	35
SC21-SC21*	11/4/21	1130	721592.75	1681985.66	721555.62	1681974.31	39
SC21-SC22	11/3/21	1615	721356.59	1682479.88	721344.64	1682480.60	12
SC21-SC23	11/3/21	1540	721739.55	1683004.59	721739.82	1683045.23	41
SC21-SC24	11/3/21	1355	722026.23	1683201.04	722020.47	1683213.16	13
SC21-SC25	11/3/21	1330	722298.29	1683736.86	722289.68	1683750.17	16
SC21-SC26	11/2/21	1215	722072.17	1684155.06	722034.14	1684181.61	46
SC21-SC28	11/3/21	1130	722132.66	1684580.03	722239.91	1684609.38	111
SC21-SC29	11/3/21	950	722523.45	1684835.49	722508.77	1684846.40	18
SC21-SC30*	11/3/21	915	722903.39	1685098.23	722886.33	1685112.31	22
SC21-SC31	11/2/21	1610	723309.00	1685479.46	723305.64	1685477.31	4
SC21-SC32	11/2/21	1520	723472.93	1685838.52	723466.94	1685837.30	6
SC21-SC33*	11/3/21	850	723725.49	1685989.72	723725.98	1686004.48	15
SC21-MRREF*	11/6/21	1355	719981.58	1685800.46	719979.62	1685812.69	12
SC21-MR01	11/6/21	1425	723283.48	1686408.97	723285.66	1686413.55	5
SC21-MR02	11/4/21	1700	723575.22	1686172.42	723569.90	1686175.97	6
SC21-MR03-A	11/4/21	1610	723941.78	1686384.05	723930.96	1686388.62	12
SC21-MR03-B	11/6/21	1325	723941.78	1686384.05	723912.86	1686393.05	30
SC21-MR04	11/6/21	1500	723941.78	1686807.32	723931.09	1686821.05	17
SC21-MR05	11/4/21	1545	724308.34	1686595.69	724302.04	1686609.01	15
SC21-MR06*	11/4/21	1515	724834.55	1686916.25	724830.78	1686923.44	8

Note:
NAD83 = North American Datum of 1983
* Co-located Ponar and core sample

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Table 2-2. Surface Sample Coordinates and Description,
Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

Location ID	Date Sampled	Time Sampled (local)	Sediment Surface Elevation NAVD88 (ft)	Actual Coordinates		Surface Sample Description
				Y	X	
				NAD83 State Plane Ohio North (US Feet)		
SC21-SCREF	11/9/21	1000	570.31	718366.67	1672643.90	Mostly sandy with leaf litter and woody debris. Some larger rocks and clay.
SC21-SC01	11/9/21	1030	571.35	718945.11	1674617.56	Darker brown small gravel, some clam shells and small-med sized rocks. Some sand.
SC21-SC05	11/8/21	1130	570.65	719598.52	1676681.20	Darker silty clay with leaf litter and woody debris. Shifted to other side of boat for additional sample volume, encountered sandy gravel. Sheen and odor observed.
SC21-SC11	11/9/21	1220	566.16	721860.86	1677958.40	Silty sand mixed with leaf litter and woody debris. Sheen on surface.
SC21-SC14	11/8/21	1300	569.81	721206.55	1679495.64	Brown silty clay.
SC21-SC18	11/9/21	1345	569.8	721442.82	1680711.77	Dark black clay with silt. Some rocks and woody debris. Odor and sheen.
SC21-SC21	11/9/21	1420	568.49	721550.77	1681975.34	Brown silt w/some clay. Leaf litter and woody debris.
SC21-SC27	11/9/21	1500	563.31	721996.24	1684420.73	Brown silt with clay, some woody debris.
SC21-SC30	11/9/21	1525	570.08	722966.07	1685104.14	Brown silty clay, some black clay. Odor and sheen on water surface.
SC21-SC33	11/8/21	1600	565.07	723730.72	1686002.09	Brown silt with clay, leaf litter and woody debris.
SC21-MRREF	11/8/21	1535	565.62	719970.27	1685802.53	Brown clay with some silt. Some leaves with woody debris.
SC21-MR06	11/8/21	1445	554.43	724831.20	1686928.53	Dark black clay. Some woody debris. Slight sheen on water.

Note:
NAD83 = North American Datum of 1983

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**Table 2-3. Surface Water Sample Coordinates,
Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio
(November 2021)**

Location ID	Date Sampled	Time Sampled (local)	Actual Coordinates	
			Y	X
			NAD83 State Plane Ohio North (US Feet)	
SC21-CDF-WAT	11/10/21	1110	740812.15	1713415.29
SC21-MR-WAT	11/10/21	1230	727935.17	1693118.95
SC21-SC-WAT*	11/10/21	1355	721167.16	1680349.97

Note:
NAD83 = North American Datum of 1983
* Water collected from this location for elutriate preparation

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Table 2-4. Core Data,
Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

Location ID	Sample Processing Date	Processing Time (Local)	Depth of Water NAVD88 (feet)	Sediment Surface Elevation NAVD88 (feet)	Surface (Ponar) Sample (Y/N)	Sediment Core				
						Penetration Depth (feet)	Sediment Recovery (feet)	Percent Recovery	Collection Method	Collected to Refusal (Y/N)
SC21-SC02	11/9/2021	14:10	1.5	571.8	N	5.7	4.2	74	Vibracore	Y
SC21-SC03	11/8/2021	8:50	2.2	571.0	N	5.0	4.6	92	Vibracore	Y
SC21-SC04	11/8/2021	10:10	4.8	568.2	N	8.0	7.4	93	Vibracore	N
SC21-SC06	11/8/2021	11:50	6.0	567.1	N	4.4	4.6	100	Vibracore	Y
SC21-SC07	11/10/2021	9:30	6.7	566.3	N	6.0	5.9	99	Vibracore	Y
SC21-SC08	11/3/2021	16:15	6.7	2.9	N	2.0	1.7	85	Vibracore	Y
SC21-SC09	11/9/2021	16:10	4.3	568.7	N	6.0	4.3	72	Vibracore	Y
SC21-SC10	11/5/2021	11:40	7.3	563.8	N	1.2	1.7	100	Vibracore	Y
SC21-SC11	11/10/2021	10:45	3.3	669.9	Y	5.0	3.7	74	Vibracore	Y
SC21-SC12	11/11/2021	8:00	7.9	565.3	N	4.0	3.4	85	Vibracore	Y
SC21-SC13	11/9/2021	11:50	1.6	571.4	N	6.0	3.9	65	Vibracore	Y
SC21-SC15	11/7/2021	11:40	3.3	569.7	N	6.0	4.2	70	Vibracore	Y
SC21-SC16	11/7/2021	13:45	8.7	564.3	N	8.0	6.4	84	Vibracore	N
SC21-SC17	11/10/2021	13:20	7.8	565.1	N	8.0	7.4	93	Vibracore	N
SC21-SC19	11/5/2021	13:45	9.2	563.8	N	7.2	5.2	72	Vibracore	Y
SC21-SC20	11/5/2021	10:30	18.5	554.5	N	1.9	2.1	100	Vibracore	Y
SC21-SC21	11/5/2021	8:45	5.0	568.0	Y	5.4	4.3	80	Vibracore	Y
SC21-SC22	11/4/2021	10:35	10.0	563.0	N	3.6	2.9	81	Vibracore	Y
SC21-SC23	11/5/2021	15:50	5.0	568.0	N	4.7	3.7	79	Vibracore	Y
SC21-SC24	11/5/2021	14:50	9.5	563.7	N	6.5	4.3	66	Vibracore	Y
SC21-SC25	11/4/2021	8:25	1.1	572.2	N	8.0	5.6	70	Vibracore	N
SC21-SC26	11/3/2021	15:10	7.6	565.7	N	3.1	2.7	87	Vibracore	Y
SC21-SC28	11/4/2021	14:15	6.4	566.8	N	5.5	5.3	96	Vibracore	Y
SC21-SC29	11/3/2021	14:25	12.6	560.6	N	2.8	1.7	60	Vibracore	Y
SC21-SC30	11/4/2021	12:00	10.1	562.9	Y	4.1	3.4	83	Vibracore	Y
SC21-SC31	11/2/2021	9:20	7.9	564.6	N	8.0	7.7	96	Vibracore	N
SC21-SC32	11/2/2021	9:20	3.0	569.3	N	8.0	7.8	98	Vibracore	N
SC21-SC33	11/4/2021	16:20	10.5	562.5	Y	4.2	3.3	79	Vibracore	Y

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Table 2-4. Core Data,
Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

Location ID	Sample Processing Date	Processing Time (Local)	Depth of Water NAVD88 (feet)	Sediment Surface Elevation NAVD88 (feet)	Surface (Ponar) Sample (Y/N)	Sediment Core				
						Penetration Depth (feet)	Sediment Recovery (feet)	Percent Recovery	Collection Method	Collected to Refusal (Y/N)
SC21-MRREF	11/9/2021	9:30	10.0	563.3	Y	8.0	7.1	89	Vibracore	N
SC21-MR01	11/7/2021	8:45	31.5	541.8	N	4.1	3.4	83	Vibracore	Y
SC21-MR02	11/7/2021	9:50	19.6	553.8	N	8.0	7.6	95	Vibracore	N
SC21-MR03-A	11/8/2021	14:15	22.3	551.1	N	7.5	4.9	65	Vibracore	Y
SC21-MR03-B	11/8/2021	15:45	23.7	549.6	N	6.0	4.3	72	Vibracore	Y
SC21-MR04	11/10/2021	8:20	29.4	543.8	N	8.0	5.6	70	Vibracore	N
SC21-MR05	11/5/2021	16:45	22.0	551.3	N	5.2	4.1	79	Vibracore	Y
SC21-MR06	11/7/2021	15:35	20.2	553.1	Y	2.2	2.2	100	Vibracore	Y

Note:
NAVD88 = North American Vertical Datum of 1988.

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Table 2-5. In Situ Water Quality Measurements,
Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

Sampling Location	Date, Local Time	Water Depth (ft)	Water Depth (ft)	Water Temperature (°C)	Turbidity (NTU)	pH	Dissolved Oxygen (mg/L)
SWAN CREEK							
SC21-CDF-WAT	11/10/2021, 1110	4.2	SURF	15.7	34.32	7.73	9.63
			BOT	13.9	38.72	7.82	9.91
SC21-MR-WAT	11/10/2021, 1230	8.3	SURF	9.5	38.06	7.77	10.65
			MID	9.5	30.36	7.79	10.57
			BOT	9.5	30.75	7.85	10.56
SC21-SC-WAT	11/10/2021, 1355	7.9	SURF	9.8	2.67	7.79	10.4
			MID	9.8	2.48	7.8	10.43
			BOT	9.8	2.63	7.83	10.57

Notes:
°C = Degrees Celsius
ft = Feet
mg/L = Milligram(s) per liter
NTU = Nephelometric Turbidity Unit
ppt = Part per thousand

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Table 2-6a. Actual Analytical Sampling Program - Core Sediment Samples,
Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

				Analytical Group and Method											
Sampling Unit	Sample Location	Sample Type	Sample Depth Interval (feet)	TPH (DRO/ORO) SW846 8015D	TAL Metals[a] EPA CLP ISM02.4	PCB Aroclors EPA CLP SOM02.4	Moisture Content ASTM D2216	TOC Lloyd Kahn	PAHs (34)[b]	PAHs (17)[c] EPA CLP SOM02.4/SV SIM	PCB Congeners EPA 1668A	Oil and Grease SW846 9071B	Grain Size with Hydrometer ASTM D422	SEM/AVS (Cd, Cu, Pb, Ni, Zn) EPA 821-R-91-100, SW846 6010C/9030
	Swan Creek Sediment Samples													
	SC21-SCREF	Ponar	SURF	1	1	1	1	1	1	0	1	1	1	1
	SC21-SC01	Ponar	SURF	1	1	0	1	1	1	0	0	1	1	1
1	SC21-SC02	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
2	SC21-SC03	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC04	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			4.0-6.0	1	1	1	1	1	0	1	0	1	1	0
			4.0-6.0FD	1	1	1	1	1	0	1	0	1	1	0
			6.0-8.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC05	Ponar	SURF	1	1	1	1	1	1	0	0	1	1	1
3	SC21-SC06	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC07	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0FD	1	1	1	1	1	0	1	0	1	1	0
			4.0-6.0	1	1	1	1	1	0	1	0	1	1	0
4	SC21-SC08	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
	SC21-SC09	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC10	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
	SC21-SC11	Ponar	SURF	1	1	1	1	1	1	0	1	1	1	1
		Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			0.0-1.0FD	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC12	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			1.0-2.0MS/MSD	1	1	1	0	1	0	1	0	1	0	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC13	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0MS/MSD	1	1	1	0	1	0	1	0	1	0	0
5	SC21-SC14	Ponar	SURF	1	1	1	1	1	1	0	1	1	1	1
	SC21-SC15	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
6	SC21-SC16	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			4.0-6.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC17	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0MS/MSD	1	1	1	0	1	0	1	0	1	0	0
			4.0-6.0	1	1	1	1	1	0	1	0	1	1	0
			6.0-8.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC18	Ponar	SURF	1	1	1	1	1	1	0	1	1	1	1
			SURFFD	0	0	0	0	0	0	0	1	0	0	0
			SURFMS/MSD	0	0	0	0	0	0	0	1	0	0	0
	SC21-SC19	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	0	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			4.0-6.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC20	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC21	Ponar	SURF	1	1	1	1	1	1	0	0	1	1	1
		Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0MS/MSD	1	1	1	0	1	0	1	0	1	0	0
	SC21-SC22	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
7	SC21-SC23	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC24	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC25	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0FD	1	1	1	1	1	0	1	0	1	1	0
			4.0-6.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC26	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC27	Ponar	SURF	1	1	1	1	1	1	0	0	1	1	1

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Table 2-6a. Actual Analytical Sampling Program - Core Sediment Samples,
Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

				Analytical Group and Method											
Sampling Unit	Sample Location	Sample Type	Sample Depth Interval (feet)	TPH (DRO/ORO) SW846 8015D	TAL Metals[a] EPA CLP ISM02.4	PCB Aroclors EPA CLP SOM02.4	Moisture Content ASTM D2216	TOC Lloyd Kahn	PAHs (34)[b]	PAHs (17)[c] EPA CLP SOM02.4/SV SIM	PCB Congeners EPA 1668A	Oil and Grease SW846 9071B	Grain Size with Hydrometer ASTM D422	SEM/AVS (Cd, Cu, Pb, Ni, Zn) EPA 821-R-91-100, SW846 6010C/9030
8	SC21-SC28	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			0.0-1.0FD	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0MS/MSD	1	1	1	0	1	0	1	0	1	0	0
			4.0-6.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC29	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
	SC21-SC30	Ponar	SURF	1	1	1	1	1	1	0	0	1	1	1
		Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC31	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			4.0-6.0	1	1	1	1	1	0	1	0	1	1	0
			6.0-8.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC32	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			4.0-6.0	1	1	1	1	1	0	1	0	1	1	0
			6.0-8.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-SC33	Ponar	SURF	1	1	0	1	1	1	0	0	1	1	1
		Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
	Maumee River Sediment Samples													
	SC21-MRREF-SURF	Ponar	SURF	1	1	0	1	1	1	0	0	1	1	1
	SC21-MRREF	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			4.0-6.0	1	1	1	1	1	0	1	0	1	1	0
			6.0-8.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-MR01	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-MR02	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			4.0-6.0	1	1	1	1	1	0	1	0	1	1	0
			6.0-8.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-MR03-A	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			1.0-2.0MS/MSD	1	1	1	0	1	0	1	0	1	0	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-MR03-B	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			1.0-2.0FD	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-MR04	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
			4.0-6.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-MR05	Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
			2.0-4.0	1	1	1	1	1	0	1	0	1	1	0
	SC21-MR06	Ponar	SURF	1	1	0	1	1	1	0	0	1	1	1
			SURFFD	1	1	0	1	1	1	0	0	1	1	1
			SURFMS/MSD	1	1	0	0	1	1	0	0	1	0	0
		Core	0.0-1.0	1	1	1	1	1	0	1	0	1	1	1
			1.0-2.0	1	1	1	1	1	0	1	0	1	1	0
Total Field Samples				142	142	136	135	142	14	128	6	142	134	51
Field Duplicates				7	7	6	7	7	1	6	1	7	7	3
MS/MSD				7	7	6	0	7	1	6	1	7	0	0
Total Parent Samples				128	128	124	128	128	12	116	4	128	127	48

Notes:

(a) Total metals include: aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc.

(b) 34 PAHs include: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(e)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, perylene, phenanthrene, pyrene, C1 naphthalenes, C2 naphthalenes, C3 naphthalenes, C1 fluorenes, C4 naphthalenes, C1 phenanthrenes, C2 fluorenes, C2 phenanthrenes, C3 fluorenes, C1 fluoranthenes, C3 phenanthrenes, C4 phenanthrenes, C1 chrysenes, C2 chrysenes, C3 chrysenes, and C4 chrysenes.

(c) 17 PAHs include: 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, and pyrene.

ASTM = ASTM International
AVS = Acid Volatile Sulfide
CLP = Contract Laboratory Program
EPA = U.S. Environmental Protection Agency
FD = Field duplicate
MS/MSD = Matrix spike/matrix spike duplicate
PAH = Polycyclic Aromatic Hydrocarbon
PCB = Polychlorinated Biphenyl
SEM = Simultaneously Extracted Metals
TAL = Target Analyte List
TOC = Total Organic Carbon
TPH = Total Petroleum Hydrocarbons

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Table 2-6b. Actual Analytical Sampling Program - Composite Sediment Samples,
Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

	Analytical Group and Method												
Sample Location/Sample ID	**TPH (DRO/ORO) SW846 8015D**	**TAL Metals[a] EPA CLP ISM02.4**	**PCB Aroclors EPA CLP SOM02.4**	**Moisture Content ASTM D2216**	**TOC Lloyd Kahn**	**PAHs (17)[b] EPA CLP SOM02.4/SV SIM**	**Oil and Grease SW846 9071B**	**Grain Size with Hydrometer ASTM D422**	**Nitrogen (Total Kjeldahl) EPA 351.2**	**Nitrogen (Ammonia) EPA 350.1**	**Total Cyanide SW846 9012B**	**Total Phosphorus EPA 365.1**	**TCLP Full Suite[c]**
Composite Sediment Samples For Elutriate Testing													
SC21-COMP-01	1	1	1	1	1	1	1	1	1	1	1	1	1
SC21-COMP-02	1	1	1	1	1	1	1	1	1	1	1	1	1
SC21-COMP-03	1	1	1	1	1	1	1	1	1	1	1	1	1
SC21-COMP-04	1	1	1	1	1	1	1	1	1	1	1	1	1
SC21-COMP-05	1	1	1	1	1	1	1	1	1	1	1	1	1
SC21-COMP-05FD	1	1	1	1	1	1	1	1	1	1	1	1	0
SC21-COMP-05MS/MSD	1	1	1	0	1	1	1	0	1	1	1	1	0
SC21-COMP-06	1	1	1	1	1	1	1	1	1	1	1	1	1
SC21-COMP-07	1	1	1	1	1	1	1	1	1	1	1	1	1
SC21-COMP-08	1	1	1	1	1	1	1	1	1	1	1	1	1
Total Field Samples	10	10	10	9	10	10	10	9	10	10	10	10	8
Field Duplicates	1	1	1	1	1	1	1	1	1	1	1	1	0
MS/MSD	1	1	1	0	1	1	1	0	1	1	1	1	0
Total Parent Samples	8	8	8	8	8	8	8	8	8	8	8	8	8

Notes:

(a) Total metals include: aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc.

(b) 17 PAHs include: 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, and pyrene.

(c) TCLP Full Suite (includes Herbicides, Metals, Pesticides, SVOCs, VOCs, Cyanide, Ignitability, pH, Flashpoint, Paint Filter Test, and Percent solids/moisture content) EPA SW846 1311 (8151A, 6010D, 8081B, 8270E, and 8260D); SW846 9012B, SW846 1020, SW846 9040C, SW846 9095B, and ASTM D2216. Additional sample collected and analyzed from IDW drum.

ASTM = ASTM International
CLP = Contract Laboratory Program
EPA = U.S. Environmental Protection Agency
FD = Field Duplicate
MS/MSD = Matrix spike/matrix spike duplicate
PAH = Polycyclic Aromatic Hydrocarbon
PCB = Polychlorinated Biphenyl
TAL = Target Analyte List
TOC = Total Organic Carbon
TPH = Total Petroleum Hydrocarbons

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**Table 2-6c. Actual Analytical Sampling Program - Site Water and Elutriates,
Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)**

	Analytical Group and Method								
	Chemistry								
Sample Location/Sample ID	TPH (DRO/ORO) SW846 8015D	TAL Metals[a] EPA CLP ISM02.4	PCB Aroclors EPA CLP SOM02.4	PAHs (17)[b] EPA CLP SOM02.4/SV SIM	Oil and Grease EPA 1664B	Nitrogen (Total Kjeldahl) EPA 351.2	Nitrogen (Ammonia) EPA 350.1	Total Cyanide SW846 9012B	Total Phosphorus EPA 365.1
Site Water Samples									
SC21-CDF-WAT	1	1	1	1	1	1	1	1	1
SC21-SC-WAT	1	1	1	1	1	1	1	1	1
SC21-SC-WATFD	1	1	1	1	1	1	1	1	1
SC21-SC-WATMS/MSD	1	1	1	1	1	1	1	1	1
SC21-MR-WAT	1	1	1	1	1	1	1	1	1
Laboratory Generated Samples									
Elutriate Samples (Elutriate Water Generated in Lab)									
SC21-COMP-01-SET	1	1	1	1	1	1	1	1	1
SC21-COMP-01-SETFD	1	1	1	1	1	1	1	1	1
SC21-COMP-01-SETFDMS/MSD	1	1	1	1	1	1	1	1	1
SC21-COMP-02-SET	1	1	1	1	1	1	1	1	1
SC21-COMP-03-SET	1	1	1	1	1	1	1	1	1
SC21-COMP-04-SET	1	1	1	1	1	1	1	1	1
SC21-COMP-05-SET	1	1	1	1	1	1	1	1	1
SC21-COMP-06-SET	1	1	1	1	1	1	1	1	1
SC21-COMP-07-SET	1	1	1	1	1	1	1	1	1
SC21-COMP-08-SET	1	1	1	1	1	1	1	1	1
Total Field Samples	15	15	15	15	15	15	15	15	15
Field Duplicates	2	2	2	2	2	2	2	2	2
MS/MSD	2	2	2	2	2	2	2	2	2
Total Parent Samples	11	11	11	11	11	11	11	11	11

Notes:

(a) Total metals include: aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc.

(b) 17 PAHs include: 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, and pyrene.

ASTM = ASTM International
CLP = Contract Laboratory Program
EPA = U.S. Environmental Protection Agency
FD = Field Duplicate
MS/MSD = Matrix spike/matrix spike duplicate
PAH = Polycyclic Aromatic Hydrocarbon
PCB = Polychlorinated Biphenyl
TAL = Target Analyte List
TOC = Total Organic Carbon
TPH = Total Petroleum Hydrocarbons

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Table 2-6d. Actual Analytical Sampling Program - Bioassay Testing and Tissue, Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

						Analytical Group and Method		
Sample Location/Sample ID	**Toxicity - *Hyalella azteca* (10 Day) EPA 100.1**	**Toxicity - *Chironomus dilutus* (10 Day) EPA 100.2**	**Toxicity - *Daphnia magna* (48 Hours) EPA 2021.0**	**Toxicity - *Pimephales promelas* (96 Hours) EPA 2000.0**	**Bioaccumulation- *Lumbriculus variegatus* (28 Day) EPA 100.3**	**% Lipids (*Lumbriculus* tissue) Gravimetric**	**% Moisture (*Lumbriculus* tissue)**	**PCB Congeners (*Lumbriculus* tissue) EPA 1668A**
Sediment Bioassay and Tissue Samples								
SCREF	1	1			1	5	5	5
SC21-SC01	1	1						
SC21-SC05	1	1						
SC21-SC11	1	1			1	5	5	5
SC21-SC14	1	1			1	5	5	5
SC21-SC18	1	1			1	5	5	5
SC21-SC21	1	1						
SC21-SC27	1	1						
SC21-SC30	1	1						
SC21-SC33	1	1						
SC21-MRREF	1	1						
SC21-MR06	1	1						
Pre-Test					1	5	5	5
Control	1	1			1	5	5	5
Aquatic Bioassay Samples								
SC21-COMP-01			1	1				
SC21-COMP-02			1	1				
SC21-COMP-03			1	1				
SC21-COMP-04			1	1				
SC21-COMP-05			1	1				
SC21-COMP-06			1	1				
SC21-COMP-07			1	1				
SC21-COMP-08			1	1				
Control			1	1				
Total Samples	13	13	9	9	6	30	30	30

Notes:
EPA = U.S. Environmental Protection Agency
PCB = Polychlorinated Biphenyls

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Table 3-1a. Core and Surface Grab Sediment Results for Physical Properties

Location ID:		SC21-MR01	SC21-MR01	SC21-MR01	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR03	SC21-MR03	SC21-MR03	SC21-MR03
Sample Name:		SC21-MR01-0010	SC21-MR01-1020	SC21-MR01-2040	SC21-MR02-0010	SC21-MR02-1020	SC21-MR02-2040	SC21-MR02-4060	SC21-MR02-6080	SC21-MR03-A-0010	SC21-MR03-A-1020	SC21-MR03-A-2040	SC21-MR03-B-0010
Sample Date:		11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021
Depth Interval (feet):		0-1	1-2	2-4	0-1	1-2	2-4	4-6	6-8	0-1	1-2	2-4	0-1
Grain Size	**Unit**												
Gravel	%	1.2	0.9	0.6	0	0	0	0	0	1	2.2	2.7	1.4
Sand	%	22.3	53.4	17.1	18.6	9.8	12.4	19.3	15.7	43.9	55.5	54	70.5
Silt	%	50.5	33	60	65.2	59.5	65.6	50.3	58.7	46.5	35.8	29.2	23.1
Clay	%	26	12.7	22.3	16.2	30.7	22.0	30.4	25.6	8.6	6.5	14.1	5
Silt + Clay	%	76.5	45.7	82.3	81.4	90.2	87.6	80.7	84.3	55.1	42.3	43.3	28.1
Sieve Analysis													
Sieve Size #4 - Percent Finer	% retained	1.2	0.9	0.6	0	0	0	0	0	1	2.2	2.7	1.4
Sieve Size #200 - Percent Finer	% passed	76.5	45.7	82.3	81.4	90.2	87.6	80.7	84.3	55.1	42.3	43.3	28.1
Classification		SILT WITH SAND (ML), grayish brown	SILTY SAND (SM), grayish brown	SILT WITH SAND (ML), grayish brown	SILT WITH SAND (ML), gray	SILT (ML), gray	SILT (ML), brown	SILT WITH SAND (ML), brown	SILT WITH SAND (ML), gray	SANDY SILT (ML), gray	SILTY SAND (SM), gray	SILTY SAND (SM), gray	SILTY SAND (SM), brown
Moisture Content	%	106.6	60.8	28.9	80.9	79.2	76.9	66.7	60.9	66.5	52.7	37.2	46.6

Notes:
% = percent
FD = Field Duplicate
SC = Swan Creek

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Table 3-1a. Core and Surface Grab Sediment Results for Physical Properties

Location ID:		SC21-MR03	SC21-MR03	SC21-MR03	SC21-MR04	SC21-MR04	SC21-MR04	SC21-MR04	SC21-MR05	SC21-MR05	SC21-MR05	SC21-MR06	SC21-MR06
Sample Name:		SC21-MR03-B-1020	SC21-MR03-B-1020FD	SC21-MR03-B-2040	SC21-MR04-0010	SC21-MR04-1020	SC21-MR04-2040	SC21-MR04-4060	SC21-MR05-0010	SC21-MR05-1020	SC21-MR05-2040	SC21-MR06-SURF	SC21-MR06-SURFFD
Sample Date:		11/8/2021	11/8/2021	11/8/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/5/2021	11/5/2021	11/5/2021	11/8/2021	11/8/2021
Depth Interval (feet):		1-2	1-2	2-4	0-1	1-2	2-4	4-6	0-1	1-2	2-4	0-0.5	0-0.5
Grain Size	**Unit**												
Gravel	%	1.4	1.1	1.9	0	0	0.3	0	1.3	0.7	2.7	0.1	0.3
Sand	%	50.3	50.4	55.5	17.6	6.8	2.7	2.5	45.5	56.4	35.7	18.1	13.9
Silt	%	40.6	30.6	26.5	50.9	68.4	49.4	55.8	33.1	27.1	48.7	72.5	63.7
Clay	%	7.7	17.9	16.1	31.5	24.8	47.6	41.7	20.1	15.8	12.9	9.3	22.1
Silt + Clay	%	48.3	48.5	42.6	82.4	93.2	97.0	97.5	53.2	42.9	61.6	81.8	85.8
Sieve Analysis													
Sieve Size #4 - Percent Finer	% retained	1.4	1.1	1.9	0	0	0.3	0	1.3	0.7	2.7	0.1	0.3
Sieve Size #200 - Percent Finer	% passed	48.3	48.5	42.6	82.4	93.2	97	97.5	53.2	42.9	61.6	81.8	85.8
Classification		SILTY SAND (SM), gray	SILTY SAND (SM), grayish brown	SILTY SAND (SM), gray	SILT WITH SAND (ML), gray	SILT (ML), grayish brown	SILTY CLAY (CL-ML), grayish brown	SILT (ML), gray	SANDY SILT (ML), gray	SILTY SAND (SM), grayish brown	grayish brown grayish brown	SILT WITH SAND (ML), dark brown	SILT (ML), dark brown
Moisture Content	%	60.0	86.9	42.3	175.7	134.7	48.5	58.3	70.4	49.5	69.3	84.1	74.1

Notes:
% = percent
FD = Field Duplicate
SC = Swan Creek

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Table 3-1a. Core and Surface Grab Sediment Results for Physical Properties

Location ID:		SC21-MR06	SC21-MR06	SC21-MRRE	SC21-MRRE	SC21-MRRE	SC21-MRRE	SC21-MRRE	SC21-MRRE	SC21-SC01	SC21-SC02	SC21-SC02	SC21-SC02
Sample Name:		SC21-MR06-0010	SC21-MR06-1020	SC21-MRREF-SURF	SC21-MRREF-0010	SC21-MRREF-1020	SC21-MRREF-2040	SC21-MRREF-4060	SC21-MRREF-6080	SC21-SC01-SURF	SC21-SC02-0010	SC21-SC02-1020	SC21-SC02-2040
Sample Date:		11/7/2021	11/7/2021	11/8/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021
Depth Interval (feet):		0-1	1-2	0-0.5	0-1	1-2	2-4	4-6	6-8	0-0.5	0-1	1-2	2-4
Grain Size	**Unit**												
Gravel	%	1.7	3.2	0.1	0	0	0	0.5	1.9	5.7	0	0	8.5
Sand	%	23.6	48.7	10.9	3.3	6.5	19.6	26.5	36.1	93.4	57.7	75.9	76.8
Silt	%	66.8	40.1	78.0	54.1	69.0	56.6	52.7	49.5	0.6	37.6	23.0	13.7
Clay	%	7.9	8	11.0	42.6	24.5	23.8	20.3	12.5	0.3	4.7	1.1	1.0
Silt + Clay	%	74.7	48.1	89.0	96.7	93.5	80.4	73.0	62.0	0.9	42.3	24.1	14.7
Sieve Analysis													
Sieve Size #4 - Percent Finer	% retained	1.7	3.2	0.1	0	0	0	0.5	1.9	5.7	0	0	8.5
Sieve Size #200 - Percent Finer	% passed	74.7	48.1	89	96.7	93.5	80.4	73	62	0.9	42.3	24.1	14.7
Classification		SILT WITH SAND (ML), dark brown	SILTY SAND (SM), brown	SILT (ML), gray	SILT (ML), gray	SILT (ML), gray	SILT WITH SAND (ML), dark brown	SILT WITH SAND (ML), dark brown	SANDY SILT (ML), dark brown	SAND (SP), trace gravel, brown	SILTY SAND (SM), dark brown	SILTY SAND (SM), dark brown	SILTY SAND (SM), trace gravel, dark brown
Moisture Content	%	80.3	62.6	115.8	77.6	83.1	68.8	52.8	67.5	15.6	59.7	43.8	35.5

Notes:
% = percent
FD = Field Duplicate
SC = Swan Creek

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Table 3-1a. Core and Surface Grab Sediment Results for Physical Properties

Location ID:		SC21-SC03	SC21-SC03	SC21-SC03	SC21-SC04	SC21-SC04	SC21-SC04	SC21-SC04	SC21-SC04	SC21-SC04	SC21-SC05	SC21-SC06	SC21-SC06
Sample Name:		SC21-SC03-0010	SC21-SC03-1020	SC21-SC03-2040	SC21-SC04-4060FD	SC21-SC04-0010	SC21-SC04-1020	SC21-SC04-2040	SC21-SC04-4060	SC21-SC04-6080	SC21-SC05-SURF	SC21-SC06-0010	SC21-SC06-1020
Sample Date:		11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/9/2021	11/8/2021	11/8/2021
Depth Interval (feet):		0-1	1-2	2-4	4-6	0-1	1-2	2-4	4-6	6-8	0-0.5	0-1	1-2
Grain Size	**Unit**												
Gravel	%	0	1.1	1.8	0	1.5	0.7	0	0	1.1	0.6	1.7	0.8
Sand	%	37.9	32.6	38.3	77.3	64.4	69.1	70.1	76	63.2	93.1	24	26
Silt	%	61.1	64.4	55.4	13	23.2	23.2	23.1	17.2	28.3	5.2	38	38.7
Clay	%	1	1.9	4.5	9.7	10.9	7.0	6.8	6.8	7.4	1.1	36.3	34.5
Silt + Clay	%	62.1	66.3	59.9	22.7	34.1	30.2	29.9	24.0	35.7	6.3	74.3	73.2
Sieve Analysis													
Sieve Size #4 - Percent Finer	% retained	0	1.1	1.8	0	1.5	0.7	0	0	1.1	0.6	1.7	0.8
Sieve Size #200 - Percent Finer	% passed	62.1	66.3	59.9	22.7	34.1	30.2	29.9	24	35.7	6.3	74.3	73.2
Classification		SANDY SILT (ML), dark gray	SANDY SILT (ML), dark gray	SANDY SILT (ML), dark gray	SILTY SAND (SM), dark gray	SILTY SAND (SM), grayish brown	SILTY SAND (SM), grayish brown	SILTY SAND (SM), grayish brown	SILTY SAND (SM), dark gray	SILTY SAND (SM), dark gray	SAND WITH SILT (SP-SM), black	SILT WITH SAND (ML), brown	SILT WITH SAND (ML), brown
Moisture Content	%	104.2	66.5	44.8	32.3	38.0	34.5	45.9	20.9	24.1	33.0	29.4	17.0

Notes:
% = percent
FD = Field Duplicate
SC = Swan Creek

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Table 3-1a. Core and Surface Grab Sediment Results for Physical Properties

Location ID:		SC21-SC06	SC21-SC07	SC21-SC07	SC21-SC07	SC21-SC07	SC21-SC07	SC21-SC08	SC21-SC09	SC21-SC09	SC21-SC09	SC21-SC10	SC21-SC11
Sample Name:		SC21-SC06-2040	SC21-SC07-0010	SC21-SC07-1020	SC21-SC07-2040	SC21-SC07-2040FD	SC21-SC07-4060	SC21-SC08-0010	SC21-SC09-0010	SC21-SC09-1020	SC21-SC09-2040	SC21-SC10-0010	SC21-SC11-SURF
Sample Date:		11/8/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/3/2021	11/10/2021	11/10/2021	11/10/2021	11/5/2021	11/9/2021
Depth Interval (feet):		2-4	0-1	1-2	2-4	2-4	4-6	0-1	0-1	1-2	2-4	0-1	0-0.5
Grain Size	**Unit**												
Gravel	%	5.3	0.8	0.4	0	0	0	3.8	2.9	0	49.6	2.7	2.9
Sand	%	24.4	22.2	9.1	36.4	12	26.9	25.1	26.5	16.9	37.3	19.7	91.8
Silt	%	48.0	52.1	66	43.8	65.8	54.1	43.7	62.0	72.0	12.7	48.1	1.9
Clay	%	22.3	24.9	24.5	19.8	22.2	19	27.4	8.6	11.1	0.4	29.5	3.4
Silt + Clay	%	70.3	77.0	90.5	63.6	88.0	73.1	71.1	70.6	83.1	13.1	77.6	5.3
Sieve Analysis													
Sieve Size #4 - Percent Finer	% retained	5.3	0.8	0.4	0	0	0	3.8	2.9	0	49.6	2.7	2.9
Sieve Size #200 - Percent Finer	% passed	70.3	77	90.5	63.6	88	73.1	71.1	70.6	83.1	13.1	77.6	5.3
Classification		SILT WITH SAND (ML), brown	SILT WITH SAND (ML), gray	SILT (ML), gray	SANDY SILT (ML), grayish brown	SILT (ML), dark brown	SILT WITH SAND (ML), dark brown	SILT WITH SAND (ML), dark gray	SILT WITH SAND (ML), grayish brown	SILT WITH SAND (ML), dark brown	SILTY GRAVEL WITH SAND (GM), blackish gray	SILT WITH SAND (ML), gray	SAND WITH SILTY CLAY (SP-SC), blackish
Moisture Content	%	18.9	30.3	30.3	21.8	25.8	25.0	30.7	70.7	70.3	40.6	23.0	78.2

Notes:
% = percent
FD = Field Duplicate
SC = Swan Creek

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Table 3-1a. Core and Surface Grab Sediment Results for Physical Properties

Location ID:		SC21-SC11	SC21-SC11	SC21-SC11	SC21-SC11	SC21-SC12	SC21-SC12	SC21-SC12	SC21-SC13	SC21-SC13	SC21-SC13	SC21-SC14	SC21-SC15
Sample Name:		SC21-SC11-0010	SC21-SC11-0010FD	SC21-SC11-1020	SC21-SC11-2040	SC21-SC12-0010	SC21-SC12-1020	SC21-SC12-2040	SC21-SC13-0010	SC21-SC13-1020	SC21-SC13-2040	SC21-SC14-SURF	SC21-SC15-0010
Sample Date:		11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/11/2021	11/11/2021	11/11/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/7/2021
Depth Interval (feet):		0-1	0-1	1-2	2-4	0-1	1-2	2-4	0-1	1-2	2-4	0-0.5	0-1
Grain Size	**Unit**												
Gravel	%	10.4	18.5	8.9	0.2	0.6	0.9	1.3	0	0	0	0	1.3
Sand	%	66.9	61.8	80.1	61.9	4.7	11.8	13.8	13.3	37.9	34.8	38.3	37.7
Silt	%	21.2	12.0	10.0	35.3	44.7	43.7	44.9	70.2	46.1	49.3	46.9	57.6
Clay	%	1.5	7.7	1.0	2.6	50	43.6	40	16.5	16.0	15.9	14.8	3.4
Silt + Clay	%	22.7	19.7	11.0	37.9	94.7	87.3	84.9	86.7	62.1	65.2	61.7	61.0
Sieve Analysis													
Sieve Size #4 - Percent Finer	% retained	10.4	18.5	8.9	0.2	0.6	0.9	1.3	0	0	0	0	1.3
Sieve Size #200 - Percent Finer	% passed	22.7	19.7	11	37.9	94.7	87.3	84.9	86.7	62.1	65.2	61.7	61
Classification		SILTY SAND (SM), trace gravel, dark brown	WITH GRAVEL (SC-SM), brown	SAND WITH SILT (SP-SM), trace gravel, dark	SILTY SAND (SM), dark brown	SILT (ML), gray	SILT (ML), gray	SILT WITH SAND (ML), gray	SILT (ML), dark brown	SANDY SILT (ML), dark brown	SANDY SILT (ML), dark brown	SANDY SILT (ML), dark brown	SANDY SILT (ML), dark brown
Moisture Content	%	63.5	41.8	28.9	39.5	27.4	27.1	22.2	117.7	81.9	78.3	62.6	29.8

Notes:
% = percent
FD = Field Duplicate
SC = Swan Creek

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Table 3-1a. Core and Surface Grab Sediment Results for Physical Properties

Location ID:		SC21-SC15	SC21-SC15	SC21-SC16	SC21-SC16	SC21-SC16	SC21-SC16	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC18
Sample Name:		SC21-SC15-1020	SC21-SC15-2040	SC21-SC16-0010	SC21-SC16-1020	SC21-SC16-2040	SC21-SC16-4060	SC21-SC17-0010	SC21-SC17-1020	SC21-SC17-2040	SC21-SC17-4060	SC21-SC17-6080	SC21-SC18-SURF
Sample Date:		11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/9/2021
Depth Interval (feet):		1-2	2-4	0-1	1-2	2-4	4-6	0-1	1-2	2-4	4-6	6-8	0-0.5
Grain Size	**Unit**												
Gravel	%	0	0.5	14.4	9.5	5.1	0.3	2.1	15.5	2.6	0	0	0
Sand	%	25.5	47.2	37.4	60.1	52.5	37.4	49.9	58.7	35.7	24.9	52.9	14.8
Silt	%	72.4	51.3	45.4	28.8	38.4	54.7	33.7	18.7	40.6	60.1	41.2	75.3
Clay	%	2.1	1	2.8	1.6	4.0	7.6	14.3	7.1	21.1	15	5.9	9.9
Silt + Clay	%	74.5	52.3	48.2	30.4	42.4	62.3	48.0	25.8	61.7	75.1	47.1	85.2
Sieve Analysis													
Sieve Size #4 - Percent Finer	% retained	0	0.5	14.4	9.5	5.1	0.3	2.1	15.5	2.6	0	0	0
Sieve Size #200 - Percent Finer	% passed	74.5	52.3	48.2	30.4	42.4	62.3	48	25.8	61.7	75.1	47.1	85.2
Classification		SILT WITH SAND (ML), dark brown	SANDY SILT (ML), dark brown	SILTY SAND (SM), trace gravel, dark brown	SILTY SAND (SM), trace gravel, dark brown	SILTY SAND (SM), trace gravel, dark brown	SANDY SILT (ML), dark brown	SILTY SAND (SM), black	SILTY SAND (SM), black	SANDY SILT (ML), gray	SILT WITH SAND (ML), dark brown	SILTY SAND (SM), dark brown	SILT (ML), black
Moisture Content	%	61.9	108.7	58.9	40.0	35.1	37.5	51.1	38.3	44.2	45.9	32.9	70.7

Notes:
% = percent
FD = Field Duplicate
SC = Swan Creek

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Table 3-1a. Core and Surface Grab Sediment Results for Physical Properties

Location ID:		SC21-SC19	SC21-SC19	SC21-SC19	SC21-SC19	SC21-SC20	SC21-SC20	SC21-SC21	SC21-SC21	SC21-SC21	SC21-SC21	SC21-SC22	SC21-SC22
Sample Name:		SC21-SC19-0010	SC21-SC19-1020	SC21-SC19-2040	SC21-SC19-4060	SC21-SC20-0010	SC21-SC20-1020	SC21-SC21-SURF	SC21-SC21-0010	SC21-SC21-1020	SC21-SC21-2040	SC21-SC22-0010	SC21-SC22-1020
Sample Date:		11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/9/2021	11/5/2021	11/5/2021	11/5/2021	11/4/2021	11/4/2021
Depth Interval (feet):		0-1	1-2	2-4	4-6	0-1	1-2	0-0.5	0-1	1-2	2-4	0-1	1-2
Grain Size	**Unit**												
Gravel	%	--	0.3	2.7	1.1	1.6	0.1	0	2	0.6	0.4	20.3	12.2
Sand	%	--	37.6	31.2	19.4	17.6	14.6	33.6	21.2	35	44.6	31.6	52.6
Silt	%	--	44.9	53.3	53.3	51.4	49.9	63.6	76.3	61.8	54.2	17.3	11.4
Clay	%	--	17.2	12.8	26.2	29.4	35.4	2.8	0.5	2.6	0.8	30.8	23.8
Silt + Clay	%	--	62.1	66.1	79.5	80.8	85.3	66.4	76.8	64.4	55.0	48.1	35.2
Sieve Analysis													
Sieve Size #4 - Percent Finer	% retained	--	0.3	2.7	1.1	1.6	0.1	0	2	0.6	0.4	20.3	12.2
Sieve Size #200 - Percent Finer	% passed	--	62.1	66.1	79.5	80.8	85.3	66.4	76.8	64.4	55	48.1	35.2
Classification		--	SANDY SILT (ML), grayish brown	SANDY SILT (ML), grayish brown	SILT WITH SAND (ML), grayish black	SILT WITH SAND (ML), gray	SILT (ML), gray	SANDY SILT (ML), black	SILT WITH SAND (ML), brown	SANDY SILT (ML), black	SANDY SILT (ML), black	GRAVEL (SC), dark brown	CLAYEY SAND (SC), dark brown
Moisture Content	%	45.3	55.3	41.6	41.7	18.3	31.2	123.1	42.0	49.8	55.7	44.0	28.8

Notes:
% = percent
FD = Field Duplicate
SC = Swan Creek

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Table 3-1a. Core and Surface Grab Sediment Results for Physical Properties

Location ID:		SC21-SC23	SC21-SC23	SC21-SC23	SC21-SC24	SC21-SC24	SC21-SC24	SC21-SC25	SC21-SC25	SC21-SC25	SC21-SC25	SC21-SC25	SC21-SC26
Sample Name:		SC21-SC23-0010	SC21-SC23-1020	SC21-SC23-2040	SC21-SC24-0010	SC21-SC24-1020	SC21-SC24-2040	SC21-SC25-0010	SC21-SC25-1020	SC21-SC25-2040	SC21-SC25-2040FD	SC21-SC25-4060	SC21-SC26-0010
Sample Date:		11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/4/2021	11/4/2021	11/4/2021	11/4/2021	11/4/2021	11/3/2021
Depth Interval (feet):		0-1	1-2	2-4	0-1	1-2	2-4	0-1	1-2	2-4	2-4	4-6	0-1
Grain Size	**Unit**												
Gravel	%	1.9	0.4	0	0	0	0.5	--	--	0	0.2	0	1.3
Sand	%	45.2	27.7	44.3	0	4.8	34.7	--	--	57.2	49	64.6	21.6
Silt	%	51.2	65.6	50.9	0	79.4	54.7	--	--	41.6	13.1	34.6	29.8
Clay	%	1.7	6.3	4.8	100	15.8	10.1	--	--	1.2	37.7	0.8	47.3
Silt + Clay	%	52.9	71.9	55.7	100	95.2	64.8	--	--	42.8	50.8	35.4	77.1
Sieve Analysis													
Sieve Size #4 - Percent Finer	% retained	1.9	0.4	0		0	0.5	--	--	0	0.2	0	1.3
Sieve Size #200 - Percent Finer	% passed	52.9	71.9	55.7		95.2	64.8	--	--	42.8	50.8	35.4	77.1
Classification		SANDY SILT (ML), black	SILT WITH SAND (ML), black	SANDY SILT (ML), gray	Limited amount of soil-mostly liquid	SILT (ML), gray	SANDY SILT (ML), gray	Organic Soil, blackish gray	Organic Soil, blackish gray	SILTY SAND (SM), brown	SANDY LEAN CLAY (CL), blackish gray	SILTY SAND (SM), blackish gray	LEAN CLAY WITH SAND (CL), dark gray
Moisture Content	%	107.2	60.0	69.6	83.1	85.2	52.8	110.4	88.3	67.5	78.5	68.2	52.8

Notes:
% = percent
FD = Field Duplicate
SC = Swan Creek

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Table 3-1a. Core and Surface Grab Sediment Results for Physical Properties

Location ID:		SC21-SC26	SC21-SC27	SC21-SC28	SC21-SC28	SC21-SC28	SC21-SC28	SC21-SC28	SC21-SC29	SC21-SC30	SC21-SC30	SC21-SC30	SC21-SC30
Sample Name:		SC21-SC26-1020	SC21-SC27-SURF	SC21-SC28-0010	SC21-SC28-0010FD	SC21-SC28-1020	SC21-SC28-2040	SC21-SC28-4060	SC21-SC29-0010	SC21-SC30-SURF	SC21-SC30-0010	SC21-SC30-1020	SC21-SC30-2040
Sample Date:		11/3/2021	11/9/2021	11/4/2021	11/4/2021	11/4/2021	11/4/2021	11/4/2021	11/3/2021	11/9/2021	11/4/2021	11/4/2021	11/4/2021
Depth Interval (feet):		1-2	0-0.5	0-1	0-1	1-2	2-4	4-6	0-1	0-0.5	0-1	1-2	2-4
Grain Size	**Unit**												
Gravel	%	9.3	13.4	13.8	13	0.6	1.9	7.3	44.9	0.2	0	25.2	0.4
Sand	%	24.1	28.3	37.6	48.4	22.7	28.7	32	25.7	13.6	17.5	49	16.6
Silt	%	47	52.7	37.4	8.2	72.0	63.9	23.1	24.8	70.4	78.8	6.6	79.2
Clay	%	19.6	5.6	11.2	30.4	4.7	5.5	37.6	4.6	15.8	3.7	19.2	3.8
Silt + Clay	%	66.6	58.3	48.6	38.6	76.7	69.4	60.7	29.4	86.2	82.5	25.8	83.0
Sieve Analysis													
Sieve Size #4 - Percent Finer	% retained	9.3	13.4	13.8	13	0.6	1.9	7.3	44.9	0.2	0	25.2	0.4
Sieve Size #200 - Percent Finer	% passed	66.6	58.3	48.6	38.6	76.7	69.4	60.7	29.4	86.2	82.5	25.8	83
Classification		SANDY SILT (ML), trace gravel, brown	SANDY SILT (ML), trace gravel, dark gray	SILTY SAND (SM), trace gravel, brown	CLAYEY SAND (SC), trace gravel, blackish gray	SILT WITH SAND (ML), grayish black	SANDYSILT (ML), gray	(CL), trace gravel, blackish gray	SILTY GRAVEL WITH SAND (GM), grayish black	SILT (ML), gray	SILT WITH SAND (ML), dark brown	CLAYEY SAND WITH GRAVEL (SC), black	SILT WITH SAND (ML), gray
Moisture Content	%	37.1	115.4	37.9	39.1	52.4	54.0	45.7	68.1	97.1	93.8	70.8	77.4

Notes:
% = percent
FD = Field Duplicate
SC = Swan Creek

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Table 3-1a. Core and Surface Grab Sediment Results for Physical Properties

Location ID:		SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC32	SC21-SC32	SC21-SC32	SC21-SC32	SC21-SC32	SC21-SC33	SC21-SC33
Sample Name:		SC21-SC31-0010	SC21-SC31-1020	SC21-SC31-2040	SC21-SC31-4060	SC21-SC31-6080	SC21-SC32-0010	SC21-SC32-1020	SC21-SC32-2040	SC21-SC32-4060	SC21-SC32-6080	SC21-SC33-SURF	SC21-SC33-0010
Sample Date:		11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/8/2021	11/4/2021
Depth Interval (feet):		0-1	1-2	2-4	4-6	6-8	0-1	1-2	2-4	4-6	6-8	0-0.5	0-1
Grain Size	**Unit**												
Gravel	%	0	0	0	0.1	0.6	0	0	0	0	0	0	0.2
Sand	%	35.5	7.5	7.1	50.5	46.3	3.9	10.4	10	30.5	72.3	33.3	13
Silt	%	52.3	56.1	56.7	40.7	40.5	44.5	41.3	37.6	56.7	22.3	49.1	74.8
Clay	%	12.2	36.4	36.2	8.7	12.6	51.6	48.3	52.4	12.8	5.4	17.6	12
Silt + Clay	%	64.5	92.5	92.9	49.4	53.1	96.1	89.6	90.0	69.5	27.7	66.7	86.8
Sieve Analysis													
Sieve Size #4 - Percent Finer	% retained	0	0	0	0.1	0.6	0	0	0	0	0	0	0.2
Sieve Size #200 - Percent Finer	% passed	64.5	92.5	92.9	49.4	53.1	96.1	89.6	90	69.5	27.7	66.7	86.8
Classification		SANDY SILT (ML), grayish brown	SILT (ML), gray	SILT (ML), grayish black	SILTY SAND (SM), black	SANDY SILT (ML), black	SILTY CLAY (CL-ML), gray	SILTY CLAY (CL-ML), gray	SILTY CLAY (CL-ML), gray	SANDY SILT (ML), gray	SILTY SAND (SM), gray	SANDY SILT (ML), brown	SILT (ML), brown
Moisture Content	%	84.2	75.0	74.7	63.1	53.6	112.8	95.6	77.6	67.2	50.6	96.6	61.6

Notes:
% = percent
FD = Field Duplicate
SC = Swan Creek

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Table 3-1a. Core and Surface Grab Sediment Results for Physical Properties

Location ID:		SC21-SC33	SC21-SC33	SC21-SCREF
Sample Name:		SC21-SC33-1020	SC21-SC33-2040	SC21-SCREF-SURF
Sample Date:		11/4/2021	11/4/2021	11/9/2021
Depth Interval (feet):		1-2	2-3.4	0-0.5
Grain Size	**Unit**			
Gravel	%	24.2	23.3	0
Sand	%	41.7	52.5	71.4
Silt	%	32.9	23.1	24.8
Clay	%	1.2	1.1	3.8
Silt + Clay	%	34.1	24.2	28.6
Sieve Analysis				
Sieve Size #4 - Percent Finer	% retained	24.2	23.3	0
Sieve Size #200 - Percent Finer	% passed	34.1	24.2	28.6
Classification		SILTY SAND (SM), gray	SILTY SAND (SM), gray	SILTY SAND (SM), brown
Moisture Content	%	55.0	50.1	31.4

Notes:
% = percent
FD = Field Duplicate
SC = Swan Creek

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Table 3-1b. Composite Sediment Results for Physical Properties

Location ID:		SC21-COMP	SC21-COMP	SC21-COMP	SC21-COMP	SC21-COMP	SC21-COMP	SC21-COMP	SC21-COMP	SC21-COMP
Sample Name:		SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-05FD	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
Sample Date:		11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/10/2021	11/11/2021	11/11/2021
Depth Interval (feet):		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Grain Size	**Unit**									
Gravel	%	6.4	2.2	4.4	4.3	5.2	4.7	3.8	0.7	7.7
Sand	%	65.6	56.9	31	55.9	45.5	49.8	45.4	41.3	38.8
Silt	%	21.3	33.8	38.1	30.2	42.0	39.0	33.2	44.9	40.7
Clay	%	6.7	7.1	26.5	9.6	7.3	6.5	17.6	13.1	12.8
Silt + Clay	%	28.0	40.9	64.6	39.8	49.3	45.5	50.8	58.0	53.5
Sieve Analysis										
Sieve Size #4 - Percent Finer	% retained	6.4	2.2	4.4	4.3	5.2	4.7	3.8	0.7	7.7
Sieve Size #200 - Percent Finer	% passed	28	40.9	64.6	39.8	49.3	45.5	50.8	58	53.5
Classification		SILTY SAND (SM), trace gravel, black	SILTY SAND (SM), black	SANDY SILT (ML), blackish brown	SILTY SAND (SM), brown	SILTY SAND (SM), grayish brown	SILTY SAND (SM), black	SANDY SILT (ML), brown	SANDY SILT (ML), grayish brown	SANDY SILT (ML), trace gravel, brown
Moisture Content	%	29.2	24.6	17.8	60.9	57.7	60.1	20.9	44.7	44.9

Notes:
% = percent
FD = Field Duplicate
SC = Swan Creek

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Table 3-2a. Core and Surface Grab Sediment Results for TPH and Oil and Grease

		Location ID:	SC21-MR01	SC21-MR01	SC21-MR01	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR03-A	SC21-MR03-A	SC21-MR03-A	SC21-MR03-B
		Sample Name:	SC21-MR01-0010	SC21-MR01-1020	SC21-MR01-2040	SC21-MR02-0010	SC21-MR02-1020	SC21-MR02-2040	SC21-MR02-4060	SC21-MR02-6080	SC21-MR03-A-0010	SC21-MR03-A-1020	SC21-MR03-A-2040	SC21-MR03-B-0010
		Sample Date:	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021
		Depth Interval (ft):	0-1	1-2	2-4	0-1	1-2	2-4	4-6	6-8	0-1	1-2	2-4	0-1
Analyte	**Region 4 ESV**	**Unit**												
Diesel Range Organics (C10-C28)	340	mg/kg	21	64 J	47	79	200	91	100	91	<u>380</u>	230 J	43	80
Oil Range Organics (C28-C40)	NSL	mg/kg	28	30 J	30	30	77	37	36	35	150	90	13 J	36
Σ TPH	NSL	mg/kg	49	94	77	109	277	128	136	126	530	320	56	116
Oil and Grease	NSL	mg/kg	420 U	320 U	270 U	450	500	160 J	570	340	590	450	420	480

Notes:

<u>Underlined values exceed the Region 4 ESV</u>

FD = Field duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J+ = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased high).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.

mg/kg = Milligrams per kilogram

MR = Maumee River

SC = Swan Creek

TPH = Total Petroleum Hydrocarbons

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

Σ TPH = Sum of Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + ORO (C28-C40)

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Table 3-2a. Core and Surface Grab Sediment Results for TPH and Oil and Grease

			Location ID:	SC21-MR03-B	SC21-MR03-B	SC21-MR03-B	SC21-MR04	SC21-MR04	SC21-MR04	SC21-MR04	SC21-MR05	SC21-MR05	SC21-MR05	SC21-MR06	SC21-MR06	SC21-MR06
			Sample Name:	SC21-MR03-B-1020	SC21-MR03-B-1020FD	SC21-MR03-B-2040	SC21-MR04-0010	SC21-MR04-1020	SC21-MR04-2040	SC21-MR04-4060	SC21-MR05-0010	SC21-MR05-1020	SC21-MR05-2040	SC21-MR06-0010	SC21-MR06-1020	SC21-MR06-SURF
			Sample Date:	11/8/2021	11/8/2021	11/8/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/5/2021	11/5/2021	11/5/2021	11/7/2021	11/7/2021	11/8/2021
			Depth Interval (ft):	1-2	1-2	2-4	0-1	1-2	2-4	4-6	0-1	1-2	2-4	0-1	0-1	0-0.5
Analyte	**Region 4 ESV**	**Unit**														
Diesel Range Organics (C10-C28)	340	mg/kg		330	340	210	37	18 J+	22 J+	36	490 J	90	35 J	2100 J	730 J	180 J
Oil Range Organics (C28-C40)	NSL	mg/kg		160	160	96	34 U	30 U	19 U	21 U	150 J	55	17 J	660 J	300 J	90 J
Σ TPH	NSL	mg/kg		490	500	306	54	33	31.5	46.5	640	145	52	2760	1030	270
Oil and Grease	NSL	mg/kg		760	620	1900	270 J	460 U	290 U	320 U	210 J	450	310 U	760	510	190 J

Notes:

Underlined values exceed the Region 4 ESV

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J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approxim

mg/kg = Milligrams per kilogram

MR = Maumee River

SC = Swan Creek

TPH = Total Petroleum Hydrocarbons

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

Σ TPH = Sum of Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + ORO (C28-C40)

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Table 3-2a. Core and Surface Grab Sediment Results for TPH and Oil and Grease

			Location ID:	SC21-MR06	SC21-MRREF	SC21-MRREF	SC21-MRREF	SC21-MRREF	SC21-MRREF	SC21-MRREF	SC21-SC01	SC21-SC02	SC21-SC02	SC21-SC02	SC21-SC03
			Sample Name:	SC21-MR06-SURFFD	SC21-MRREF-0010	SC21-MRREF-1020	SC21-MRREF-2040	SC21-MRREF-4060	SC21-MRREF-6080	SC21-MRREF-SURF	SC21-SC01-SURF	SC21-SC02-0010	SC21-SC02-1020	SC21-SC02-2040	SC21-SC03-0010
			Sample Date:	11/8/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/8/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/8/2021
			Depth Interval (ft):	0-0.5	0-1	1-2	2-4	4-6	6-8	0-0.5	0-0.5	0-1	1-2	2-4	0-1
Analyte	**Region 4 ESV**	**Unit**													
Diesel Range Organics (C10-C28)	340	mg/kg		560 J	110 J	13	210 J	44	170 J	86 J	48	47	220 J	230 J	350 J
Oil Range Organics (C28-C40)	NSL	mg/kg		270 J	86 J	23 U	86 J	20	76 J	79 J	29	49	140 J	150 J	320 J
Σ TPH	NSL	mg/kg		830	196	24.5	296	64	246	165	77	96	360	380	670
Oil and Grease	NSL	mg/kg		600 J	360 U	350 U	210 J	270 J	330 U	420 U	220 J	2500 J	1400 J	1500 J	1400

Notes:

Underlined values exceed the Region 4 ESV

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J+ = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased high).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approxim

mg/kg = Milligrams per kilogram

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SC = Swan Creek

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Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

Σ TPH = Sum of Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + ORO (C28-C40)

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Table 3-2a. Core and Surface Grab Sediment Results for TPH and Oil and Grease

	Location ID:	SC21-SC03	SC21-SC03	SC21-SC04	SC21-SC04	SC21-SC04	SC21-SC04	SC21-SC04	SC21-SC04	SC21-SC05	SC21-SC06	SC21-SC06	SC21-SC06	SC21-SC07	SC21-SC07
	Sample Name:	SC21-SC03-1020	SC21-SC03-2040	SC21-SC04-0010	SC21-SC04-1020	SC21-SC04-2040	SC21-SC04-4060	SC21-SC04-4060FD	SC21-SC04-6080	SC21-SC05-SURF	SC21-SC06-0010	SC21-SC06-1020	SC21-SC06-2040	SC21-SC07-0010	SC21-SC07-1020
	Sample Date:	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/9/2021	11/8/2021	11/8/2021	11/8/2021	11/10/2021	11/10/2021
	Depth Interval (ft):	1-2	2-4	0-1	1-2	2-4	4-6	4-6	6-8	0-0.5	0-1	1-2	2-4	0-1	1-2
Analyte	**Region 4 ESV**	**Unit**													
Diesel Range Organics (C10-C28)	340	mg/kg	260	460 J	130 J	17	47 J	14	12	22	29	14	72 J	150 J	220	15 J+
Oil Range Organics (C28-C40)	NSL	mg/kg	81	140 J	54 J	17 U	21 J	42	20	11 J	26	17 U	17 J	24 J	59	16 U
Σ TPH	NSL	mg/kg	341	600	184	34	68	56	32	33	55	31	89	174	279	31
Oil and Grease	NSL	mg/kg	2400	270 U	500	150 J	300 U	260 U	250 U	260 U	350 J	250 U	250 U	110 J	260 U	260 U

Notes:

Underlined values exceed the Region 4 ESV

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J+ = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased high).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approxim

mg/kg = Milligrams per kilogram

MR = Maumee River

SC = Swan Creek

TPH = Total Petroleum Hydrocarbons

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

Σ TPH = Sum of Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + ORO (C28-C40)

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Table 3-2a. Core and Surface Grab Sediment Results for TPH and Oil and Grease

		Location ID:	SC21-SC07	SC21-SC07	SC21-SC07	SC21-SC08	SC21-SC09	SC21-SC09	SC21-SC09	SC21-SC10	SC21-SC11	SC21-SC11	SC21-SC11	SC21-SC11	SC21-SC11
		Sample Name:	SC21-SC07-2040	SC21-SC07-2040FD	SC21-SC07-4060	SC21-SC08-0010	SC21-SC09-0010	SC21-SC09-1020	SC21-SC09-2040	SC21-SC10-0010	SC21-SC11-0010	SC21-SC11-0010FD	SC21-SC11-1020	SC21-SC11-2040	SC21-SC11-SURF
		Sample Date:	11/10/2021	11/10/2021	11/10/2021	11/3/2021	11/9/2021	11/9/2021	11/9/2021	11/5/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/9/2021
		Depth Interval (ft):	2-4	2-4	4-6	0-1	0-1	1-2	2-4	0-1	0-1	0-1	1-2	2-4	0-0.5
Analyte	**Region 4 ESV**	**Unit**													
Diesel Range Organics (C10-C28)	340	mg/kg	8.9 J+	8.6 U	8.5 J+	68	1300	2000	540	50 J	120	140	180	230	210 J
Oil Range Organics (C28-C40)	NSL	mg/kg	16 U	17 U	15 U	21 J+	470	810	240	10 J	79	93	52	56	150 J
Σ TPH	NSL	mg/kg	24.9	25.6	23.5	89	1770	2810	780	60	199	233	232	286	360
Oil and Grease	NSL	mg/kg	250 U	250 U	250 U	230 U	4000	5800	2600	240 U	1100	1600	1100	440	300 J

Notes:

Underlined values exceed the Region 4 ESV

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J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J+ = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased high).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approxim

mg/kg = Milligrams per kilogram

MR = Maumee River

SC = Swan Creek

TPH = Total Petroleum Hydrocarbons

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

Σ TPH = Sum of Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + ORO (C28-C40)

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Table 3-2a. Core and Surface Grab Sediment Results for TPH and Oil and Grease

		Location ID:	SC21-SC12	SC21-SC12	SC21-SC12	SC21-SC13	SC21-SC13	SC21-SC13	SC21-SC14	SC21-SC15	SC21-SC15	SC21-SC15	SC21-SC16	SC21-SC16	SC21-SC16	SC21-SC16
		Sample Name:	SC21-SC12-0010	SC21-SC12-1020	SC21-SC12-2040	SC21-SC13-0010	SC21-SC13-1020	SC21-SC13-2040	SC21-SC14-SURF	SC21-SC15-0010	SC21-SC15-1020	SC21-SC15-2040	SC21-SC16-0010	SC21-SC16-1020	SC21-SC16-2040	SC21-SC16-4060
		Sample Date:	11/11/2021	11/11/2021	11/11/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021
		Depth Interval (ft):	0-1	1-2	2-4	0-1	1-2	2-4	0-0.5	0-1	1-2	2-4	0-1	1-2	2-4	4-6
Analyte	**Region 4 ESV**	**Unit**														
Diesel Range Organics (C10-C28)	340	mg/kg	45	60	39	270 J	290 J	340 J	310 J	43	830	2300	570	88	75	34
Oil Range Organics (C28-C40)	NSL	mg/kg	16 U	16 U	16 U	280 J	270 J	180 J-	300 J	22 J	250	750	190	31	26	14 J
Σ TPH	NSL	mg/kg	61	76	55	550	560	520	610	65	1080	3050	760	119	101	48
Oil and Grease	NSL	mg/kg	160 J	160 J	240 UJ	730 J	930 J	4400 J	790 J	610	3400	8500	1500	510	290	170 J

Notes:

Underlined values exceed the Region 4 ESV

FD = Field duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J+ = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased high).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approxim

mg/kg = Milligrams per kilogram

MR = Maumee River

SC = Swan Creek

TPH = Total Petroleum Hydrocarbons

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

Σ TPH = Sum of Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + ORO (C28-C40)

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Table 3-2a. Core and Surface Grab Sediment Results for TPH and Oil and Grease

			Location ID:	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC18	SC21-SC19	SC21-SC19	SC21-SC19	SC21-SC19	SC21-SC20	SC21-SC20	SC21-SC21	SC21-SC21
			Sample Name:	SC21-SC17-0010	SC21-SC17-1020	SC21-SC17-2040	SC21-SC17-4060	SC21-SC17-6080	SC21-SC18-SURF	SC21-SC19-0010	SC21-SC19-1020	SC21-SC19-2040	SC21-SC19-4060	SC21-SC20-0010	SC21-SC20-1020	SC21-SC21-0010	SC21-SC21-1020
			Sample Date:	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/9/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021
			Depth Interval (ft):	0-1	1-2	2-4	4-6	6-8	0-0.5	0-1	1-2	2-4	4-6	0-1	1-2	0-1	1-2
Analyte	**Region 4 ESV**	**Unit**															
Diesel Range Organics (C10-C28)	340	mg/kg		700	1400	300 J	46	65	490 J	890	2200	98	52	56 J	29	720	3200
Oil Range Organics (C28-C40)	NSL	mg/kg		230	300	130	20	29 J+	210 J	640	200	54	34	12 J	15	390	1300
Σ TPH	NSL	mg/kg		930	1700	430	66	94	700	1530	2400	152	86	68	44	1110	4500
Oil and Grease	NSL	mg/kg		1200	2000	160 J	150 J	11000	3600	2200	440	350	150 J	150 J	240 U	810	820

Notes:

Underlined values exceed the Region 4 ESV

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SC = Swan Creek

TPH = Total Petroleum Hydrocarbons

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

Σ TPH = Sum of Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + ORO (C28-C40)

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Table 3-2a. Core and Surface Grab Sediment Results for TPH and Oil and Grease

			Location ID:	SC21-SC21	SC21-SC21	SC21-SC22	SC21-SC22	SC21-SC23	SC21-SC23	SC21-SC23	SC21-SC24	SC21-SC24	SC21-SC24	SC21-SC25	SC21-SC25	SC21-SC25	SC21-SC25
			Sample Name:	SC21-SC21-2040	SC21-SC21-SURF	SC21-SC22-0010	SC21-SC22-1020	SC21-SC23-0010	SC21-SC23-1020	SC21-SC23-2040	SC21-SC24-0010	SC21-SC24-1020	SC21-SC24-2040	SC21-SC25-0010	SC21-SC25-1020	SC21-SC25-2040	SC21-SC25-2040FD
			Sample Date:	11/5/2021	11/9/2021	11/4/2021	11/4/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/4/2021	11/4/2021	11/4/2021	11/4/2021
			Depth Interval (ft):	2-4	0-0.5	0-1	1-2	0-1	1-2	2-4	0-1	1-2	2-4	0-1	1-2	2-4	2-4
Analyte	**Region 4 ESV**	**Unit**															
Diesel Range Organics (C10-C28)	340	mg/kg		1700	230 J	120	42 J+	1600 J	400	790	650	460	1200	220	200	1100	1700
Oil Range Organics (C28-C40)	NSL	mg/kg		750	250 J	84	21 J+	710 J	140	370	260	210	280	250	150	560	800
Σ TPH	NSL	mg/kg		2450	480	204	63	2310	540	1160	910	670	1480	470	350	1660	2500
Oil and Grease	NSL	mg/kg		2300	460 U	300 U	260 U	960	1100	1800	850	640	1600	700	420 U	380 U	270 J

Notes:

Underlined values exceed the Region 4 ESV

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J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

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SC = Swan Creek

TPH = Total Petroleum Hydrocarbons

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

Σ TPH = Sum of Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + ORO (C28-C40)

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Table 3-2a. Core and Surface Grab Sediment Results for TPH and Oil and Grease

		Location ID:	SC21-SC25	SC21-SC26	SC21-SC26	SC21-SC27	SC21-SC28	SC21-SC28	SC21-SC28	SC21-SC28	SC21-SC28	SC21-SC29	SC21-SC30	SC21-SC30
		Sample Name:	SC21-SC25-4060	SC21-SC26-0010	SC21-SC26-1020	SC21-SC27-SURF	SC21-SC28-0010	SC21-SC28-0010FD	SC21-SC28-1020	SC21-SC28-2040	SC21-SC28-4060	SC21-SC29-0010	SC21-SC30-0010	SC21-SC30-1020
		Sample Date:	11/4/2021	11/3/2021	11/3/2021	11/9/2021	11/4/2021	11/4/2021	11/4/2021	11/4/2021	11/4/2021	11/3/2021	11/4/2021	11/4/2021
		Depth Interval (ft):	4-6	0-1	1-2	0-0.5	0-1	0-1	1-2	2-4	4-6	0-1	0-1	1-2
Analyte	**Region 4 ESV**	**Unit**												
Diesel Range Organics (C10-C28)	340	mg/kg	1700	870	380	300 J	2000	2300	1800	1900	1800	2200	2300	2900
Oil Range Organics (C28-C40)	NSL	mg/kg	580	290	110	300 J	470	640	570	560	540	630	610	890
Σ TPH	NSL	mg/kg	2280	1160	490	600	2470	2940	2370	2460	2340	2830	2910	3790
Oil and Grease	NSL	mg/kg	650	350	260 U	280 J	250 J	310 U	620	570 J	330 U	340	380 U	300 J

Notes:

Underlined values exceed the Region 4 ESV

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J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approxim

mg/kg = Milligrams per kilogram

MR = Maumee River

SC = Swan Creek

TPH = Total Petroleum Hydrocarbons

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

Σ TPH = Sum of Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + ORO (C28-C40)

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Table 3-2a. Core and Surface Grab Sediment Results for TPH and Oil and Grease

		Location ID:	SC21-SC30	SC21-SC30	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC32	SC21-SC32	SC21-SC32	SC21-SC32	SC21-SC32
		Sample Name:	SC21-SC30-2040	SC21-SC30-SURF	SC21-SC31-0010	SC21-SC31-1020	SC21-SC31-2040	SC21-SC31-4060	SC21-SC31-6080	SC21-SC32-0010	SC21-SC32-1020	SC21-SC32-2040	SC21-SC32-4060	SC21-SC32-6080
		Sample Date:	11/4/2021	11/9/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021
		Depth Interval (ft):	2-4	0-0.5	0-1	1-2	2-4	4-6	6-8	0-1	1-2	2-4	4-6	6-8
Analyte	**Region 4 ESV**	**Unit**												
Diesel Range Organics (C10-C28)	340	mg/kg	1900	230 J	980	3700	2600	2900	2300	110	110	200	83	24
Oil Range Organics (C28-C40)	NSL	mg/kg	560	200 J	430	650	930	670	620	130	110	170	77	24 J+
Σ TPH	NSL	mg/kg	2460	430	1410	4350	3530	3570	2920	240	220	370	160	48
Oil and Grease	NSL	mg/kg	680	1500	290 J	350	280 J	710	1400	390 U	370 U	350 U	310 U	290 U

Notes:

Underlined values exceed the Region 4 ESV

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J+ = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased high).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approxim

mg/kg = Milligrams per kilogram

MR = Maumee River

SC = Swan Creek

TPH = Total Petroleum Hydrocarbons

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

Σ TPH = Sum of Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + ORO (C28-C40)

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Table 3-2a. Core and Surface Grab Sediment Results for TPH and Oil and Grease

			Location ID:	SC21-SC33	SC21-SC33	SC21-SC33	SC21-SC33	SC21-SCREF
			Sample Name:	SC21-SC33-0010	SC21-SC33-1020	SC21-SC33-2040	SC21-SC33-SURF	SC21-SCREF-SURF
			Sample Date:	11/4/2021	11/4/2021	11/4/2021	11/8/2021	11/9/2021
			Depth Interval (ft):	0-1	1-2	2-3.4	0-0.5	0-0.5
Analyte	**Region 4 ESV**	**Unit**						
Diesel Range Organics (C10-C28)	340	mg/kg	500	2200	2000	270 J	140 J
Oil Range Organics (C28-C40)	NSL	mg/kg	290	700	690	290 J	140 J
Σ TPH	NSL	mg/kg	790	2900	2690	560	280
Oil and Grease	NSL	mg/kg	360	980	1400	280 J	260 J

Notes:

Underlined values exceed the Region 4 ESV

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J+ = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased high).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approxim

mg/kg = Milligrams per kilogram

MR = Maumee River

SC = Swan Creek

TPH = Total Petroleum Hydrocarbons

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

Σ TPH = Sum of Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + ORO (C28-C40)

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Table 3-2b. Composite Sediment Results for TPH and Oil and Grease

		Location ID:	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
		Sample Name:	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-05FD	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
		Sample Date:	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/10/2021	11/11/2021	11/11/2021
Analyte	**Region 4 ESV**	**Unit**									
Diesel Range Organics (C10-C28)	340	mg/kg	230	<u>880</u>	220	<u>510</u>	<u>540 J</u>	<u>3100 J</u>	100	<u>1400</u>	330
Oil Range Organics (C28-C40)	NSL	mg/kg	140	280	64	140	120 J	780 J	29 J+	170	98
Σ TPH	NSL	mg/kg	370	1160	284	650	660	3880	129	1570	428
Oil and Grease	NSL	mg/kg	500	1300	280	980	2000 J	2000	620	1000	540

Notes:

<u>Underlined values exceed the Region 4 ESV</u>

FD = Field duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J+ = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased high).

mg/kg = Milligrams per kilogram

SC = Swan Creek

TPH = Total Petroleum Hydrocarbons

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

Σ TPH = Sum of Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + ORO (C28-C40)

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Table 3-3a. Core and Surface Grab Sediment Results for Metals and TOC

				Location ID:	SC21-MR01	SC21-MR01	SC21-MR01	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR03-A	SC21-MR03-A	SC21-MR03-A	SC21-MR03-B	SC21-MR03-B	SC21-MR03-B
				Sample Name:	SC21-MR01-0010	SC21-MR01-1020	SC21-MR01-2040	SC21-MR02-0010	SC21-MR02-1020	SC21-MR02-2040	SC21-MR02-4060	SC21-MR02-6080	SC21-MR03-A-0010	SC21-MR03-A-1020	SC21-MR03-A-2040	SC21-MR03-B-0010	SC21-MR03-B-1020	SC21-MR03-B-1020FD
				Sample Date:	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021
				Depth Interval (ft):	0-1	1-2	2-4	0-1	1-2	2-4	4-6	6-8	0-1	1-2	2-4	0-1	1-2	1-2
Analyte	**TEC**	**PEC**	**Ohio SRV**	**Unit**														
Aluminum	NSL	NSL	42000	mg/kg	22400	14800	13100	14800	18200	18800	17500	19900	9750 J	16100	8870 J	12600 J	13400 J	12500 J
Antimony	NSL	NSL	0.84	mg/kg	12.7 U	9.6 U	7.6 U	9.6 U	8.1 U	7.7 U	9.6 U	9.5 U	6.5 U	7.1 U	7.4 U	8.2 U	7.5 U	9.2 U
Arsenic	9.79	33	11	mg/kg	7.9	6.5	9	**16**	**15.7**	**16.8**	**27.6**	**19.9**	**15.5 J**	**11 J**	8.8 J	**24.7 J**	**25 J**	**25.8 J**
Barium	NSL	NSL	210	mg/kg	131	89.8	95.8	122	149	147	161	144	108	124	80	115	119	128
Beryllium	NSL	NSL	0.8	mg/kg	0.93 J	0.62 J	0.68	0.65 J	0.8	0.84	0.82	0.84	0.56	0.72	0.45 J	0.6 J	0.61 J	0.67 J
Cadmium	0.99	4.98	0.96	mg/kg	0.56 J	0.9	0.33 J	**2.9**	**3.3**	**5**	**4.4**	**2.4**	0.92	0.8	0.59 J	**1.3**	**1.5**	**1.6**
Calcium	NSL	NSL	110000	mg/kg	29800	29800	74100	43700	40300	36100	42800	43700	31600	34200	42000	39100	32900	35500
Chromium	43.4	111	51	mg/kg	**48.8 J**	24.4 J	22.6 J	**49.1 J**	**47 J**	36.3 J	**124 J**	37.2 J	18.9	27.2	16.4	26	27.5	28.3
Cobalt	NSL	NSL	12	mg/kg	10.5 J	7.8 J	10.4	9.4	9.7	10.4	10.9	10.6	7.2	9.5	6.7	8	7.2	8
Copper	31.6	149	42	mg/kg	29.1	21.7	21.8	**63.1**	**57.5**	**64.7**	**112**	**50.2**	**75 J**	**34.9 J**	**45.4 J**	**55.7 J**	**59.3 J**	**67.4 J**
Iron	NSL	NSL	44000	mg/kg	28900	19600	23100	22500	25700	27800	27500	27500	18800	26000	16300	20700	19800	21000
Lead	35.8	128	47	mg/kg	18.2	18.2	10.4	**80**	**83.4**	**125**	**193**	**91.2**	**181 J**	**51.5 J**	**94.7 J**	**166 J**	**130 J**	**169 J**
Magnesium	NSL	NSL	29000	mg/kg	10800	9440	16100	11400	11900	10300	11900	11200	8910	10200	10400	11600	8580	9370
Manganese	NSL	NSL	1000	mg/kg	445	303	488	435	386	437	452	504	276 J	670 J	286 J	344 J	313 J	350 J
Mercury	0.18	1.06	0.12	mg/kg	0.027 J	0.062 J	0.019 J	**0.35**	**0.55**	**0.51**	**0.93**	**0.84**	**2.2**	**3.8**	**1.7**	**0.66**	**1.4**	**1.9**
Nickel	22.7	48.6	36	mg/kg	**33.1**	**24.4**	**28.4**	**29.8**	**33**	**32**	**35.2**	**32.3**	20.7	**27.8**	18.7	**23.2**	**23.1**	**24.7**
Potassium	NSL	NSL	12000	mg/kg	4750	2960	3840	3150	3760	3750	3570	3900	1950	2980	1930	2590	2730	2570
Selenium	NSL	NSL	1.4	mg/kg	7.4 U	5.6 U	4.4 U	5.6 U	4.7 U	4.5 U	5.6 U	5.5 U	3.8 U	4.1 U	4.3 U	4.8 U	4.4 U	5.3 U
Silver	NSL	NSL	0.43	mg/kg	2.1 U	1.6 U	1.6	1 J	2	0.86 J	2	0.33 J	1.9	1.2 U	1 J	0.51 J	1.2 J	1.5
Sodium	NSL	NSL	NSL	mg/kg	162 J	140 J	215 J	173 J	184 J	187 J	211 J	218 J	142 J	157 J	159 J	168 J	146 J	160 J
Thallium	NSL	NSL	4.7	mg/kg	5.3 U	4 U	3.2 U	4 U	3.4 U	3.2 U	4 U	4 U	2.7 U	3 U	3.1 U	3.4 U	3.1 U	3.8 U
Vanadium	NSL	NSL	40	mg/kg	45	31	29.6	33.3	38.6	39.9	38.3	40.6	23.2	33.5	21.7	27.7	28.4	28.8
Zinc	121	459	190	mg/kg	114	87.5	56	**155**	**261**	**226**	**327**	**190**	**309 J**	**154 J**	**178 J**	**247 J**	**219 J**	**287 J**
Total Organic Carbon	NSL	NSL	NSL	%	2.32	1.45	1.07	3.15	3.12	3	3.87	2.75	5.36	3.29	1.42	2.3	7.87	2.99

NOTES:
Bolded values exceed the TEC
Bolded and shaded values exceed the PEC
Underlined values exceed the Ohio SRV
FD = Field Duplicate
J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).
J+ = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased high).
J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).
mg/kg = milligrams per kilogram
MR = Maumee River
NSL = No Screening Level
SC = Swan Creek
U = Compound was analyzed but not detected.
UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.
PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TOC = Total Organic Carbon
Ohio SRV = Ecological Risk Assessment Guidance Document (Ohio EPA 2018)

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Table 3-3a. Core and Surface Grab Sediment Results for Metals and TOC

					Location ID:	SC21-MR03-B	SC21-MR04	SC21-MR04	SC21-MR04	SC21-MR04	SC21-MR05	SC21-MR05	SC21-MR05	SC21-MR06	SC21-MR06	SC21-MR06	SC21-MR06	SC21-MRREF	SC21-MRREF
					Sample Name:	SC21-MR03-B-2040	SC21-MR04-0010	SC21-MR04-1020	SC21-MR04-2040	SC21-MR04-4060	SC21-MR05-0010	SC21-MR05-1020	SC21-MR05-2040	SC21-MR06-0010	SC21-MR06-1020	SC21-MR06-SURF	SC21-MR06-SURFFD	SC21-MRREF-0010	SC21-MRREF-1020
					Sample Date:	11/8/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/5/2021	11/5/2021	11/5/2021	11/7/2021	11/7/2021	11/8/2021	11/8/2021	11/9/2021	11/9/2021
					Depth Interval (ft):	2-4	0-1	1-2	2-4	4-6	0-1	1-2	2-4	0-1	1-2	0-0.5	0-0.5	0-1	1-2
Analyte	**TEC**	**PEC**	**Ohio SRV**	**Unit**															
Aluminum	NSL	NSL	42000	mg/kg	9450 J	26900	27800	16600	15900	14400	10500	9640	16500	14600	9440 J	18900 J	22100	19800
Antimony	NSL	NSL	0.84	mg/kg	6.4 U	12.9 UJ	11.2 UJ	6.1 UJ	9.4 UJ	9.6 UJ	7.7 UJ	8.4 UJ	7.9 U	6.3 U	5 U	10.8 U	10.7 U	8 U
Arsenic	9.79	33	11	mg/kg	**22.6 J**	**10.5**	**12.5**	6.8	**13.7**	**26.9**	**20.4**	5.8	**65.2**	**16.1**	**28**	**45.9**	8.9	8.3
Barium	NSL	NSL	210	mg/kg	96.4	159	162	106	110	124	85.7	63.3	183	116	93.5	168	129	120
Beryllium	NSL	NSL	0.8	mg/kg	0.45 J	1.1	1.2	0.76	0.69 J	0.7 J	0.48 J	0.44 J	0.84	0.68	0.46	0.89 J	0.93	0.86
Cadmium	0.99	4.98	0.96	mg/kg	0.75	0.76 J	0.7 J	0.24 J	0.39 J	**1.4**	0.63 J	0.31 J	**1.8**	0.71	0.59	0.94	0.76 J	0.75
Calcium	NSL	NSL	110000	mg/kg	56800	40800	44700	59100	110000	40100	46600	40200	38200	46000	17400 J	35600 J	33700	29700
Chromium	43.4	111	51	mg/kg	17.1	36.7	37.7	25	25.7	**44 J**	17.7 J	14.7 J	27.7	25.2 J	15.5 J	29 J	31.2	29.2
Cobalt	NSL	NSL	12	mg/kg	6.6	12.5	13.5	11.1	14.9	9.2	7.6	7.5	10	8.6	5.5	10.6	10.7	10
Copper	31.6	149	42	mg/kg	**60.5 J**	**39.6**	**37.6**	22.9	31.2	**68.7 J**	**54.1 J**	16.4 J	**132**	**57.2**	**46.2**	**69.9**	**32.1**	30.1
Iron	NSL	NSL	44000	mg/kg	17700	32900	33600	23500	30200	21300	17200	18200	27200	22400	15000 J	27400 J	28600	26100
Lead	35.8	128	47	mg/kg	**139 J**	26.6	22.5	10.6	13.9	**147**	**98.2**	8.7	**315**	**143**	**116 J**	**338 J**	21.3	22.5
Magnesium	NSL	NSL	29000	mg/kg	20000	12300	13000	13900	23800	10900	13000	12200	11300	11100	5350 J	11200 J	11300	9870
Manganese	NSL	NSL	1000	mg/kg	310 J	643	670	414	640	348 J	315 J	381 J	374	344	250 J	457 J	388	356
Mercury	0.18	1.06	0.12	mg/kg	**1.5**	0.045 J	0.042 J	0.14 U	0.16 U	**1.1**	**0.8**	0.038 J	**4.4**	**1.1**	**4.3 J**	**2.5 J**	0.07 J	0.074 J
Nickel	22.7	48.6	36	mg/kg	18.7	**35.6**	**37.1**	**30.9**	**40.1**	**27.9**	19.1	18.6	**33**	**25.4**	16.3	**30.7**	**31.3**	**30**
Potassium	NSL	NSL	12000	mg/kg	1900	5970	5990	4990	5080	3180	2360	2330	3080	2750	1780	3620	4420	3760
Selenium	NSL	NSL	1.4	mg/kg	3.8 U	7.5 U	6.5 U	3.6 U	5.5 U	5.6 U	4.5 U	4.9 U	4.6 U	3.7 U	2.9 U	6.3 U	6.2 U	4.7 U
Silver	NSL	NSL	0.43	mg/kg	0.97 J	2.2 U	1.9 U	1 U	1.6 U	0.44 J	0.6 J	1.4 U	3.4	0.91 J	1.5	1.2 J	1.8 UJ	1.3 UJ
Sodium	NSL	NSL	NSL	mg/kg	161 J	227 J	256 J	241 J	359 J	179 J	182 J	153 J	198 J	204 J	94.1 J	175 J	157 J	140 J
Thallium	NSL	NSL	4.7	mg/kg	2.7 U	5.4 U	4.7 U	2.5 U	3.9 U	4 U	3.2 U	3.5 U	3.3 U	2.6 U	2.1 U	4.5 U	4.5 U	3.3 U
Vanadium	NSL	NSL	40	mg/kg	22.3	53.1	56.6	37.4	40.2	33.2	26.4	23.8	36.6	32.3	20.4	41.1	45.4	40.3
Zinc	121	459	190	mg/kg	**219 J**	**153**	**150**	60.9	71.9	**208**	**170**	49.2	**616**	**217**	**234**	**327**	**124**	**123**
Total Organic Carbon	NSL	NSL	NSL	%	2.58	2.49	2.48	1.46	1.15	2.81	2.63	1.93	3.44	2.94	3.49	1.51	2.41	2.12

NOTES:
Bolded values exceed the TEC
Bolded and shaded values exceed the PEC
Underlined values exceed the Ohio SRV
FD = Field Duplicate
J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).
J+ = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased high).
J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).
mg/kg = milligrams per kilogram
MR = Maumee River
NSL = No Screening Level
SC = Swan Creek
U = Compound was analyzed but not detected.
UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.
PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TOC = Total Organic Carbon
Ohio SRV = Ecological Risk Assessment Guidance Document (Ohio EPA 2018)

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Table 3-3a. Core and Surface Grab Sediment Results for Metals and TOC

					Location ID:	SC21-MRREF	SC21-MRREF	SC21-MRREF	SC21-MRREF	SC21-SC01	SC21-SC02	SC21-SC02	SC21-SC02	SC21-SC03	SC21-SC03	SC21-SC03	SC21-SC04	SC21-SC04	SC21-SC04	SC21-SC04
					Sample Name:	SC21-MRREF-2040	SC21-MRREF-4060	SC21-MRREF-6080	SC21-MRREF-SURF	SC21-SC01-SURF	SC21-SC02-0010	SC21-SC02-1020	SC21-SC02-2040	SC21-SC03-0010	SC21-SC03-1020	SC21-SC03-2040	SC21-SC04-0010	SC21-SC04-1020	SC21-SC04-2040	SC21-SC04-4060
					Sample Date:	11/9/2021	11/9/2021	11/9/2021	11/8/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021
					Depth Interval (ft):	2-4	4-6	6-8	0-0.5	0-0.5	0-1	1-2	2-4	0-1	1-2	2-4	0-1	1-2	2-4	4-6
Analyte	**TEC**	**PEC**	**Ohio SRV**	**Unit**																
Aluminum	NSL	NSL	42000	mg/kg		15300	12300	13400	20300	5160	7350	4440	4320	8900	13600	8330	4200 J	4280 J	4130 J	2860 J
Antimony	NSL	NSL	0.84	mg/kg		7.2 U	6.1 U	6.7 U	11.7 U	6.7 U	8.5 U	7.7 U	6 U	9.5 U	10.3 U	7.5 U	5.8 U	7 U	6.4 U	5.9 U
Arsenic	9.79	33	11	mg/kg		**25.6**	**10.8**	**11**	7.1	**13.1**	4.7	3.1	3.8	7.5	**169**	4	3 J	3.1 J	2.9 J	1.5
Barium	NSL	NSL	210	mg/kg		110	80.9	92.1	118	50.4	58.7	42.3	45	84.1	162	49.3	26.8	22.6 J	22.1	15 J
Beryllium	NSL	NSL	0.8	mg/kg		0.73	0.59	0.7	0.86 J	0.42 J	0.35 J	0.22 J	0.23 J	0.42 J	0.72 J	0.34 J	0.2 J	0.19 J	0.19 J	0.13 J
Cadmium	0.99	4.98	0.96	mg/kg		**1.1**	0.42 J	0.41 J	0.57 J	0.16 J	0.36 J	0.44 J	0.92	**1.1**	**3.1**	0.22 J	0.2 J	0.58 U	0.53 U	0.49 U
Calcium	NSL	NSL	110000	mg/kg		38900	32700	36100	32100	64500	22600	15900	25300	27000	36700	46000	26700	29100	24700	17200
Chromium	43.4	111	51	mg/kg		25.2	19	20.6	27.9	9.4	14.6	9.6	10.3	18.4 J	27.6 J	13.4 J	9.2	7.7	7.2	5.3
Cobalt	NSL	NSL	12	mg/kg		9	7.9	9.2	9.9	6.3	5.1 J	3.4 J	4.9 J	6.6 J	10.1	6.8	4.3 J	4.6 J	4.5 J	3.4 J
Copper	31.6	149	42	mg/kg		**35.1**	27.8	29.7	27.9	25.6	29.5	**39.1**	**50.3**	**43.4**	**190**	15.4	**42.7 J**	19.2 J	7.9 J	5.4
Iron	NSL	NSL	44000	mg/kg		22300	17900	21800	25300	17000	11900	7840	8790	15100	28900	14700	7990	8070	7450	4880
Lead	35.8	128	47	mg/kg		**48.3**	35.7	**42.4**	18	20.8	23.5	**40.5**	32.4	**58.3**	**718**	9.2	15.2 J	5.8 J	4.6 J	3.6
Magnesium	NSL	NSL	29000	mg/kg		10700	10100	12200	9710	18200	7430	4970	7130	9220	10800	9800	6480	6890	5710	4360
Manganese	NSL	NSL	1000	mg/kg		394	310	360	331	332 J	300 J	175 J	191 J	280	359	324	124 J	133 J	118 J	84.3
Mercury	0.18	1.06	0.12	mg/kg		**0.23 J**	**0.25 J**	0.18 J	0.041 J	0.12 U	0.023 J	0.035 J	0.052 J	0.072 J	**2.7**	0.13 U	0.029 J	0.13 U	0.13 U	0.11 U
Nickel	22.7	48.6	36	mg/kg		**25.6**	20.7	**24.1**	**28.1**	15.6	12.3	8.1	10.9	16.3	**46.1**	16.2	9.6	9.8	8.9	6.5
Potassium	NSL	NSL	12000	mg/kg		3090	2380	2550	4270	1460	1600	995	966	1870	2460	1790	986	1020	979	630
Selenium	NSL	NSL	1.4	mg/kg		4.2 U	3.6 U	3.9 U	6.8 U	3.9 U	5 U	4.5 U	3.5 U	5.6 U	6 U	4.4 U	3.4 U	4.1 U	3.7 U	3.4 U
Silver	NSL	NSL	0.43	mg/kg		1.2 UJ	1 UJ	1.1 UJ	2 UJ	1.1 U	1.4 U	1.3 U	0.99 U	1.6 U	1.4 J	1.2 U	0.97 U	1.2 U	1.1 U	0.98 U
Sodium	NSL	NSL	NSL	mg/kg		148 J	123 J	138 J	977 U	169 J	202 J	144 J	186 J	990	1520	516 J	158 J	171 J	138 J	82.1 J
Thallium	NSL	NSL	4.7	mg/kg		3 U	2.6 U	2.8 U	4.9 U	2.8 U	3.6 U	3.2 U	2.5 U	4 U	4.3 U	3.1 U	2.4 U	2.9 U	2.7 U	2.4 U
Vanadium	NSL	NSL	40	mg/kg		33.9	27.6	32	41.4	14.1	19	11.4	11.3	22	33.3	20.4	12.2	13.4	12.6	8.9
Zinc	121	459	190	mg/kg		**149**	101	96.8	105	65.2	99.9	117	73.8	**141**	**956**	47.9	32.7 J	23.4 J	24.5 J	15.3
Total Organic Carbon	NSL	NSL	NSL	%		2.47	2.15	2.93	2.58	2.87	2.9	2.35	1.39	3.42	4.01	1.67	0.976	0.851	1.11	0.564

NOTES:
Bolded values exceed the TEC
Bolded and shaded values exceed the PEC
Underlined values exceed the Ohio SRV
FD = Field Duplicate
J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).
J+ = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased high).
J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).
mg/kg = milligrams per kilogram
MR = Maumee River
NSL = No Screening Level
SC = Swan Creek
U = Compound was analyzed but not detected.
UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.
PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TOC = Total Organic Carbon
Ohio SRV = Ecological Risk Assessment Guidance Document (Ohio EPA 2018)

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Table 3-3a. Core and Surface Grab Sediment Results for Metals and TOC

				Location ID:	SC21-SC04	SC21-SC04	SC21-SC05	SC21-SC06	SC21-SC06	SC21-SC06	SC21-SC07	SC21-SC07	SC21-SC07	SC21-SC07	SC21-SC07	SC21-SC08	SC21-SC09	SC21-SC09	SC21-SC09
				Sample Name:	SC21-SC04-4060FD	SC21-SC04-6080	SC21-SC05-SURF	SC21-SC06-0010	SC21-SC06-1020	SC21-SC06-2040	SC21-SC07-0010	SC21-SC07-1020	SC21-SC07-2040	SC21-SC07-2040FD	SC21-SC07-4060	SC21-SC08-0010	SC21-SC09-0010	SC21-SC09-1020	SC21-SC09-2040
				Sample Date:	11/8/2021	11/8/2021	11/9/2021	11/8/2021	11/8/2021	11/8/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/3/2021	11/9/2021	11/9/2021	11/9/2021
				Depth Interval (ft):	4-6	6-8	0-0.5	0-1	1-2	2-4	0-1	1-2	2-4	2-4	4-6	0-1	0-1	1-2	2-4
Analyte	**TEC**	**PEC**	**Ohio SRV**	**Unit**															
Aluminum	NSL	NSL	42000	mg/kg	3580 J	5120 J	3790	13700 J	10100 J	9280 J	13000	15400	14300	15000	14400	11800	13700	15200	6860
Antimony	NSL	NSL	0.84	mg/kg	5.6 U	6.7 U	6.7 U	5.8 U	5.2 U	4.9 U	6.4 UJ	7 UJ	5.9 UJ	5.4 UJ	6.1 UJ	6.8 U	7.3 U	7.3 U	6.4 U
Arsenic	9.79	33	11	mg/kg	1.9 J	3.6 J	4.7	4.7 J	4.5 J	6 J	**11.3**	**10.3**	**10.2**	**11**	9.3	6.4	9.1	**11.1**	9.7
Barium	NSL	NSL	210	mg/kg	20.2	28.8	34.1	68	58.2	72.3	84.2	95.6	83.3	89.5	83.7	76.8	105	127	61.1
Beryllium	NSL	NSL	0.8	mg/kg	0.17 J	0.24 J	0.19 J	0.61	0.44	0.42	0.62	0.7	0.65	0.69	0.68	0.49 J	0.67	0.73	0.35 J
Cadmium	0.99	4.98	0.96	mg/kg	0.12 J	0.15 J	0.2 J	0.48 U	0.13 J	0.23 J	0.64	0.32 J	0.22 J	0.27 J	0.26 J	0.16 J	**1.4**	**2.5**	**1.8**
Calcium	NSL	NSL	110000	mg/kg	18300	29500	30900	58800	66500	63000	44300	39600	48800	49600	51400	68400	23200	21800	57500
Chromium	43.4	111	51	mg/kg	6.6	9.5	7.7	21.2	16.4	15.4	21.5	22.7	22.7	22.7	21.6	17.9	29.1	37.2	16.5
Cobalt	NSL	NSL	12	mg/kg	4.2 J	5.4 J	3.5 J	10.7	8.2	8	10.6	11.3	11.2	11.6	11.4	8.8	8.5	9.5	7.4
Copper	31.6	149	42	mg/kg	6.4 J	9.5 J	**34.1**	20.8 J	20.4 J	25.6 J	**156**	**48.5**	24.5	25.9	28.1	19.2	**85.5**	**126**	**469**
Iron	NSL	NSL	44000	mg/kg	6260	8710	7910	22300	17300	18200	23200	24100	24000	24700	23600	18800	21700	24400	14800
Lead	35.8	128	47	mg/kg	5.6 J	5.5 J	32.8	9.1 J	9.3 J	7.8 J	**154**	**41.6**	17.9	19.6	22.6	8.8	**114**	**179**	**312**
Magnesium	NSL	NSL	29000	mg/kg	4870	8010	7020	12700	12400	13500	15100	14300	15700	17300	14700	15000	9100	8590	11300
Manganese	NSL	NSL	1000	mg/kg	94.8 J	153 J	206 J	422 J	379 J	331 J	526	442	495	537	533	343	444	546	343
Mercury	0.18	1.06	0.12	mg/kg	0.11 U	0.12 U	0.021 J	0.12 U	0.035 J	0.11 U	0.092 J	0.057 J	0.016 J	0.022 J	0.02 J	0.1 U	**0.21**	**0.51**	**0.67**
Nickel	22.7	48.6	36	mg/kg	8.5	11.3	7.5	**25**	20.6	22.4	**26.8**	**29.1**	**28.6**	**29.6**	**28.8**	**24.4**	**23.6**	**28.7**	19.4
Potassium	NSL	NSL	12000	mg/kg	777	1160	916	3980	2780	2940	2940	3450	3430	3500	3600	3680	2370	2590	1480
Selenium	NSL	NSL	1.4	mg/kg	3.3 U	3.9 U	3.9 U	3.4 U	3 U	2.9 U	3.7 U	4.1 U	3.4 U	3.1 U	3.6 U	4 U	4.3 U	4.3 U	3.7 U
Silver	NSL	NSL	0.43	mg/kg	0.93 U	1.1 U	1.1 U	0.97 U	0.86 U	0.81 U	1.1 U	1.2 U	0.98 U	0.9 U	1 U	1.1 U	1.2 U	0.76 J	0.21 J
Sodium	NSL	NSL	NSL	mg/kg	92.2 J	98.8 J	104 J	205 J	167 J	175 J	230 J	241 J	242 J	259 J	266 J	230 J	190 J	184 J	173 J
Thallium	NSL	NSL	4.7	mg/kg	2.3 U	2.8 U	2.8 U	2.4 U	2.2 U	2 U	2.7 U	2.9 U	2.5 U	2.2 U	2.5 U	2.8 U	3.1 U	3 U	2.7 U
Vanadium	NSL	NSL	40	mg/kg	11	15.6	9.6	29.6	23.9	22.8	33.4	37.9	35.7	37.5	34.8	27.9	30.3	31.9	19.3
Zinc	121	459	190	mg/kg	18.8 J	29 J	75.3	49.2 J	43.5 J	48.6 J	**167**	85	64	68.1	69.2	43.7	**201**	**306**	**303**
Total Organic Carbon	NSL	NSL	NSL	%	0.459	0.819	0.772	0.621	0.854	0.882	1.19	0.738	0.727	0.706	1.43	0.918	2.78	3.63	1.94

NOTES:
Bolded values exceed the TEC
Bolded and shaded values exceed the PEC
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FD = Field Duplicate
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J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).
mg/kg = milligrams per kilogram
MR = Maumee River
NSL = No Screening Level
SC = Swan Creek
U = Compound was analyzed but not detected.
UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.
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TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TOC = Total Organic Carbon
Ohio SRV = Ecological Risk Assessment Guidance Document (Ohio EPA 2018)

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Table 3-3a. Core and Surface Grab Sediment Results for Metals and TOC

				Location ID:	SC21-SC10	SC21-SC11	SC21-SC11	SC21-SC11	SC21-SC11	SC21-SC11	SC21-SC12	SC21-SC12	SC21-SC12	SC21-SC13	SC21-SC13	SC21-SC13	SC21-SC14	SC21-SC15	SC21-SC15
				Sample Name:	SC21-SC10-0010	SC21-SC11-0010	SC21-SC11-0010FD	SC21-SC11-1020	SC21-SC11-2040	SC21-SC11-SURF	SC21-SC12-0010	SC21-SC12-1020	SC21-SC12-2040	SC21-SC13-0010	SC21-SC13-1020	SC21-SC13-2040	SC21-SC14-SURF	SC21-SC15-0010	SC21-SC15-1020
				Sample Date:	11/5/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/9/2021	11/11/2021	11/11/2021	11/11/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/7/2021	11/7/2021
				Depth Interval (ft):	0-1	0-1	0-1	1-2	2-4	0-0.5	0-1	1-2	2-4	0-1	1-2	2-4	0-0.5	0-1	1-2
Analyte	**TEC**	**PEC**	**Ohio SRV**	**Unit**															
Aluminum	NSL	NSL	42000	mg/kg	13000	8070	7380	5110	8480	15500	17600 J+	22700 J+	15400 J+	13300	11900	13400	12800	10700	12700
Antimony	NSL	NSL	0.84	mg/kg	4.9 UJ	6.6 U	8.2 U	7.1 U	9.8 U	11 U	5.4 UJ	6.5 UJ	6.1 UJ	10.3 U	10.9 U	8 U	11.1 U	9.9 U	9.4 U
Arsenic	9.79	33	11	mg/kg	8.3	9.5	8.7	**10.2**	8.4	9	8.8 J	**11.3 J+**	**9.9 J**	9	7.6	**11.4**	8	**17.7**	**9.9**
Barium	NSL	NSL	210	mg/kg	85.6	74.8	59.4	43.6	68.3	110	101	137	101	104	107	154	92.2	139	137
Beryllium	NSL	NSL	0.8	mg/kg	0.57	0.57	0.35 J	0.29 J	0.38 J	0.69 J	0.87 J+	1.1 J+	0.76 J+	0.63 J	0.58 J	0.7	0.56 J	0.59 J	0.65 J
Cadmium	0.99	4.98	0.96	mg/kg	0.23 J	0.74	0.67 J	0.82	0.52 J	0.59 J	0.47 J+	0.6 J+	0.55 J+	0.68 J	0.64 J	**3.1**	0.51 J	**2.1**	**2.2**
Calcium	NSL	NSL	110000	mg/kg	92100	44600	49800	41600	72600	29400	81900	96900	79300	29800	36400	26700	31500	30000	33100
Chromium	43.4	111	51	mg/kg	20.6	15.6	13.4	14.3	13.9	25.7	27.3 J+	34.9 J+	24.1 J+	23.3	22.7	39.3	21.1	36.2 J	36 J
Cobalt	NSL	NSL	12	mg/kg	10	6.4	6.3 J	5.7 J	7.8 J	8.8 J	13.9 J+	17.4 J+	12.4 J+	8.5 J	8.8 J	8.9	7.8 J	8.5	8.8
Copper	31.6	149	42	mg/kg	23.3	**316 J**	**63.3 J**	**93.3**	**110**	**44.1**	26	30.5	25.8	**47.7**	**88.1**	**168**	**45.4**	**292**	**173**
Iron	NSL	NSL	44000	mg/kg	21100	19100	13400	12200	14000	20800	25400 J+	32100 J+	24000 J+	22100	22100	24200	19300	20000	22700
Lead	35.8	128	47	mg/kg	9.5	**85.1 J**	**40.5 J**	**121**	24.5	**40.8**	12.7 J+	13.8 J+	10.7 J+	**37.8**	**53.3**	**302**	**49.4**	**313**	**287**
Magnesium	NSL	NSL	29000	mg/kg	17200	12800	12600	8860	13400	11800	17300	21900	17800	11300	12800	10900	11000	10900	12600
Manganese	NSL	NSL	1000	mg/kg	382 J	371	362	230	484	535 J	470 J	577 J+	435 J	633	530	444	479 J	394	473
Mercury	0.18	1.06	0.12	mg/kg	0.11 U	0.049 J	0.069 J	0.13	0.18 U	0.055 J	0.12 UJ	0.13 UJ	0.11 UJ	0.067 J	0.079 J	**0.92 J**	0.049 J	**0.27**	**0.36**
Nickel	22.7	48.6	36	mg/kg	**27.9**	17	15	17.7	18.4	**24.3**	**40.4 J+**	**50.4 J+**	**36.6 J+**	21.6	21.9	**29.9**	19	**31.3**	**29.4**
Potassium	NSL	NSL	12000	mg/kg	4270	1710	1680	1170	2160	3200	5970	6830	5200	2770	2490	2660	2630	2100	2470
Selenium	NSL	NSL	1.4	mg/kg	2.9 U	3.9 U	4.8 U	4.2 U	5.7 U	6.4 U	3.2 U	3.8 U	3.6 U	6 U	6.3 U	4.7 U	6.5 U	5.8 U	5.5 U
Silver	NSL	NSL	0.43	mg/kg	0.82 U	1.1 U	1.4 U	1.2 U	1.6 U	1.8 U	0.9 U	1.1 U	1 U	1.7 UJ	1.8 UJ	1 J	1.9 U	0.66 J	0.47 J
Sodium	NSL	NSL	NSL	mg/kg	247 J	222 J	197 J	149 J	258 J	243 J	338 J	381 J	309 J	277 J	229 J	214 J	236 J	190 J	203 J
Thallium	NSL	NSL	4.7	mg/kg	2.1 U	2.8 U	3.4 U	3 U	4.1 U	4.6 U	2.3 U	2.7 U	2.6 U	4.3 U	4.5 U	3.3 U	4.6 U	4.1 U	3.9 U
Vanadium	NSL	NSL	40	mg/kg	32.7	19.3	18.2	17.5	23	33.9	44.5	57	40	30.7	28.3	30.4	30.2	26.5	30
Zinc	121	459	190	mg/kg	53	**144**	107	106	57.7	**167**	69.9 J+	81.8 J+	62.9 J+	**166**	**167**	**390**	**153**	**405**	**386**
Total Organic Carbon	NSL	NSL	NSL	%	1.13	2.34	1.78	1.92	3.21	4.11	1.12	1.05	0.948	5.05	2.78	4.3	2.97	3.04	4.99

NOTES:
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mg/kg = milligrams per kilogram
MR = Maumee River
NSL = No Screening Level
SC = Swan Creek
U = Compound was analyzed but not detected.
UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.
PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TOC = Total Organic Carbon
Ohio SRV = Ecological Risk Assessment Guidance Document (Ohio EPA 2018)

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Table 3-3a. Core and Surface Grab Sediment Results for Metals and TOC

					Location ID:	SC21-SC15	SC21-SC16	SC21-SC16	SC21-SC16	SC21-SC16	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC18	SC21-SC19	SC21-SC19	SC21-SC19	SC21-SC19	SC21-SC20
					Sample Name:	SC21-SC15-2040	SC21-SC16-0010	SC21-SC16-1020	SC21-SC16-2040	SC21-SC16-4060	SC21-SC17-0010	SC21-SC17-1020	SC21-SC17-2040	SC21-SC17-4060	SC21-SC17-6080	SC21-SC18-SURF	SC21-SC19-0010	SC21-SC19-1020	SC21-SC19-2040	SC21-SC19-4060	SC21-SC20-0010
					Sample Date:	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/9/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021
					Depth Interval (ft):	2-4	0-1	1-2	2-4	4-6	0-1	1-2	2-4	4-6	6-8	0-0.5	0-1	1-2	2-4	4-6	0-1
Analyte	**TEC**	**PEC**	**Ohio SRV**	**Unit**																	
Aluminum	NSL	NSL	42000	mg/kg		11300	12400	7660	8750	16100	12800	10800	12800	16700	9380	13600	11000	15800	13700	13200	12500
Antimony	NSL	NSL	0.84	mg/kg		4.2 J	8.5 U	6.2 U	5.9 U	6.7 U	9.6 U	6.5 U	7.9 U	8.5 U	5.8 U	8.8 U	8.8 J	7.7 UJ	8.4 UJ	6.6 UJ	5.2 UJ
Arsenic	9.79	33	11	mg/kg		**35.6**	9.6	7.7	6.3	8	**16.1**	**21**	**11.8**	**11.3**	6.2	**10**	**14.9**	**10.1**	7.2	6.9	**11**
Barium	NSL	NSL	210	mg/kg		245	107	58.7	61.7	104	142	90.6	88.2	108	60.3	127	125	121	106	94	83.8
Beryllium	NSL	NSL	0.8	mg/kg		0.66 J	0.62 J	0.39 J	0.46 J	0.76	0.69 J	0.57	0.64 J	0.85	0.48 J	0.68 J	0.72	0.88	0.74	0.61	0.51
Cadmium	0.99	4.98	0.96	mg/kg		**5.6**	**1.7**	0.59	0.34 J	0.43 J	**2.9**	**1.6**	0.81	0.79	0.35 J	**2.5**	**3.3**	0.65	0.36 J	0.27 J	0.15 J
Calcium	NSL	NSL	110000	mg/kg		29500	34900	62300	34100	30400	34200	42000	43100	36300	30700	23900	49100	36600	37300	51400	132000
Chromium	43.4	111	51	mg/kg		**50.2 J**	32.4 J	16.2 J	14.1 J	24.2 J	29.3	20.6	**430**	24.4	14.3	33.1	**1820 J**	**63.5 J**	28.6 J	38.1 J	20.5 J
Cobalt	NSL	NSL	12	mg/kg		8.7	8.9	6.9	6.4	9.4	10.2	7.6	10.5	11.3	7.1	9.3	10.2	10.8	9.2	9.1	11.1
Copper	31.6	149	42	mg/kg		**275**	**90.1**	**57.4**	30.4	**38.5**	**256**	**96.8**	**57.7**	**47.6**	20.7	**110**	**1210 J**	**82.7 J**	**45.1 J**	**40.7 J**	31.5 J
Iron	NSL	NSL	44000	mg/kg		23800	21700	15500	16000	26300	20300	18200	21200	23400	15200	22900	19400	26700	20800	20200	23200
Lead	35.8	128	47	mg/kg		**639**	**158**	**77**	**63.1**	**59.1**	**537**	**191**	**92.7**	**87.1**	35.5	**211**	**401**	**129**	**127**	**40.6**	10.5
Magnesium	NSL	NSL	29000	mg/kg		10200	9890	15700	10300	10000	10700	15800	11800	11000	8230	9930	12100	11300	11600	13300	17700
Manganese	NSL	NSL	1000	mg/kg		347	533	360	287	471	449	435	447	461	350	306	380 J	421 J	339 J	367 J	468 J
Mercury	0.18	1.06	0.12	mg/kg		**1.3**	**0.44**	**0.47**	**0.38**	**0.38**	**0.44**	**0.54**	**0.4**	**0.47**	**0.23**	**0.44**	**0.64**	**0.79**	**0.83**	**0.29**	0.12 U
Nickel	22.7	48.6	36	mg/kg		**34.3**	**24.6**	17.3	16.9	**27.1**	**27**	21.6	**26.3**	**31.5**	17.2	**28.4**	**60.2**	**29.7**	**23**	**23.9**	**28.8**
Potassium	NSL	NSL	12000	mg/kg		2190	2270	1610	1740	3020	2480	2030	2360	3390	1870	2600	2240	3290	2830	3050	4130
Selenium	NSL	NSL	1.4	mg/kg		5.6 U	4.9 U	3.6 U	3.4 U	3.9 U	5.6 U	3.8 U	4.6 U	5 U	3.4 U	5.1 U	4.4 U	4.5 U	4.9 U	3.8 U	3 U
Silver	NSL	NSL	0.43	mg/kg		1.5 J	2.7	1 U	0.98 U	1.1 U	0.78 J	0.26 J	1.3 U	1.4 U	0.97 U	0.35 J	5.9	1.3 U	1.4 U	1.1 U	0.86 U
Sodium	NSL	NSL	NSL	mg/kg		239 J	285 J	248 J	192 J	188 J	350 J	309 J	324 J	253 J	171 J	176 J	368 J	345 J	252 J	221 J	284 J
Thallium	NSL	NSL	4.7	mg/kg		4 U	3.5 U	2.6 U	2.4 U	2.8 U	4 U	2.7 U	3.3 U	3.6 U	2.4 U	3.7 U	3.2 U	3.2 U	3.5 U	2.7 U	2.2 U
Vanadium	NSL	NSL	40	mg/kg		27.2	28.7	19.9	21.6	35.3	30.5	25.5	31.4	39.2	23	30.7	30.5	37.2	32.9	31.6	30.5
Zinc	121	459	190	mg/kg		**573**	**227**	**125**	93.3	**132**	**581**	**265**	**147**	**173**	62.2	**289**	**539**	**217**	119	80.9	53.9
Total Organic Carbon	NSL	NSL	NSL	%		4.85	3.15	3.31	3.43	2.71	3.16	1.97	1.82	1.86	1.33	3.4	2.93	2.16	1.63	1.57	1.49

NOTES:
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TOC = Total Organic Carbon
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Table 3-3a. Core and Surface Grab Sediment Results for Metals and TOC

					Location ID:	SC21-SC20	SC21-SC21	SC21-SC21	SC21-SC21	SC21-SC21	SC21-SC22	SC21-SC22	SC21-SC23	SC21-SC23	SC21-SC23	SC21-SC24	SC21-SC24	SC21-SC24	SC21-SC25	SC21-SC25	SC21-SC25
					Sample Name:	SC21-SC20-1020	SC21-SC21-0010	SC21-SC21-1020	SC21-SC21-2040	SC21-SC21-SURF	SC21-SC22-0010	SC21-SC22-1020	SC21-SC23-0010	SC21-SC23-1020	SC21-SC23-2040	SC21-SC24-0010	SC21-SC24-1020	SC21-SC24-2040	SC21-SC25-0010	SC21-SC25-1020	SC21-SC25-2040
					Sample Date:	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/9/2021	11/4/2021	11/4/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/4/2021	11/4/2021	11/4/2021
					Depth Interval (ft):	1-2	0-1	1-2	2-4	0-0.5	0-1	1-2	0-1	1-2	2-4	0-1	1-2	2-4	0-1	1-2	2-4
Analyte	**TEC**	**PEC**	**Ohio SRV**	**Unit**																	
Aluminum	NSL	NSL	42000	mg/kg		16300	13200	15900	9530	9590	10100	9460	13700	12400	15100	21000	20200	14100	21200	10800	10800
Antimony	NSL	NSL	0.84	mg/kg		6.6 UJ	9.6 UJ	2.2 J	8.7	11.4 U	6.8 U	6.2 U	10.9 U	8 UJ	2.3 J	3.8 J	9.1 UJ	7.7 UJ	10.8 U	11.3 U	8.9 U
Arsenic	9.79	33	11	mg/kg		**10.2**	**15.8**	**14**	**46.5**	7	8.3	5.1	**10.7**	8.3	**16**	**55.4**	**78.3**	**14.2**	1.2 J	7.2	**11.1**
Barium	NSL	NSL	210	mg/kg		110	184	185	298	80	95.9	53.9	134	120	201	259	186	127	33.6 J	103	160
Beryllium	NSL	NSL	0.8	mg/kg		0.75	0.75 J	0.79	0.75	0.46 J	0.7	0.45 J	0.66 J	0.58 J	0.82	1.1	0.98	0.74	0.17 J	0.53 J	0.58 J
Cadmium	0.99	4.98	0.96	mg/kg		0.27 J	**3.9**	**3.9**	**11.5**	0.49 J	0.35 J	0.14 J	**1.6**	**1.9**	**6.2**	**4.8**	**2**	0.53 J	0.9 U	**1.6**	**2.4**
Calcium	NSL	NSL	110000	mg/kg		81600	31000	30200	28600	28900	29400 J	28600 J	38300	27900	32300	35800	38400	43400	394 J	28500 J	25700 J
Chromium	43.4	111	51	mg/kg		25.2 J	34.4 J	39.8 J	**440 J**	18.5	18.5	13.9	39.9	29.6 J	**104 J**	**105 J**	40.9 J	27.7 J	12.6	23.7	43.4
Cobalt	NSL	NSL	12	mg/kg		12.1	10.7	12.3	13.8	6.6 J	7.4	7	10.2	7.8	12	12.4	11.6	9.6	9 U	6.8 J	7.5
Copper	31.6	149	42	mg/kg		26.8 J	**368 J**	**245 J**	**520 J**	**42.1**	**32.6**	17.4	**183**	**118 J**	**313 J**	**205 J**	**128 J**	**47.8 J**	3.7 J	**75.7**	**325**
Iron	NSL	NSL	44000	mg/kg		26100	21600	23800	19600	16900	16300	14400	24000	18900	25100	31400	31800	25800	2490	15900	17500
Lead	35.8	128	47	mg/kg		11.1	**758**	**662**	**1290**	**43**	**111**	21.9	**259**	**158**	**1180**	**488**	**279**	**116**	12	**81.7**	**334**
Magnesium	NSL	NSL	29000	mg/kg		17000	11000	10500	8870	11000	8670	9370	14300	10900	10200	12100	11300	10900	270 J	11400	9510
Manganese	NSL	NSL	1000	mg/kg		429 J	358 J	356 J	226	453	285	232	442	329 J	463 J	398 J	377 J	417 J	9.7	288	245
Mercury	0.18	1.06	0.12	mg/kg		0.12 U	**0.77**	**1.3**	**2.4**	0.043 J	**0.75**	0.05 J	0.18 J	**0.46**	**0.8**	**2.2**	**1.9**	**0.7**	0.035 J	0.15 J	**0.86**
Nickel	22.7	48.6	36	mg/kg		**33.9**	**28.9**	**32.2**	**70.2**	17	18.5	16.9	**40.8**	**27.7**	**34.1**	**52**	**37.4**	**24.6**	5.9 J	19.6	**49**
Potassium	NSL	NSL	12000	mg/kg		5350	2530	3040	1930	2070	1780	1740	2900	2470	2920	4130	4110	3010	255 J	2210	2080
Selenium	NSL	NSL	1.4	mg/kg		3.8 U	5.6 U	5.2 U	4.7 U	6.6 U	3.9 U	3.6 U	6.3 U	4.7 U	4.7 U	6.6 U	5.3 U	4.5 U	6.3 U	6.6 U	5.2 U
Silver	NSL	NSL	0.43	mg/kg		1.1 U	1.2 J	0.65 J	7.2	1.9 U	1.1 U	1 U	0.55 J	0.46 J	1.6	2.2	0.85 J	1.3 U	1.8 U	1.9 U	0.85 J
Sodium	NSL	NSL	NSL	mg/kg		289 J	453 J	523 J	675	349 J	242 J	283 J	353 J	241 J	298 J	291 J	227 J	209 J	902 U	689 J	814
Thallium	NSL	NSL	4.7	mg/kg		2.7 U	4 U	3.7 U	3.4 U	4.7 U	2.8 U	2.6 U	4.5 U	3.3 U	3.3 U	4.7 U	3.8 U	3.2 U	4.5 U	4.7 U	3.7 U
Vanadium	NSL	NSL	40	mg/kg		39.6	31.8	36.9	25.9	22.9	24.6	22.9	33.8	27.9	35.4	46.3	45.4	33.3	10.3	25.1	25.2
Zinc	121	459	190	mg/kg		65.1	**759**	**534**	**1120**	**139**	107	44.2	**332**	**253**	**827**	**640**	**690**	**169**	6 J	**202**	**417**
Total Organic Carbon	NSL	NSL	NSL	%		0.851	5.96	6.42	9.43	3.73	2.73	1.16	4.12	3.74	4.31	5.28	4.78	3.73	6.13	4.36	5.14

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UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.
PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TOC = Total Organic Carbon
Ohio SRV = Ecological Risk Assessment Guidance Document (Ohio EPA 2018)

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Table 3-3a. Core and Surface Grab Sediment Results for Metals and TOC

				Location ID:	SC21-SC25	SC21-SC25	SC21-SC26	SC21-SC26	SC21-SC27	SC21-SC28	SC21-SC28	SC21-SC28	SC21-SC28	SC21-SC28	SC21-SC29	SC21-SC30
				Sample Name:	SC21-SC25-2040FD	SC21-SC25-4060	SC21-SC26-0010	SC21-SC26-1020	SC21-SC27-SURF	SC21-SC28-0010	SC21-SC28-0010FD	SC21-SC28-1020	SC21-SC28-2040	SC21-SC28-4060	SC21-SC29-0010	SC21-SC30-0010
				Sample Date:	11/4/2021	11/4/2021	11/3/2021	11/3/2021	11/9/2021	11/4/2021	11/4/2021	11/4/2021	11/4/2021	11/4/2021	11/3/2021	11/4/2021
				Depth Interval (ft):	2-4	4-6	0-1	1-2	0-0.5	0-1	0-1	1-2	2-4	4-6	0-1	0-1
Analyte	**TEC**	**PEC**	**Ohio SRV**	**Unit**												
Aluminum	NSL	NSL	42000	mg/kg	8100	11200	16100	11400	10700	11900	9350	9890	13500	15800	10000	16200
Antimony	NSL	NSL	0.84	mg/kg	7.7 U	2.7 J	9.7 U	6.5 U	12 U	7.8 U	2.2 J	7.2 U	8.4 U	8.8 U	9.2 J	11 U
Arsenic	9.79	33	11	mg/kg	**10**	**19.4**	**235**	**17.4**	6	**24.8**	**37.8**	**150**	**29.3**	**13.5**	**24.8**	**133**
Barium	NSL	NSL	210	mg/kg	101	237	201	89.7	79.4	133	136	137	124	125	163	204
Beryllium	NSL	NSL	0.8	mg/kg	0.46 J	0.73	0.81	0.49 J	0.49 J	0.61 J	0.54 J	0.64	0.67 J	0.83	0.61 J	0.82 J
Cadmium	0.99	4.98	0.96	mg/kg	**3.1**	**8.3**	**1.9**	0.26 J	0.5 J	**1.4**	**4**	**1.2**	0.65 J	0.57 J	**8.2**	**3**
Calcium	NSL	NSL	110000	mg/kg	19900 J	25300 J	34700	71800	23300	42500 J	56400 J	28000 J	57100 J	40600 J	33300	41200 J
Chromium	43.4	111	51	mg/kg	38.5	**170**	26.6	17.4	19.2	**46.8**	**63.1**	18.9	25.9	28.2	**1570**	35.2
Cobalt	NSL	NSL	12	mg/kg	6.3 J	10.3	9.5	8.6	6.5 J	8.8	6.4	7.9	9.2	11.2	10.2	9.7
Copper	31.6	149	42	mg/kg	**238**	**652**	**142**	25.1	28.8	**99.1**	**120**	**135**	**59.3**	**58.3**	**742**	**186**
Iron	NSL	NSL	44000	mg/kg	17100	20000	28300	20100	16500	21700	19100	20200	24000	26800	17500	27300
Lead	35.8	128	47	mg/kg	**300**	**1280**	**541**	35.8	30.8	**194**	**320**	**378**	**139**	**179**	**631**	**437**
Magnesium	NSL	NSL	29000	mg/kg	7250	7610	10700	13000	9110	10400	7640	7790	10700	11800	7500	10700
Manganese	NSL	NSL	1000	mg/kg	193	266	373	432	410	322	229	250	359	444	232	459
Mercury	0.18	1.06	0.12	mg/kg	**0.49**	**1.6**	**1.2**	0.13	0.049 J	**0.56**	**1.3**	**2.3**	**1**	**0.88**	**1.3**	**2.6**
Nickel	22.7	48.6	36	mg/kg	**25.4**	**32**	**32.9**	**23**	16.6	**27**	**30.7**	**24.5**	**24.5**	**26.4**	**97.1**	**35.2**
Potassium	NSL	NSL	12000	mg/kg	1530	1850	3160	3000	2190	2600	1950	1910	2880	3080	1970	3160
Selenium	NSL	NSL	1.4	mg/kg	4.5 U	4.8 U	5.7 U	3.8 U	7 U	4.6 U	4.5 U	4.2 U	4.9 U	5.1 U	5.6 U	6.4 U
Silver	NSL	NSL	0.43	mg/kg	0.63 J	1.6	1.1 J	1.1 U	2 U	0.53 J	2	0.68 J	1.4 U	1.5 U	5.8	2.1
Sodium	NSL	NSL	NSL	mg/kg	784	658 J	359 J	503 J	186 J	259 J	262 J	263 J	277 J	273 J	257 J	247 J
Thallium	NSL	NSL	4.7	mg/kg	3.2 U	3.4 U	4 U	2.7 U	5 U	3.3 U	3.2 U	3 U	3.5 U	3.7 U	4 U	4.6 U
Vanadium	NSL	NSL	40	mg/kg	20	25.9	35.2	27	23.8	27.7	23.5	24.8	31.1	35	23.7	36.1
Zinc	121	459	190	mg/kg	**341**	**1290**	**700**	78.7	**134**	**276**	**399**	**505**	**248**	**196**	**933**	**655**
Total Organic Carbon	NSL	NSL	NSL	%	5.11	8.39	2.82	1.57	4.06	5.43	3.28	4.36	3.52	3.14	8.37	5.27

NOTES:
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Bolded and shaded values exceed the PEC
Underlined values exceed the Ohio SRV
FD = Field Duplicate
J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).
J+ = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased high).
J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).
mg/kg = milligrams per kilogram
MR = Maumee River
NSL = No Screening Level
SC = Swan Creek
U = Compound was analyzed but not detected.
UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.
PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TOC = Total Organic Carbon
Ohio SRV = Ecological Risk Assessment Guidance Document (Ohio EPA 2018)

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Table 3-3a. Core and Surface Grab Sediment Results for Metals and TOC

				Location ID:	SC21-SC30	SC21-SC30	SC21-SC30	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC32	SC21-SC32	SC21-SC32	SC21-SC32	SC21-SC32
				Sample Name:	SC21-SC30-1020	SC21-SC30-2040	SC21-SC30-SURF	SC21-SC31-0010	SC21-SC31-1020	SC21-SC31-2040	SC21-SC31-4060	SC21-SC31-6080	SC21-SC32-0010	SC21-SC32-1020	SC21-SC32-2040	SC21-SC32-4060	SC21-SC32-6080
				Sample Date:	11/4/2021	11/4/2021	11/9/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021
				Depth Interval (ft):	1-2	2-4	0-0.5	0-1	1-2	2-4	4-6	6-8	0-1	1-2	2-4	4-6	6-8
Analyte	**TEC**	**PEC**	**Ohio SRV**	**Unit**													
Aluminum	NSL	NSL	42000	mg/kg	17400	16800	14700	13900	17000	13500	8840	12700	12500	14000	18400	9430	11900
Antimony	NSL	NSL	0.84	mg/kg	10 U	8 U	9.8 U	2.4 J	9.4 U	7.8 U	7.8 U	8.9 U	10 U	9.8 U	8.9 U	8.1 U	7.2 U
Arsenic	9.79	33	11	mg/kg	**155**	**335**	8.7	**19.4**	**50.8**	**394**	**102**	**116**	5.6	6.8	8.1	4.8	3.8
Barium	NSL	NSL	210	mg/kg	186	182	104	146	173	247	136	140	78.1	89.9	131	62.2	74
Beryllium	NSL	NSL	0.8	mg/kg	0.88	0.81	0.66 J	0.67 J	0.82	0.69	0.52 J	0.76	0.5 J	0.56 J	0.85	0.4 J	0.5 J
Cadmium	0.99	4.98	0.96	mg/kg	**1.6**	**1.9**	0.58 J	**4**	**2**	**3**	**1**	**1.7**	0.4 J	0.59 J	0.75	0.43 J	0.41 J
Calcium	NSL	NSL	110000	mg/kg	43900 J	42400 J	29900	35900	38300	35600	33000	36700	21400	29700	37500	41200	46100
Chromium	43.4	111	51	mg/kg	27.8	26.8	24.9	40	27.6	25.1	15.9	26.3	17.5	21.2	26.5	14.7	16.7
Cobalt	NSL	NSL	12	mg/kg	10.5	9.8	8.3	8.8	9.5	8.5	6.7	8.7	6 J	7.3 J	9	6.9	7.7
Copper	31.6	149	42	mg/kg	**142**	**115**	**34.8**	**123**	**118**	**204**	**99.9**	**159**	21.8	30.8	**34.1**	20.1	19.1
Iron	NSL	NSL	44000	mg/kg	29200	30000	22300	22200	24500	29200	16600	22800	17300	19400	25900	13700	16900
Lead	35.8	128	47	mg/kg	**455**	**707**	32.6	**295**	**328**	**742**	**312**	**394**	16.9	25.8	**40.3**	16.6	8.6
Magnesium	NSL	NSL	29000	mg/kg	11000	9830	11400	12300	10600	9120	7320	9740	7850	10700	11400	12800	13600
Manganese	NSL	NSL	1000	mg/kg	424	399	479	493	366	298	230	306	311	399	486	252	285
Mercury	0.18	1.06	0.12	mg/kg	**2.3**	**2.3**	0.082 J	**0.41**	**2.1**	**4.6**	**1.9**	**2.5**	0.054 J	**0.2**	0.11 J	0.034 J	0.022 J
Nickel	22.7	48.6	36	mg/kg	**36.2**	**34.1**	22.3	**27.6**	**35**	**35.6**	20	**28.7**	16.9	20.2	**25.7**	17	21.3
Potassium	NSL	NSL	12000	mg/kg	3180	3100	3000	2770	3030	2560	1760	2510	2360	2730	3420	2090	2620
Selenium	NSL	NSL	1.4	mg/kg	5.9 U	4.6 U	5.7 U	5.5 U	5.5 U	4.5 U	4.5 U	5.2 U	5.8 U	5.7 U	5.2 U	4.7 U	4.2 U
Silver	NSL	NSL	0.43	mg/kg	1.6 J	1.8	1.6 U	0.71 J	1 J	3.6	1.2 J	1.2 J	1.7 U	1.6 U	1.5 U	1.3 U	1.2 U
Sodium	NSL	NSL	NSL	mg/kg	235 J	220 J	210 J	251 J	203 J	186 J	155 J	190 J	141 J	169 J	207 J	194 J	243 J
Thallium	NSL	NSL	4.7	mg/kg	4.2 U	3.3 U	4.1 U	4 U	3.9 U	3.2 U	3.2 U	3.7 U	4.2 U	4.1 U	3.7 U	3.4 U	3 U
Vanadium	NSL	NSL	40	mg/kg	37.7	36	32.5	31.9	36.2	30.5	22.6	33	24.2	28.2	34.6	22.3	25.7
Zinc	121	459	190	mg/kg	**575**	**631**	**157**	**320**	**364**	**1110**	**437**	**674**	85.4	104	**135**	62.7	56.9
Total Organic Carbon	NSL	NSL	NSL	%	4.53	3.9	5.33	4.27	7.68	5.13	5.08	4.7	2.8	2.71	2.48	1.99	2.42

NOTES:
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mg/kg = milligrams per kilogram
MR = Maumee River
NSL = No Screening Level
SC = Swan Creek
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PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
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TOC = Total Organic Carbon
Ohio SRV = Ecological Risk Assessment Guidance Document (Ohio EPA 2018)

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Table 3-3a. Core and Surface Grab Sediment Results for Metals and TOC

				Location ID:	SC21-SC33	SC21-SC33	SC21-SC33	SC21-SC33	SC21-SCREF
				Sample Name:	SC21-SC33-0010	SC21-SC33-1020	SC21-SC33-2040	SC21-SC33-SURF	SC21-SCREF-SURF
				Sample Date:	11/4/2021	11/4/2021	11/4/2021	11/8/2021	11/9/2021
				Depth Interval (ft):	0-1	1-2	2-4	0-0.5	0-0.5
Analyte	**TEC**	**PEC**	**Ohio SRV**	**Unit**					
Aluminum	NSL	NSL	42000	mg/kg	15200	13000	9900	9530	4310
Antimony	NSL	NSL	0.84	mg/kg	9.1 U	10 U	8.5 U	10.1 U	8 U
Arsenic	9.79	33	11	mg/kg	9.4	**56**	**62.8**	6.4	4.3
Barium	NSL	NSL	210	mg/kg	106	205	125	74.5	37.5
Beryllium	NSL	NSL	0.8	mg/kg	0.66 J	0.72 J	0.61 J	0.45 J	0.19 J
Cadmium	0.99	4.98	0.96	mg/kg	0.62 J	**1.3**	**1.2**	0.45 J	0.16 J
Calcium	NSL	NSL	110000	mg/kg	34200 J	39300 J	29400 J	26700	17600
Chromium	43.4	111	51	mg/kg	25.1	22.7	17.5	17.4	8
Cobalt	NSL	NSL	12	mg/kg	9.1	8.2 J	6.6 J	6.4 J	3.2 J
Copper	31.6	149	42	mg/kg	**57.2**	**156**	**104**	31	10.9
Iron	NSL	NSL	44000	mg/kg	23400	23100	17700	16000	7060
Lead	35.8	128	47	mg/kg	**59.1**	**642**	**269**	30.6	11.2
Magnesium	NSL	NSL	29000	mg/kg	12000	9810	8100	8560	5160
Manganese	NSL	NSL	1000	mg/kg	558	340	286	391	133 J
Mercury	0.18	1.06	0.12	mg/kg	0.15 J	**3.3**	**2.9**	0.061 J	0.14 U
Nickel	22.7	48.6	36	mg/kg	**26.5**	**26.1**	20.5	15.4	7.3
Potassium	NSL	NSL	12000	mg/kg	2970	2500	1890	2100	967
Selenium	NSL	NSL	1.4	mg/kg	5.3 U	5.8 U	4.9 U	5.9 U	4.7 U
Silver	NSL	NSL	0.43	mg/kg	1.5 U	3.6	1.9	1.7 UJ	1.3 U
Sodium	NSL	NSL	NSL	mg/kg	229 J	258 J	196 J	177 J	103 J
Thallium	NSL	NSL	4.7	mg/kg	3.8 U	4.1 U	3.5 U	4.2 U	3.3 U
Vanadium	NSL	NSL	40	mg/kg	32.3	30.2	24.5	23.1	11.5
Zinc	121	459	190	mg/kg	**160**	**565**	**439**	117	50.5
Total Organic Carbon	NSL	NSL	NSL	%	2.82	5.91	6.64	4.14	2.18

NOTES:
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mg/kg = milligrams per kilogram
MR = Maumee River
NSL = No Screening Level
SC = Swan Creek
U = Compound was analyzed but not detected.
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Table 3-3b. Composite Sediment Results for Metals and TOC

					Location ID:	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
					Sample Name:	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-05FD	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
					Sample Date:	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/10/2021	11/11/2021	11/11/2021
Analyte	**TEC**	**PEC**	**Ohio SRV**	**Unit**										
Aluminum	NSL	NSL	42000	mg/kg		7380 J+	5640 J+	14200 J+	9040 J+	11300 J+	8900 J+	7960	18200 J+	14400 J+
Antimony	NSL	NSL	0.84	mg/kg		8.7 U	6.6 UJ	7.7 UJ	7.5 UJ	6.4 U	6.5 UJ	6.8 U	7.6 U	9.3 UJ
Arsenic	9.79	33	11	mg/kg		6.5 J+	**13.9 J**	**11.8 J**	**10.2 J**	**34.3 J**	**20.4 J**	8.4	**60.7 J+**	**32.2 J**
Barium	NSL	NSL	210	mg/kg		62.7	53.2	76.8	70.8	99.8	77.6	58.4	191	149
Beryllium	NSL	NSL	0.8	mg/kg		0.33 J+	0.31 J+	0.61 J+	0.47 J+	0.56 J+	0.45 J+	0.44 J	0.94 J+	0.8 J+
Cadmium	0.99	4.98	0.96	mg/kg		0.63 J+	**1.5 J+**	0.75 J+	**1.5 J+**	**2.6 J+**	**2 J+**	0.5 J	**4.8 J+**	**4 J+**
Calcium	NSL	NSL	110000	mg/kg		53400	40600	84900	55700	37300	26300	41500	43600	45900
Chromium	43.4	111	51	mg/kg		15.3 J+	13.6 J+	21.4 J+	26.8 J+	29.4 J+	21.7 J+	15.8	**53.5 J+**	**415 J+**
Cobalt	NSL	NSL	12	mg/kg		6.4 J+	5.8 J+	11.3 J+	8 J+	8.7 J+	6.7 J+	7.1	13.4 J+	11.9 J+
Copper	31.6	149	42	mg/kg		**54.4**	**39**	**46.3**	**345**	**122**	**93.9**	**53**	**188**	**281**
Iron	NSL	NSL	44000	mg/kg		13800 J+	10800 J+	23500 J+	15400 J+	19600 J+	14700 J+	14800	29100 J+	24200 J+
Lead	35.8	128	47	mg/kg		**43.7 J+**	**98.4 J+**	**68.6 J+**	**147 J+**	**171 J+**	**141 J+**	**75.1**	**570 J+**	**371 J+**
Magnesium	NSL	NSL	29000	mg/kg		10700	9710	21600	11300	11100	8160	11800	13400	12800
Manganese	NSL	NSL	1000	mg/kg		411 J	201 J	546 J	347 J	396 J+	321 J	315	461 J+	421 J
Mercury	0.18	1.06	0.12	mg/kg		0.075 J-	0.18 J-	0.094 J-	0.14 J-	**0.39 J-**	**0.32 J-**	**0.26**	**1.2 J-**	**0.92 J-**
Nickel	22.7	48.6	36	mg/kg		15.3 J+	14.2 J+	**28.5 J+**	21 J+	**26.2 J+**	20.3 J+	17.1	**40 J+**	**47.8 J+**
Potassium	NSL	NSL	12000	mg/kg		1550	1250	4050	2200	2210	1710	1630	3670	2810
Selenium	NSL	NSL	1.4	mg/kg		5.1 U	3.8 U	4.5 U	4.4 U	3.7 U	3.8 U	3.9 U	4.4 U	5.4 U
Silver	NSL	NSL	0.43	mg/kg		1.4 U	1.1 U	1.3 U	1.2 U	0.47 J	1.1 U	1.1 U	0.9 J	2.1
Sodium	NSL	NSL	NSL	mg/kg		231 J	330 J	291 J	221 J	239 J	187 J	203 J	450 J	284 J
Thallium	NSL	NSL	4.7	mg/kg		3.6 U	2.7 U	3.2 U	3.1 U	2.7 U	2.7 U	2.8 U	3.2 U	3.9 U
Vanadium	NSL	NSL	40	mg/kg		18.3	15.7	32.4	21.7	27.2	21.2	19.6	41.8	33.5
Zinc	121	459	190	mg/kg		118 J+	**129 J+**	108 J+	**336 J+**	**359 J+**	**260 J+**	112	**680 J+**	**574 J+**
Total Organic Carbon	NSL	NSL	NSL	%		1.99	1.68	1.32	3.14	2.96	3.25	2.48	5.26	2.87

NOTES:
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UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.
PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
TOC = Total Organic Carbon
Ohio SRV = Ecological Risk Assessment Guidance Document (Ohio EPA 2018)

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Table 3-4. Core and Surface Grab Sediment Results for SEM/AVS

	Location ID:	SC21-MR01	SC21-MR02	SC21-MR03-A	SC21-MR03-B	SC21-MR04	SC21-MR05	SC21-MR06	SC21-MR06	SC21-MR06	SC21-MRREF	SC21-MRREF
	Sample Name:	SC21-MR01-0010	SC21-MR02-0010	SC21-MR03-A-0010	SC21-MR03-B-0010	SC21-MR04-0010	SC21-MR05-0010	SC21-MR06-0010	SC21-MR06-SURF	SC21-MR06-SURFFD	SC21-MRREF-0010	SC21-MRREF-SURF
	Sample Date:	11/7/2021	11/7/2021	11/8/2021	11/8/2021	11/10/2021	11/5/2021	11/7/2021	11/8/2021	11/8/2021	11/9/2021	11/8/2021
	Depth Interval (ft):	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-0.5	0-0.5	0-1	0-0.5
Analyte	**Unit**											
Cadmium	µmole/g	0.0075	0.025	0.012	0.01	0.0067	0.015	0.012	0.012	0.011	0.0075	0.0074
Copper	µmole/g	0.21	0.33	1.3	0.81	0.28	0.24	0.38	1	1	0.23	0.37
Lead	µmole/g	0.078	0.4	1.2 J	0.25 J	0.074	0.61	1	1.2	0.96	0.086	0.093
Nickel	µmole/g	0.16	0.21	0.27	0.21	0.16	0.19	0.23	0.31	0.35	0.21	0.28
Zinc	µmole/g	0.88	1.9	6	1.5	1.2	3	5	5.1	4.5	0.99	1.1
Acid Volatile Sulfides (AVS)	µmole/g	6.1	9 J	41.6	6 J	2.5	19.7	37	27.4	30.8	19.9	24.8
SEM/AVS Ratio	none	0.219	0.318	0.211	0.463	0.688	0.206	0.179	0.278	0.221	0.077	0.075
Σ SEM	µmole/g	1.34	2.865	8.782	2.78	1.7207	4.055	6.622	7.622	6.821	1.5235	1.8504
AVS	µmole/g	6.1	9 J	41.6	6 J	2.5	19.7	37	27.4	30.8	19.9	24.8
foc	fraction	0.023	0.0315	0.0536	0.023	0.0249	0.0281	0.0344	0.0349	0.0151	0.0241	0.0258
(Σ SEM - AVS) / foc	µmole/g	-205	-195	-612	-140	-31.3	-557	-883	-567	-1588	-763	-890

NOTES:

Bolded values exceed 1 SEM/AVS ratio

Bolded and shaded values exceed 130 µmole/$g_{oc.}$

AVS = Acid volatile sulfides

FD = Field duplicate

foc = fraction organic carbon

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

MR = Maumee River

NC = SEM/AVS not calculated because AVS was not detected.

SC = Swan Creek

SEM = Simultaneously extracted metals

µmole/g = micromole per gram

U = Compound was analyzed but not detected.

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Table 3-4. Core and Surface Grab Sediment Results for SEM/AVS

	Location ID:	SC21-SC01	SC21-SC02	SC21-SC03	SC21-SC04	SC21-SC05	SC21-SC06	SC21-SC07	SC21-SC08	SC21-SC09	SC21-SC10	SC21-SC11	SC21-SC11	SC21-SC11	SC21-SC12
	Sample Name:	SC21-SC01-SURF	SC21-SC02-0010	SC21-SC03-0010	SC21-SC04-0010	SC21-SC05-SURF	SC21-SC06-0010	SC21-SC07-0010	SC21-SC08-0010	SC21-SC09-0010	SC21-SC10-0010	SC21-SC11-0010	SC21-SC11-0010FD	SC21-SC11-SURF	SC21-SC12-0010
	Sample Date:	11/9/2021	11/9/2021	11/8/2021	11/8/2021	11/9/2021	11/8/2021	11/10/2021	11/3/2021	11/9/2021	11/5/2021	11/10/2021	11/10/2021	11/9/2021	11/11/2021
	Depth Interval (ft):	0-0.5	0-1	0-1	0-1	0-0.5	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-0.5	0-1
Analyte	**Unit**														
Cadmium	µmole/g	0.0013	0.004	0.0091	0.0043	0.0014 J	0.0012	0.0046	0.00047	0.02	0.00047	0.0067	0.006	0.0026 J	0.00089
Copper	µmole/g	0.16	0.17	0.55	0.48	0.36	0.12	0.36	0.036	0.72	0.031	0.38	0.33	0.36	0.06
Lead	µmole/g	0.06	0.11	0.26	0.24 J	0.12	0.019 J	0.29	0.0075	0.9	0.0085	0.17	0.16	0.16	0.015
Nickel	µmole/g	0.034	0.11	0.17	0.16	0.036	0.1	0.19	0.024	0.23	0.024	0.17	0.16	0.075	0.06
Zinc	µmole/g	0.59	1.3	1.9	1.5	0.48	0.17	0.89	0.042	3.4	0.043	2.1	1.7	0.97	0.081
Acid Volatile Sulfides (AVS)	µmole/g	0.1	19.6	32.7	5	1.9	0.021 U	2.3	0.018 U	16.2	0.018 U	27	24.3	5.3	0.019 U
SEM/AVS Ratio	none	**6.04**	0.086	0.088	0.477	0.525	NC	0.754	NC	0.325	NC	0.105	0.097	0.296	NC
Σ SEM	µmole/g	0.8453	1.694	2.8891	2.3843	0.9974	0.4102	1.7346	0.10997	5.27	0.10697	2.8267	2.356	1.5676	0.21689
AVS	µmole/g	0.14	19.6	32.7	5	1.9	0.021 U	2.3	0.018 U	16.2	0.018 U	27	24.3	5.3	0.019 U
foc	fraction	0.0287	0.029	0.0342	0.00976	0.00772	0.00621	0.0119	0.00918	0.0278	0.0113	0.0234	0.0178	0.0411	0.0112
(Σ SEM - AVS) / foc	µmole/g	24.6	-617	-872	-268	-117	66.1	-47.5	12.0	-393	9.5	-1033	-1233	-90.8	19.4

NOTES:

Bolded values exceed 1 SEM/AVS ratio

Bolded and shaded values exceed 130 µmole/g_{oc}

AVS = Acid volatile sulfides
FD = Field duplicate
foc = fraction organic carbon

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).
MR = Maumee River
NC = SEM/AVS not calculated because AVS was not detected.
SC = Swan Creek
SEM = Simultaneously extracted metals
µmole/g = micromole per gram
U = Compound was analyzed but not detected.

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Table 3-4. Core and Surface Grab Sediment Results for SEM/AVS

	Location ID:	SC21-SC13	SC21-SC14	SC21-SC15	SC21-SC16	SC21-SC17	SC21-SC18	SC21-SC19	SC21-SC20	SC21-SC21	SC21-SC21	SC21-SC22	SC21-SC23
	Sample Name:	SC21-SC13-0010	SC21-SC14-SURF	SC21-SC15-0010	SC21-SC16-0010	SC21-SC17-0010	SC21-SC18-SURF	SC21-SC19-0010	SC21-SC20-0010	SC21-SC21-0010	SC21-SC21-SURF	SC21-SC22-0010	SC21-SC23-0010
	Sample Date:	11/9/2021	11/9/2021	11/7/2021	11/7/2021	11/10/2021	11/9/2021	11/5/2021	11/5/2021	11/5/2021	11/9/2021	11/4/2021	11/5/2021
	Depth Interval (ft):	0-1	0-0.5	0-1	0-1	0-1	0-0.5	0-1	0-1	0-1	0-0.5	0-1	0-1
Analyte	**Unit**												
Cadmium	µmole/g	0.005	0.0065	0.0067	0.017	0.017	0.026	0.019	0.00072	0.026	0.0067	0.0048	0.0096
Copper	µmole/g	0.35	0.37	0.25	0.59	0.96	0.17	3.8	0.04	0.52	0.51	0.18	0.25
Lead	µmole/g	0.2	0.17	0.22	0.86	2.3	0.99	1.3	0.011	3.5	0.2	0.33	0.38
Nickel	µmole/g	0.1	0.16	0.13	0.24	0.19	0.28	0.47	0.031	0.22	0.17	0.14	0.23
Zinc	µmole/g	1.6	1.8	1.9	3.7	7.5	4.3	5.8	0.054	10.9	2.3	1.1	2.5
Acid Volatile Sulfides (AVS)	µmole/g	19.4	12.7	26	22	21.1	143	5.9 J	0.018 U	38.3	14.9	8.3	72
SEM/AVS Ratio	none	0.116	0.197	0.096	0.246	0.52	0.04	**1.93**	NC	0.396	0.214	0.211	0.047
Σ SEM	µmole/g	2.255	2.5065	2.5067	5.407	10.967	5.766	11.389	0.13672	15.166	3.1867	1.7548	3.3696
AVS	µmole/g	19.4	12.7	26	22	21.1	143	5.9 J	0.018 U	38.3	14.9	8.3	72
foc	fraction	0.0505	0.0297	0.0304	0.0315	0.0316	0.034	0.0293	0.0149	0.0596	0.0373	0.0273	0.0412
(Σ SEM - AVS) / foc	µmole/g	-340	-343	-773	-527	-321	-4036	**187**	9.2	-388	-314	-240	-1666

NOTES:

Bolded values exceed 1 SEM/AVS ratio

Bolded and shaded values exceed 130 µmole/g_{oc}

AVS = Acid volatile sulfides

FD = Field duplicate

foc = fraction organic carbon

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

MR = Maumee River

NC = SEM/AVS not calculated because AVS was not detected.

SC = Swan Creek

SEM = Simultaneously extracted metals

µmole/g = micromole per gram

U = Compound was analyzed but not detected.

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Table 3-4. Core and Surface Grab Sediment Results for SEM/AVS

	Location ID:	SC21-SC24	SC21-SC25	SC21-SC26	SC21-SC27	SC21-SC28	SC21-SC28	SC21-SC29	SC21-SC30	SC21-SC30	SC21-SC31	SC21-SC32	SC21-SC33	SC21-SC33	SC21-SCREF
	Sample Name:	SC21-SC24-0010	SC21-SC25-0010	SC21-SC26-0010	SC21-SC27-SURF	SC21-SC28-0010	SC21-SC28-0010FD	SC21-SC29-0010	SC21-SC30-0010	SC21-SC30-SURF	SC21-SC31-0010	SC21-SC32-0010	SC21-SC33-0010	SC21-SC33-SURF	SC21-SCREF-SURF
	Sample Date:	11/5/2021	11/4/2021	11/3/2021	11/9/2021	11/4/2021	11/4/2021	11/3/2021	11/4/2021	11/9/2021	11/3/2021	11/3/2021	11/4/2021	11/8/2021	11/9/2021
	Depth Interval (ft):	0-1	0-1	0-1	0-0.5	0-1	0-1	0-1	0-1	0-0.5	0-1	0-1	0-1	0-0.5	0-0.5
Analyte	**Unit**														
Cadmium	µmole/g	0.072	0.0079	0.012	0.0066	0.028 J	0.049 J	0.081	0.016	0.013	0.0077	0.0064	0.0074	0.0055	0.0027 J
Copper	µmole/g	1.4	0.2	0.068	0.31	0.049	1.4	0.025 J	0.43	0.48	0.19	0.12	0.24	0.27	0.073
Lead	µmole/g	3.8	0.16	0.79	0.15	1.5 J	2.5 J	3.3	1.2	0.54	0.21	0.094	0.16	0.15	0.065
Nickel	µmole/g	0.62	0.14	0.2	0.17	0.28 J	0.48 J	1.7	0.25	0.26	0.11	0.11	0.15	0.15	0.085
Zinc	µmole/g	10.7	1.9	5.7	1.7	5.8	8.3	23.2	5.6	5.8	2	1	1.9	1.5	0.91
Acid Volatile Sulfides (AVS)	µmole/g	148	16.5	44.4	12.2	55.6	77	50.8	76	80.5	4	5.1	23	5	39.5
SEM/AVS Ratio	none	0.112	0.146	0.152	0.192	0.138	0.165	0.557	0.099	0.088	0.629	0.261	0.107	0.415	0.029
Σ SEM	µmole/g	16.592	2.4079	6.77	2.3366	7.657	12.729	28.306	7.496	7.093	2.5177	1.3304	2.4574	2.0755	1.1357
AVS	µmole/g	148	16.5	44.4	12.2	55.6	77	50.8	76	80.5	4	5.1	23	5	39.5
foc	fraction	0.0528	0.0613	0.0282	0.0406	0.0543	0.0328	0.0837	0.0527	0.0533	0.0427	0.028	0.0282	0.0414	0.0218
(Σ SEM - AVS) / foc	µmole/g	-2489	-230	-1334	-243	-883	-1959	-269	-1300	-1377	-34.7	-135	-728	-70.6	-1760

NOTES:

Bolded values exceed 1 SEM/AVS ratio

Bolded and shaded values exceed 130 µmole/g_{oc}

AVS = Acid volatile sulfides

FD = Field duplicate

foc = fraction organic carbon

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

MR = Maumee River

NC = SEM/AVS not calculated because AVS was not detected.

SC = Swan Creek

SEM = Simultaneously extracted metals

µmole/g = micromole per gram

U = Compound was analyzed but not detected.

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Table 3-5a. Core and Surface Grab Sediment Results for PCB Aroclors

				Location ID:	SC21-MR01	SC21-MR01	SC21-MR01	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR03-A	SC21-MR03-A	SC21-MR03-A	SC21-MR03-B	SC21-MR03-B
				Sample Name:	SC21-MR01-0010	SC21-MR01-1020	SC21-MR01-2040	SC21-MR02-0010	SC21-MR02-1020	SC21-MR02-2040	SC21-MR02-4060	SC21-MR02-6080	SC21-MR03-A-0010	SC21-MR03-A-1020	SC21-MR03-A-2040	SC21-MR03-B-0010	SC21-MR03-B-1020
				Sample Date:	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021
				Depth Interval (ft):	0-1	1-2	2-4	0-1	1-2	2-4	4-6	6-8	0-1	1-2	2-4	0-1	1-2
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**													
Aroclor-1016	NSL	NSL	NSL	ug/kg	71 U	54 U	45 U	55 U	57 U	53 U	53 U	56 U	50 U	49 U	46 U	51 U	53 U
Aroclor-1221	NSL	NSL	NSL	ug/kg	71 U	54 U	45 U	55 U	57 U	53 U	53 U	56 U	50 U	49 U	46 U	51 U	53 U
Aroclor-1232	NSL	NSL	NSL	ug/kg	71 U	54 U	45 U	55 U	57 U	53 U	53 U	56 U	50 U	49 U	46 U	51 U	53 U
Aroclor-1242	NSL	NSL	NSL	ug/kg	71 U	22 J	19 J	55 U	57 U	53 U	53 U	56 U	130 J	32 J	46 U	33 J	53 U
Aroclor-1248	NSL	NSL	NSL	ug/kg	8.2 J	54 U	45 U	55 U	57 U	53 U	53 U	56 U	50 U	49 U	46 U	51 U	53 U
Aroclor-1254	NSL	NSL	NSL	ug/kg	71 U	21 J	13 J	170	130	53 U	53 U	56 U	50 U	49 U	46 U	51 U	53 U
Aroclor-1260	NSL	NSL	NSL	ug/kg	71 U	54 U	45 U	55 U	57 U	18 J	17 J	56 U	50 U	49 U	46 U	51 U	53 U
Aroclor-1262	NSL	NSL	NSL	ug/kg	71 U	54 U	45 U	55 U	57 U	53 U	53 U	56 U	50 U	49 U	46 U	51 U	53 U
Aroclor-1268	NSL	NSL	NSL	ug/kg	71 U	54 U	45 U	55 U	57 U	53 U	53 U	56 U	50 U	49 U	46 U	51 U	53 U
Total PCBs ND=0	59.8	676	59.8	ug/kg	8.2	43	32	**170**	**130**	18	17	0	**130**	32	0	33	0

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

ND = Non-detect

NSL = No Screening Level

PCB = Polychlorinated biphenyl

SC = Swan Creek

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.

ug/kg = microgram per kilogram

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018)

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Table 3-5a. Core and Surface Grab Sediment Results for PCB Aroclors

				Location ID:	SC21-MR03-B	SC21-MR03-B	SC21-MR04	SC21-MR04	SC21-MR04	SC21-MR04	SC21-MR05	SC21-MR05	SC21-MR05	SC21-MR06	SC21-MR06	SC21-MRREF	SC21-MRREF
				Sample Name:	SC21-MR03-B-1020FD	SC21-MR03-B-2040	SC21-MR04-0010	SC21-MR04-1020	SC21-MR04-2040	SC21-MR04-4060	SC21-MR05-0010	SC21-MR05-1020	SC21-MR05-2040	SC21-MR06-0010	SC21-MR06-1020	SC21-MRREF-0010	SC21-MRREF-1020
				Sample Date:	11/8/2021	11/8/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/5/2021	11/5/2021	11/5/2021	11/7/2021	11/7/2021	11/9/2021	11/9/2021
				Depth Interval (ft):	1-2	2-4	0-1	1-2	2-4	4-6	0-1	1-2	2-4	0-1	1-2	0-1	1-2
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**													
Aroclor-1016	NSL	NSL	NSL	ug/kg	53 U	48 U	89 U	77 U	48 U	54 U	61 U	52 U	51 U	57 U	49 U	61 U	59 U
Aroclor-1221	NSL	NSL	NSL	ug/kg	53 U	48 U	89 U	77 U	48 U	54 U	61 U	52 U	51 U	57 U	49 U	61 U	59 U
Aroclor-1232	NSL	NSL	NSL	ug/kg	53 U	48 U	89 U	77 U	48 U	54 U	61 U	52 U	51 U	57 U	49 U	61 U	59 U
Aroclor-1242	NSL	NSL	NSL	ug/kg	53 U	48 U	89 U	77 U	48 U	54 U	81 J	52 U	51 U	57 U	49 U	61 U	59 U
Aroclor-1248	NSL	NSL	NSL	ug/kg	53 U	48 U	89 U	77 U	5 J	54 U	61 U	52 U	51 U	57 U	49 U	61 U	59 U
Aroclor-1254	NSL	NSL	NSL	ug/kg	53 U	48 U	89 U	77 U	48 U	54 U	61 U	52 U	51 U	57 U	49 U	61 U	10 J
Aroclor-1260	NSL	NSL	NSL	ug/kg	53 U	48 U	89 U	77 U	48 U	54 U	61 U	52 U	51 U	57 U	49 U	61 U	59 U
Aroclor-1262	NSL	NSL	NSL	ug/kg	53 U	48 U	89 U	77 U	48 U	54 U	61 U	52 U	51 U	57 U	49 U	61 U	59 U
Aroclor-1268	NSL	NSL	NSL	ug/kg	53 U	48 U	89 U	77 U	48 U	54 U	61 U	52 U	51 U	57 U	49 U	61 U	59 U
Total PCBs ND=0	59.8	676	59.8	ug/kg	0	0	0	0	5	0	**81**	0	0	0	0	0	10

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

ND = Non-detect

NSL = No Screening Level

PCB = Polychlorinated biphenyl

SC = Swan Creek

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.

ug/kg = microgram per kilogram

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018)

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Table 3-5a. Core and Surface Grab Sediment Results for PCB Aroclors

				Location ID:	SC21-MRREF	SC21-MRREF	SC21-MRREF	SC21-SC02	SC21-SC02	SC21-SC02	SC21-SC03	SC21-SC03	SC21-SC03	SC21-SC04	SC21-SC04	SC21-SC04	SC21-SC04
				Sample Name:	SC21-MRREF-2040	SC21-MRREF-4060	SC21-MRREF-6080	SC21-SC02-0010	SC21-SC02-1020	SC21-SC02-2040	SC21-SC03-0010	SC21-SC03-1020	SC21-SC03-2040	SC21-SC04-0010	SC21-SC04-1020	SC21-SC04-2040	SC21-SC04-4060
				Sample Date:	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021
				Depth Interval (ft):	2-4	4-6	6-8	0-1	1-2	2-4	0-1	1-2	2-4	0-1	1-2	2-4	4-6
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**													
Aroclor-1016	NSL	NSL	NSL	ug/kg	53 U	50 U	53 U	59 U	49 U	44 U	60 U	59 U	46 U	43 U	43 U	51 U	43 U
Aroclor-1221	NSL	NSL	NSL	ug/kg	53 U	50 U	53 U	59 U	49 U	44 U	60 U	59 U	46 U	43 U	43 U	51 U	43 U
Aroclor-1232	NSL	NSL	NSL	ug/kg	53 U	50 U	53 U	59 U	49 U	44 U	60 U	59 U	46 U	43 U	43 U	51 U	43 U
Aroclor-1242	NSL	NSL	NSL	ug/kg	53 U	50 U	53 U	31 J	85 J	93	60 U	59 U	46 U	55	43 U	51 U	43 U
Aroclor-1248	NSL	NSL	NSL	ug/kg	53 U	50 U	53 U	59 U	49 U	44 U	60 U	59 U	46 U	43 U	43 U	51 U	43 U
Aroclor-1254	NSL	NSL	NSL	ug/kg	4.8 J	50 U	53 U	59 U	190 J	180 J	33 J	59 U	46 U	43 U	43 U	51 U	43 U
Aroclor-1260	NSL	NSL	NSL	ug/kg	53 U	50 U	53 U	59 U	49 U	44 U	60 U	59 U	46 U	43 U	43 U	51 U	43 U
Aroclor-1262	NSL	NSL	NSL	ug/kg	53 U	50 U	53 U	59 U	49 U	44 U	60 U	59 U	46 U	43 U	43 U	51 U	43 U
Aroclor-1268	NSL	NSL	NSL	ug/kg	53 U	50 U	53 U	59 U	49 U	44 U	60 U	59 U	46 U	43 U	43 U	51 U	43 U
Total PCBs ND=0	59.8	676	59.8	ug/kg	4.8	0	0	31	**275**	**273**	33	0	0	55	0	0	0

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

ND = Non-detect

NSL = No Screening Level

PCB = Polychlorinated biphenyl

SC = Swan Creek

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.

ug/kg = microgram per kilogram

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018)

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Table 3-5a. Core and Surface Grab Sediment Results for PCB Aroclors

	Location ID:	SC21-SC04	SC21-SC04	SC21-SC05	SC21-SC06	SC21-SC06	SC21-SC06	SC21-SC07	SC21-SC07	SC21-SC07
	Sample Name:	SC21-SC04-4060FD	SC21-SC04-6080	SC21-SC05-SURF	SC21-SC06-0010	SC21-SC06-1020	SC21-SC06-2040	SC21-SC07-0010	SC21-SC07-1020	SC21-SC07-2040
	Sample Date:	11/8/2021	11/8/2021	11/9/2021	11/8/2021	11/8/2021	11/8/2021	11/10/2021	11/10/2021	11/10/2021
	Depth Interval (ft):	4-6	6-8	0-0.5	0-1	1-2	2-4	0-1	1-2	2-4
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**						
Aroclor-1016	NSL	NSL	NSL	ug/kg	42 U	43 U	40 U	43 U	41 U	37 U	43 U	44 U	42 U
Aroclor-1221	NSL	NSL	NSL	ug/kg	42 U	43 U	40 U	43 U	41 U	37 U	43 U	44 U	42 U
Aroclor-1232	NSL	NSL	NSL	ug/kg	42 U	43 U	40 U	43 U	41 U	37 U	43 U	44 U	42 U
Aroclor-1242	NSL	NSL	NSL	ug/kg	42 U	43 U	70	43 U	41 U	37 U	43 U	44 U	42 U
Aroclor-1248	NSL	NSL	NSL	ug/kg	42 U	43 U	40 U	43 U	41 U	37 U	9.2 J	44 U	42 U
Aroclor-1254	NSL	NSL	NSL	ug/kg	42 U	43 U	40 U	43 U	41 U	37 U	44 J	44 U	42 U
Aroclor-1260	NSL	NSL	NSL	ug/kg	42 U	43 U	40 U	43 U	41 U	37 U	43 U	44 U	42 U
Aroclor-1262	NSL	NSL	NSL	ug/kg	42 U	43 U	40 U	43 U	41 U	37 U	43 U	44 U	42 U
Aroclor-1268	NSL	NSL	NSL	ug/kg	42 U	43 U	40 U	43 U	41 U	37 U	43 U	44 U	42 U
Total PCBs ND=0	59.8	676	59.8	ug/kg	0	0	**70**	0	0	0	53.2	0	0

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

ND = Non-detect

NSL = No Screening Level

PCB = Polychlorinated biphenyl

SC = Swan Creek

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.

ug/kg = microgram per kilogram

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018)

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Table 3-5a. Core and Surface Grab Sediment Results for PCB Aroclors

				Location ID:	SC21-SC07	SC21-SC07	SC21-SC08	SC21-SC09	SC21-SC09	SC21-SC09	SC21-SC10	SC21-SC11	SC21-SC11	SC21-SC11	SC21-SC11	SC21-SC11
				Sample Name:	SC21-SC07-2040FD	SC21-SC07-4060	SC21-SC08-0010	SC21-SC09-0010	SC21-SC09-1020	SC21-SC09-2040	SC21-SC10-0010	SC21-SC11-0010	SC21-SC11-0010FD	SC21-SC11-1020	SC21-SC11-2040	SC21-SC11-SURF
				Sample Date:	11/10/2021	11/10/2021	11/3/2021	11/9/2021	11/9/2021	11/9/2021	11/5/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/9/2021
				Depth Interval (ft):	2-4	4-6	0-1	0-1	1-2	2-4	0-1	0-1	0-1	1-2	2-4	0-0.5
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**												
Aroclor-1016	NSL	NSL	NSL	ug/kg	42 U	41 U	39 U	110 U	52 U	52 U	39 U	53 U	51 U	44 U	63 U	68 U
Aroclor-1221	NSL	NSL	NSL	ug/kg	42 U	41 U	39 U	110 U	52 U	52 U	39 U	53 U	51 U	44 U	63 U	68 U
Aroclor-1232	NSL	NSL	NSL	ug/kg	42 U	41 U	39 U	110 U	52 U	52 U	39 U	53 U	51 U	44 U	63 U	68 U
Aroclor-1242	NSL	NSL	NSL	ug/kg	42 U	41 U	39 U	5500	760	250	39 U	250 J	670 J	280 J	63 U	160
Aroclor-1248	NSL	NSL	NSL	ug/kg	42 U	41 U	39 U	110 U	52 U	52 U	39 U	53 U	51 U	44 U	63 U	68 U
Aroclor-1254	NSL	NSL	NSL	ug/kg	42 U	41 U	39 U	2200	1700	380 J	39 U	53 U	51 U	130 J	63 U	64 J
Aroclor-1260	NSL	NSL	NSL	ug/kg	42 U	41 U	39 U	110 U	600	140	39 U	53 U	51 U	44 U	63 U	68 U
Aroclor-1262	NSL	NSL	NSL	ug/kg	42 U	41 U	39 U	110 U	52 U	52 U	39 U	53 U	51 U	44 U	63 U	68 U
Aroclor-1268	NSL	NSL	NSL	ug/kg	42 U	41 U	39 U	110 U	52 U	52 U	39 U	53 U	51 U	44 U	63 U	68 U
Total PCBs ND=0	59.8	676	59.8	ug/kg	0	0	0	**7700**	**3060**	**770**	0	**250**	**670**	**410**	0	**224**

NOTES:

Bolded detected values exceed the TEC

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J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

ND = Non-detect

NSL = No Screening Level

PCB = Polychlorinated biphenyl

SC = Swan Creek

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.

ug/kg = microgram per kilogram

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018)

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Table 3-5a. Core and Surface Grab Sediment Results for PCB Aroclors

				Location ID:	SC21-SC12	SC21-SC12	SC21-SC12	SC21-SC13	SC21-SC13	SC21-SC13	SC21-SC14	SC21-SC15	SC21-SC15	SC21-SC15	SC21-SC16	SC21-SC16	SC21-SC16	SC21-SC16
				Sample Name:	SC21-SC12-0010	SC21-SC12-1020	SC21-SC12-2040	SC21-SC13-0010	SC21-SC13-1020	SC21-SC13-2040	SC21-SC14-SURF	SC21-SC15-0010	SC21-SC15-1020	SC21-SC15-2040	SC21-SC16-0010	SC21-SC16-1020	SC21-SC16-2040	SC21-SC16-4060
				Sample Date:	11/11/2021	11/11/2021	11/11/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021
				Depth Interval (ft):	0-1	1-2	2-4	0-1	1-2	2-4	0-0.5	0-1	1-2	2-4	0-1	1-2	2-4	4-6
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**														
Aroclor-1016	NSL	NSL	NSL	ug/kg	42 U	42 U	40 U	69 U	69 U	520 U	64 U	59 U	280 U	280 U	290 U	47 U	47 U	47 U
Aroclor-1221	NSL	NSL	NSL	ug/kg	42 U	42 U	40 U	69 U	69 U	520 U	64 U	59 U	280 U	280 U	290 U	47 U	47 U	47 U
Aroclor-1232	NSL	NSL	NSL	ug/kg	42 U	42 U	40 U	69 U	69 U	520 U	64 U	59 U	280 U	280 U	290 U	47 U	47 U	47 U
Aroclor-1242	NSL	NSL	NSL	ug/kg	42 U	42 U	40 U	170	210	16000	68	270	29000	11000 J	10000	1500 J	68 J	47 U
Aroclor-1248	NSL	NSL	NSL	ug/kg	42 U	42 U	40 U	69 U	69 U	520 U	64 U	59 U	280 U	280 U	290 U	47 U	47 U	47 U
Aroclor-1254	NSL	NSL	NSL	ug/kg	42 U	42 U	40 U	60 J	81	520 U	59 J	59 U	2400 J	670 J	1800 J	250 J	47 U	47 U
Aroclor-1260	NSL	NSL	NSL	ug/kg	42 U	42 U	40 U	69 U	69 U	520 U	64 U	59 U	280 U	280 U	290 U	47 U	47 U	47 U
Aroclor-1262	NSL	NSL	NSL	ug/kg	42 U	42 U	40 U	69 U	69 U	520 U	64 U	59 U	280 U	280 U	290 U	47 U	47 U	47 U
Aroclor-1268	NSL	NSL	NSL	ug/kg	42 U	42 U	40 U	69 U	69 U	520 U	64 U	59 U	280 U	280 U	290 U	47 U	47 U	47 U
Total PCBs ND=0	59.8	676	59.8	ug/kg	0	0	0	**230**	**291**	**16000**	**127**	**270**	**31400**	**11670**	**11800**	**1750**	**68**	0

NOTES:

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J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

ND = Non-detect

NSL = No Screening Level

PCB = Polychlorinated biphenyl

SC = Swan Creek

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.

ug/kg = microgram per kilogram

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018)

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Table 3-5a. Core and Surface Grab Sediment Results for PCB Aroclors

				Location ID:	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC18	SC21-SC19	SC21-SC19	SC21-SC19	SC21-SC19	SC21-SC20	SC21-SC20	SC21-SC21	SC21-SC21
				Sample Name:	SC21-SC17-0010	SC21-SC17-1020	SC21-SC17-2040	SC21-SC17-4060	SC21-SC17-6080	SC21-SC18-SURF	SC21-SC19-0010	SC21-SC19-1020	SC21-SC19-2040	SC21-SC19-4060	SC21-SC20-0010	SC21-SC20-1020	SC21-SC21-0010	SC21-SC21-1020
				Sample Date:	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/9/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021
				Depth Interval (ft):	0-1	1-2	2-4	4-6	6-8	0-0.5	0-1	1-2	2-4	4-6	0-1	1-2	0-1	1-2
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**														
Aroclor-1016	NSL	NSL	NSL	ug/kg	57 U	48 U	46 U	48 U	43 U	270 U	50 U	54 U	50 U	48 U	41 U	39 U	55 U	53 U
Aroclor-1221	NSL	NSL	NSL	ug/kg	57 U	48 U	46 U	48 U	43 U	270 U	50 U	54 U	50 U	48 U	41 U	39 U	55 U	53 U
Aroclor-1232	NSL	NSL	NSL	ug/kg	57 U	48 U	46 U	48 U	43 U	270 U	50 U	54 U	50 U	48 U	41 U	39 U	55 U	53 U
Aroclor-1242	NSL	NSL	NSL	ug/kg	170 J	66	46 U	48 U	43 U	17000 J	100 J	54 U	50 U	48 U	12 J	39 U	55 U	53 U
Aroclor-1248	NSL	NSL	NSL	ug/kg	57 U	48 U	46 U	48 U	43 U	270 U	50 U	54 U	50 U	48 U	41 U	39 U	86 J	53 U
Aroclor-1254	NSL	NSL	NSL	ug/kg	57 U	74 J	46 U	48 U	43 U	270 U	30 J	54 U	50 U	48 U	41 U	39 U	420	92 J
Aroclor-1260	NSL	NSL	NSL	ug/kg	82	48 U	46 U	48 U	43 U	270 U	30 J	54 U	50 U	48 U	41 U	39 U	140	53 U
Aroclor-1262	NSL	NSL	NSL	ug/kg	57 U	48 U	46 U	48 U	43 U	270 U	50 U	54 U	50 U	48 U	41 U	39 U	55 U	53 U
Aroclor-1268	NSL	NSL	NSL	ug/kg	57 U	48 U	46 U	48 U	43 U	270 U	50 U	54 U	50 U	48 U	41 U	39 U	55 U	80
Total PCBs ND=0	59.8	676	59.8	ug/kg	**252**	**140**	0	0	0	**17000**	**160**	0	0	0	12	0	**646**	**172**

NOTES:

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J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

ND = Non-detect

NSL = No Screening Level

PCB = Polychlorinated biphenyl

SC = Swan Creek

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.

ug/kg = microgram per kilogram

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018)

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Table 3-5a. Core and Surface Grab Sediment Results for PCB Aroclors

				Location ID:	SC21-SC21	SC21-SC21	SC21-SC22	SC21-SC22	SC21-SC23	SC21-SC23	SC21-SC23	SC21-SC24	SC21-SC24	SC21-SC24	SC21-SC25
				Sample Name:	SC21-SC21-2040	SC21-SC21-SURF	SC21-SC22-0010	SC21-SC22-1020	SC21-SC23-0010	SC21-SC23-1020	SC21-SC23-2040	SC21-SC24-0010	SC21-SC24-1020	SC21-SC24-2040	SC21-SC25-0010
				Sample Date:	11/5/2021	11/9/2021	11/4/2021	11/4/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/4/2021
				Depth Interval (ft):	2-4	0-0.5	0-1	1-2	0-1	1-2	2-4	0-1	1-2	2-4	0-1
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**											
Aroclor-1016	NSL	NSL	NSL	ug/kg	53 U	76 U	48 U	42 U	83 U	54 U	55 U	67 U	60 U	50 U	75 UJ
Aroclor-1221	NSL	NSL	NSL	ug/kg	53 U	76 U	48 U	42 U	83 U	54 U	55 U	67 U	60 U	50 U	75 UJ
Aroclor-1232	NSL	NSL	NSL	ug/kg	53 U	76 U	48 U	42 U	83 U	54 U	55 U	67 U	60 U	50 U	75 UJ
Aroclor-1242	NSL	NSL	NSL	ug/kg	53 U	400	48 U	42 U	230 J	920 J	55 U	67 U	60 U	50 U	86 J-
Aroclor-1248	NSL	NSL	NSL	ug/kg	53 U	76 U	48 U	42 U	83 U	54 U	55 U	67 U	60 U	50 U	75 UJ
Aroclor-1254	NSL	NSL	NSL	ug/kg	53 U	200	48 U	42 U	71 J	340 J	55 U	67 U	60 U	50 U	23 J
Aroclor-1260	NSL	NSL	NSL	ug/kg	53 U	76 U	48 U	42 U	83 U	100	55 U	67 U	60 U	50 U	75 UJ
Aroclor-1262	NSL	NSL	NSL	ug/kg	53 U	76 U	48 U	42 U	83 U	54 U	55 U	67 U	60 U	50 U	75 UJ
Aroclor-1268	NSL	NSL	NSL	ug/kg	13 J	76 U	48 U	42 U	83 U	54 U	25 J	67 U	60 U	50 U	75 UJ
Total PCBs ND=0	59.8	676	59.8	ug/kg	13	**600**	0	0	**301**	**1360**	25	0	0	0	**109**

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

ND = Non-detect

NSL = No Screening Level

PCB = Polychlorinated biphenyl

SC = Swan Creek

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.

ug/kg = microgram per kilogram

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Table 3-5a. Core and Surface Grab Sediment Results for PCB Aroclors

				Location ID:	SC21-SC25	SC21-SC25	SC21-SC25	SC21-SC25	SC21-SC26	SC21-SC26	SC21-SC27	SC21-SC28	SC21-SC28	SC21-SC28	SC21-SC28	SC21-SC28	SC21-SC29
				Sample Name:	SC21-SC25-1020	SC21-SC25-2040	SC21-SC25-2040FD	SC21-SC25-4060	SC21-SC26-0010	SC21-SC26-1020	SC21-SC27-SURF	SC21-SC28-0010	SC21-SC28-0010FD	SC21-SC28-1020	SC21-SC28-2040	SC21-SC28-4060	SC21-SC29-0010
				Sample Date:	11/4/2021	11/4/2021	11/4/2021	11/4/2021	11/3/2021	11/3/2021	11/9/2021	11/4/2021	11/4/2021	11/4/2021	11/4/2021	11/4/2021	11/3/2021
				Depth Interval (ft):	1-2	2-4	2-4	4-6	0-1	1-2	0-0.5	0-1	0-1	1-2	2-4	4-6	0-1
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**													
Aroclor-1016	NSL	NSL	NSL	ug/kg	71 U	60 U	58 U	56 U	55 U	45 U	76 U	49 U	50 U	49 U	49 U	53 U	55 U
Aroclor-1221	NSL	NSL	NSL	ug/kg	71 U	60 U	58 U	56 U	55 U	45 U	76 U	49 U	50 U	49 U	49 U	53 U	55 U
Aroclor-1232	NSL	NSL	NSL	ug/kg	71 U	60 U	58 U	56 U	55 U	45 U	76 U	49 U	50 U	49 U	49 U	53 U	55 U
Aroclor-1242	NSL	NSL	NSL	ug/kg	410	2100 J	410 J	56 U	55 U	45 U	180	20 J	50 U	49 U	49 U	53 U	240 J
Aroclor-1248	NSL	NSL	NSL	ug/kg	71 U	60 U	58 U	56 U	55 U	45 U	76 U	49 U	50 U	49 U	49 U	53 U	55 U
Aroclor-1254	NSL	NSL	NSL	ug/kg	160	470 J	120 J	56 U	55 U	45 U	76 U	9.1 J	50 U	49 U	49 U	53 U	89
Aroclor-1260	NSL	NSL	NSL	ug/kg	71 U	60 U	58 U	56 U	55 U	45 U	76 U	49 U	50 U	49 U	49 U	53 U	55 U
Aroclor-1262	NSL	NSL	NSL	ug/kg	71 U	60 U	58 U	56 U	55 U	45 U	76 U	49 U	50 U	49 U	49 U	53 U	55 U
Aroclor-1268	NSL	NSL	NSL	ug/kg	71 U	60 U	58 U	56 U	55 U	45 U	76 U	49 U	50 U	49 U	49 U	53 U	67 J
Total PCBs ND=0	59.8	676	59.8	ug/kg	**570**	**2570**	**530**	0	0	0	**180**	29.1	0	0	0	0	**396**

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

ND = Non-detect

NSL = No Screening Level

PCB = Polychlorinated biphenyl

SC = Swan Creek

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.

ug/kg = microgram per kilogram

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018)

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Table 3-5a. Core and Surface Grab Sediment Results for PCB Aroclors

				Location ID:	SC21-SC30	SC21-SC30	SC21-SC30	SC21-SC30	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC32	SC21-SC32	SC21-SC32	SC21-SC32
				Sample Name:	SC21-SC30-0010	SC21-SC30-1020	SC21-SC30-2040	SC21-SC30-SURF	SC21-SC31-0010	SC21-SC31-1020	SC21-SC31-2040	SC21-SC31-4060	SC21-SC31-6080	SC21-SC32-0010	SC21-SC32-1020	SC21-SC32-2040	SC21-SC32-4060
				Sample Date:	11/4/2021	11/4/2021	11/4/2021	11/9/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021
				Depth Interval (ft):	0-1	1-2	2-4	0-0.5	0-1	1-2	2-4	4-6	6-8	0-1	1-2	2-4	4-6
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**													
Aroclor-1016	NSL	NSL	NSL	ug/kg	60 U	57 U	54 U	77 U	65 U	58 U	56 U	51 U	58 U	65 U	60 U	58 U	51 U
Aroclor-1221	NSL	NSL	NSL	ug/kg	60 U	57 U	54 U	77 U	65 U	58 U	56 U	51 U	58 U	65 U	60 U	58 U	51 U
Aroclor-1232	NSL	NSL	NSL	ug/kg	60 U	57 U	54 U	77 U	65 U	58 U	56 U	51 U	58 U	65 U	60 U	58 U	51 U
Aroclor-1242	NSL	NSL	NSL	ug/kg	60 U	57 U	54 U	140 J	480 J	58 U	56 U	51 U	58 U	68	81	95	94
Aroclor-1248	NSL	NSL	NSL	ug/kg	60 U	57 U	54 U	77 U	65 U	58 U	56 U	51 U	58 U	65 U	60 U	58 U	51 U
Aroclor-1254	NSL	NSL	NSL	ug/kg	60 U	57 U	54 U	77 U	170 J	58 U	56 U	51 U	58 U	43 J	49 J	55 J	39 J
Aroclor-1260	NSL	NSL	NSL	ug/kg	60 U	57 U	54 U	77 U	65 U	58 U	56 U	51 U	58 U	65 U	60 U	58 U	51 U
Aroclor-1262	NSL	NSL	NSL	ug/kg	60 U	57 U	54 U	77 U	65 U	58 U	56 U	51 U	58 U	65 U	60 U	58 U	51 U
Aroclor-1268	NSL	NSL	NSL	ug/kg	60 U	57 U	54 U	77 U	65 U	58 U	56 U	51 U	58 U	65 U	60 U	58 U	51 U
Total PCBs ND=0	59.8	676	59.8	ug/kg	0	0	0	**140**	**650**	0	0	0	0	**111**	**130**	**150**	**133**

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

ND = Non-detect

NSL = No Screening Level

PCB = Polychlorinated biphenyl

SC = Swan Creek

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.

ug/kg = microgram per kilogram

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018)

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Table 3-5a. Core and Surface Grab Sediment Results for PCB Aroclors

				Location ID:	SC21-SC32	SC21-SC33	SC21-SC33	SC21-SC33	SC21-SCREF
				Sample Name:	SC21-SC32-6080	SC21-SC33-0010	SC21-SC33-1020	SC21-SC33-2040	SC21-SCREF-SURF
				Sample Date:	11/3/2021	11/4/2021	11/4/2021	11/4/2021	11/9/2021
				Depth Interval (ft):	6-8	0-1	1-2	2-3.4	0-0.5
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**					
Aroclor-1016	NSL	NSL	NSL	ug/kg	48 U	59 U	59 U	51 U	50 U
Aroclor-1221	NSL	NSL	NSL	ug/kg	48 U	59 U	59 U	51 U	50 U
Aroclor-1232	NSL	NSL	NSL	ug/kg	48 U	59 U	59 U	51 U	50 U
Aroclor-1242	NSL	NSL	NSL	ug/kg	48 U	280 J	41 J	19 J	25 J
Aroclor-1248	NSL	NSL	NSL	ug/kg	13 J	59 U	59 U	51 U	50 U
Aroclor-1254	NSL	NSL	NSL	ug/kg	5.7 J	57 J	7.6 J	51 U	35 J
Aroclor-1260	NSL	NSL	NSL	ug/kg	48 U	59 U	59 U	51 U	50 U
Aroclor-1262	NSL	NSL	NSL	ug/kg	48 U	59 U	59 U	51 U	50 U
Aroclor-1268	NSL	NSL	NSL	ug/kg	48 U	59 U	59 U	51 U	50 U
Total PCBs ND=0	59.8	676	59.8	ug/kg	18.7	**337**	48.6	19	**60**

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

ND = Non-detect

NSL = No Screening Level

PCB = Polychlorinated biphenyl

SC = Swan Creek

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.

ug/kg = microgram per kilogram

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018)

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Table 3-5b. Composite Sediment Results for PCB Aroclors

				Location ID:	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
				Sample Name:	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-05FD	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
				Sample Date:	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/10/2021	11/11/2021	11/11/2021
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**									
Aroclor-1016	NSL	NSL	NSL	ug/kg	49 U	44 U	43 U	56 U	260 U	260 U	47 U	53 U	59 U
Aroclor-1221	NSL	NSL	NSL	ug/kg	49 U	44 U	43 U	56 U	260 U	260 U	47 U	53 U	59 U
Aroclor-1232	NSL	NSL	NSL	ug/kg	49 U	44 U	43 U	56 U	260 U	260 U	47 U	53 U	59 U
Aroclor-1242	NSL	NSL	NSL	ug/kg	73	22 J	15 J	1100	15000	15000	520	300 J	110 J
Aroclor-1248	NSL	NSL	NSL	ug/kg	49 U	44 U	43 U	56 U	260 U	260 U	47 U	53 U	59 U
Aroclor-1254	NSL	NSL	NSL	ug/kg	49 U	43 J	36 J	190 J	260 U	260 U	64	110 J	99
Aroclor-1260	NSL	NSL	NSL	ug/kg	49 U	44 U	43 U	56 U	260 U	260 U	47 U	53 U	59 U
Aroclor-1262	NSL	NSL	NSL	ug/kg	49 U	44 U	43 U	56 U	260 U	260 U	47 U	53 U	59 U
Aroclor-1268	NSL	NSL	NSL	ug/kg	49 U	44 U	43 U	56 U	260 U	260 U	47 U	53 U	34 J
Total PCBs ND=0	59.8	676	59.8	ug/kg	**73**	**65**	51	**1290**	**15000**	**15000**	**584**	**410**	**243**

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

ND = Non-detect

NSL = No Screening Level

PCB = Polychlorinated biphenyl

SC = Swan Creek

U = Compound was analyzed but not detected.

ug/kg = microgram per kilogram

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Table 3-6. Surface Grab Sediment Results for PCB Congeners

				Location ID:	SC21-SC11	SC21-SC14	SC21-SC18	SC21-SC18	SC21-SCREF
				Sample Name:	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF	SC21-SC18-SURFFD	SC21-SCREF-SURF
				Sample Date:	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021
				Depth Interval (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**					
PCB-1	NSL	NSL	NSL	ug/kg	0.082	0.39	6.5 J	15 J	3.6
PCB-2	NSL	NSL	NSL	ug/kg	0.011 J	0.036	1 J	2.7 J	0.076
PCB-3	NSL	NSL	NSL	ug/kg	0.021 J	0.099	2.6	3.7	0.64
PCB-4	NSL	NSL	NSL	ug/kg	0.5	2.7	72 J	140 J	21
PCB-5	NSL	NSL	NSL	ug/kg	0.04 U	0.021 J	2.8 J	6.2 J	0.092
PCB-6	NSL	NSL	NSL	ug/kg	0.3	1	200 J	610 J	4.2
PCB-7	NSL	NSL	NSL	ug/kg	0.032 J	0.13	7.9 J	25 J	0.73
PCB-8	NSL	NSL	NSL	ug/kg	0.65	2.4	190 J	510 J	12
PCB-9	NSL	NSL	NSL	ug/kg	0.041	0.1	13 J	39 J	0.37
PCB-10	NSL	NSL	NSL	ug/kg	0.023 J	0.082	3.2 J	8.1 J	0.61
PCB-11	NSL	NSL	NSL	ug/kg	0.04 U	0.47	6.2 J	19 J	0.57
PCB-13/12	NSL	NSL	NSL	ug/kg	0.12	0.49	38 J	120 J	0.94
PCB-14	NSL	NSL	NSL	ug/kg	0.04 U	0.019 U	0.051 U	0.033 UJ	0.037 U
PCB-15	NSL	NSL	NSL	ug/kg	0.68	1.9	77 J	130 J	6
PCB-16	NSL	NSL	NSL	ug/kg	0.34	0.85	160 J	56 J	2.5
PCB-17	NSL	NSL	NSL	ug/kg	0.43	2.6	190	300	11
PCB-19	NSL	NSL	NSL	ug/kg	0.14	0.9	35	57	5.3
PCB-21/33	NSL	NSL	NSL	ug/kg	0.39	1.5	120 J	220 J	3.6
PCB-22	NSL	NSL	NSL	ug/kg	0.5	2	160 J	280 J	5.2
PCB-23	NSL	NSL	NSL	ug/kg	0.02 U	0.0079 J	0.71 J	1.2 J	0.013 J
PCB-24	NSL	NSL	NSL	ug/kg	0.0089 J	0.038	2.5	0.033 U	0.1
PCB-25	NSL	NSL	NSL	ug/kg	0.3	1.7	140 J	320 J	4.8
PCB-26/29	NSL	NSL	NSL	ug/kg	0.47	2.4	190 J	410 J	6.6
PCB-27	NSL	NSL	NSL	ug/kg	0.11	0.52	23	36	1.1
PCB-28/20	NSL	NSL	NSL	ug/kg	2	8.8	580 J	1100 J	22
PCB-30/18	NSL	NSL	NSL	ug/kg	0.2	1.6	290 J	500 J	4.3
PCB-31	NSL	NSL	NSL	ug/kg	1.5	6.9	480 J	920 J	19
PCB-32	NSL	NSL	NSL	ug/kg	0.39	1.7	60	98	6.7
PCB-34	NSL	NSL	NSL	ug/kg	0.017 J	0.08	7.1 J	15 J	0.21
PCB-35	NSL	NSL	NSL	ug/kg	0.036	0.099	4.4 J	7.8 J	0.2
PCB-36	NSL	NSL	NSL	ug/kg	0.02 U	0.0086 J	0.098 J	0.033 U	0.018 U
PCB-37	NSL	NSL	NSL	ug/kg	0.55	1.6	52 J	150 J	2.9
PCB-38	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.11	0.033 U	0.018 U
PCB-39	NSL	NSL	NSL	ug/kg	0.0084 J	0.063	2.4 J	5 J	0.12
PCB-41/40/71	NSL	NSL	NSL	ug/kg	0.66	4.4	210 J	520 J	10
PCB-42	NSL	NSL	NSL	ug/kg	0.38	2.4	140 J	330 J	5.5
PCB-44/47/65	NSL	NSL	NSL	ug/kg	1.2	8.5	450 J	1100 J	20
PCB-45/51	NSL	NSL	NSL	ug/kg	0.27	1.7	120 J	250 J	4.6
PCB-46	NSL	NSL	NSL	ug/kg	0.073	0.49	37 J	82 J	1.3
PCB-48	NSL	NSL	NSL	ug/kg	0.18	1.4	80 J	180 J	3
PCB-50/53	NSL	NSL	NSL	ug/kg	0.2	1.4	87 J	200 J	4
PCB-52	NSL	NSL	NSL	ug/kg	1.4	9.1	520 J	1200 J	20
PCB-54	NSL	NSL	NSL	ug/kg	0.0044 J	0.04 J	1.2 J	2.5 J	0.15
PCB-55	NSL	NSL	NSL	ug/kg	0.015 J	0.093	1.4 J	3.2 J	0.18
PCB-56	NSL	NSL	NSL	ug/kg	0.56	3.6	120	170	7.5
PCB-57	NSL	NSL	NSL	ug/kg	0.013 J	0.066	1.3 J	4.1 J	0.16
PCB-58	NSL	NSL	NSL	ug/kg	0.008 J	0.038 J	1.8 J	5.6 J	0.079
PCB-59/62/75	NSL	NSL	NSL	ug/kg	0.15	0.8	43 J	95 J	1.7
PCB-60	NSL	NSL	NSL	ug/kg	0.23	1.8	20 J	56 J	3.6
PCB-61/70/74/76	NSL	NSL	NSL	ug/kg	1.6	13	480 J	1200 J	27
PCB-63	NSL	NSL	NSL	ug/kg	0.061	0.49	17 J	31 J	1.1
PCB-64	NSL	NSL	NSL	ug/kg	0.6	3.7	180 J	440 J	8.1
PCB-66	NSL	NSL	NSL	ug/kg	1.2	8.2	180 J	320 J	16
PCB-67	NSL	NSL	NSL	ug/kg	0.041 J	0.25	12 J	24 J	0.48
PCB-68	NSL	NSL	NSL	ug/kg	0.013 J	0.063	3.2 J	8.3 J	0.15
PCB-69/49	NSL	NSL	NSL	ug/kg	0.86	5.8	280 J	630 J	13
PCB-72	NSL	NSL	NSL	ug/kg	0.018 J	0.098	4.7 J	12 J	0.22
PCB-73/43	NSL	NSL	NSL	ug/kg	0.046 J	0.32	17 J	38 J	0.8
PCB-77	NSL	NSL	NSL	ug/kg	0.19	0.94	28 J	60 J	2
PCB-78	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.036 J	0.033 U	0.018 U
PCB-79	NSL	NSL	NSL	ug/kg	0.009 J	0.062	0.99 J	2.2 J	0.14
PCB-80	NSL	NSL	NSL	ug/kg	0.02 U	0.027 J	0.67 J	1.9 J	0.06
PCB-81	NSL	NSL	NSL	ug/kg	0.0089 J	0.041 J	0.4 J	0.83 J	0.082
PCB-82	NSL	NSL	NSL	ug/kg	0.12	1.2	32 J	70 J	2.3

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Table 3-6. Surface Grab Sediment Results for PCB Congeners

				Location ID:	SC21-SC11	SC21-SC14	SC21-SC18	SC21-SC18	SC21-SCREF
				Sample Name:	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF	SC21-SC18-SURFFD	SC21-SCREF-SURF
				Sample Date:	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021
				Depth Interval (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**					
PCB-83	NSL	NSL	NSL	ug/kg	0.079	0.58	22 J	44 J	1.2
PCB-84	NSL	NSL	NSL	ug/kg	0.2	1.6	76 J	190 J	3.5
PCB-88/91	NSL	NSL	NSL	ug/kg	0.16	1.4	69	44	2.8
PCB-89	NSL	NSL	NSL	ug/kg	0.02 J	0.16	6.8 J	15 J	0.35
PCB-92	NSL	NSL	NSL	ug/kg	0.18	1.1	52 J	110 J	0.018 U
PCB-94	NSL	NSL	NSL	ug/kg	0.02 U	0.078	3.3 J	7.6 J	0.18
PCB-95	NSL	NSL	NSL	ug/kg	0.6	4.1	240 J	510 J	8.1
PCB-96	NSL	NSL	NSL	ug/kg	0.012 J	0.13	6.5 J	15 J	0.29
PCB-99	NSL	NSL	NSL	ug/kg	0.45	3.1	110 J	200 J	6.5
PCB-100/93/102/198	NSL	NSL	NSL	ug/kg	0.054 J	0.5	19 J	41 J	1
PCB-103	NSL	NSL	NSL	ug/kg	0.02 U	0.066	3.4 J	7.1 J	0.14
PCB-104	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.064	0.1 J	0.018 U
PCB-105	NSL	NSL	NSL	ug/kg	0.39	2.7	57 J	120 J	5.9
PCB-106	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.051 U	0.44	0.018 U
PCB-107/124	NSL	NSL	NSL	ug/kg	0.041 J	0.23	4.3 J	9.1 J	0.5
PCB-108/119/86/97/125/87	NSL	NSL	NSL	ug/kg	0.66	4.5	140 J	280 J	9
PCB-109	NSL	NSL	NSL	ug/kg	0.07	0.42	14 J	28 J	0.97
PCB-110/115	NSL	NSL	NSL	ug/kg	1.1	6.6	250 J	480 J	14
PCB-111	NSL	NSL	NSL	ug/kg	0.02 U	0.0052 J	0.14	0.21	0.009 J
PCB-112	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.051 U	0.033 U	0.018 U
PCB-113/90/101	NSL	NSL	NSL	ug/kg	0.73	4.9	210 J	420 J	9.8
PCB-114	NSL	NSL	NSL	ug/kg	0.023 J	0.2	3.8 J	8.4 J	0.44
PCB-117/116/85	NSL	NSL	NSL	ug/kg	0.25	1.8	44 J	98 J	3.7
PCB-118	NSL	NSL	NSL	ug/kg	0.8	4.9	150 J	310 J	11
PCB-120	NSL	NSL	NSL	ug/kg	0.02 U	0.018 J	0.64	0.41	0.032 J
PCB-121	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.051 U	0.08	0.018 U
PCB-122	NSL	NSL	NSL	ug/kg	0.024 J	0.14	2.3	4.3	0.29
PCB-123	NSL	NSL	NSL	ug/kg	0.024 J	0.15	2.5 J	6.5 J	0.34
PCB-126	NSL	NSL	NSL	ug/kg	0.02 U	0.024 J	0.36 J	0.82 J	0.039 J
PCB-127	NSL	NSL	NSL	ug/kg	0.02 U	0.007 J	0.1	0.2	0.018 U
PCB-128/166	NSL	NSL	NSL	ug/kg	0.15	0.54	19	30	0.81
PCB-130	NSL	NSL	NSL	ug/kg	0.059	0.22	9.1 J	16 J	0.34
PCB-131	NSL	NSL	NSL	ug/kg	0.01 J	0.051	2.2 J	3.9 J	0.092
PCB-132	NSL	NSL	NSL	ug/kg	0.25	1	47 J	87 J	1.6
PCB-133	NSL	NSL	NSL	ug/kg	0.011 J	0.048 J	2.2 J	4.2 J	0.071
PCB-134/143	NSL	NSL	NSL	ug/kg	0.042 J	0.19	8.9 J	15 J	0.34
PCB-136	NSL	NSL	NSL	ug/kg	0.069	0.33	20 J	38 J	0.55
PCB-137	NSL	NSL	NSL	ug/kg	0.052	0.2	7.6 J	13 J	0.35
PCB-138/163/129	NSL	NSL	NSL	ug/kg	0.84	2.9	120 J	210 J	4.5
PCB-139/140	NSL	NSL	NSL	ug/kg	0.019 J	0.074 J	2.9 J	5.2 J	0.12
PCB-141	NSL	NSL	NSL	ug/kg	0.12	0.45	20	30	0.7
PCB-142	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.06	0.067	0.018 U
PCB-144	NSL	NSL	NSL	ug/kg	0.028 J	0.13	0.051 U	0.033 U	0.22
PCB-145	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.09	0.17	0.018 U
PCB-146	NSL	NSL	NSL	ug/kg	0.092	0.34	17 J	31 J	0.53
PCB-147/149	NSL	NSL	NSL	ug/kg	0.49	1.9	80 J	140 J	3
PCB-148	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.27 J	0.56 J	0.018 U
PCB-150	NSL	NSL	NSL	ug/kg	0.02 U	0.0039 J	0.22	0.51	0.01 J
PCB-151/135	NSL	NSL	NSL	ug/kg	0.2	0.79	44 J	78 J	1.3
PCB-152	NSL	NSL	NSL	ug/kg	0.02 U	0.0055 J	0.27 J	0.6 J	0.014 J
PCB-153/168	NSL	NSL	NSL	ug/kg	0.54	1.9	91	150	2.9
PCB-154	NSL	NSL	NSL	ug/kg	0.0065 J	0.029 J	1.5 J	3.1 J	0.048
PCB-155	NSL	NSL	NSL	ug/kg	0.02 U	0.0015 J	0.051 U	0.033 U	0.018 U
PCB-156/157	NSL	NSL	NSL	ug/kg	0.1	0.39	15 J	29 J	0.61
PCB-158	NSL	NSL	NSL	ug/kg	0.079	0.28	12 J	20 J	0.45
PCB-159	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.061	0.13 J	0.018 U
PCB-160	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.051 U	0.033 U	0.018 U
PCB-161	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.051 U	0.033 U	0.018 U
PCB-162	NSL	NSL	NSL	ug/kg	0.02 U	0.016 J	0.46 J	1.3 J	0.017 J
PCB-164	NSL	NSL	NSL	ug/kg	0.054	0.18	7.5 J	13 J	0.28
PCB-165	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.051 U	0.033 U	0.018 U
PCB-167	NSL	NSL	NSL	ug/kg	0.036 J	0.12	4.4 J	7.4 J	0.19
PCB-169	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.086 J	0.25 J	0.018 U

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Table 3-6. Surface Grab Sediment Results for PCB Congeners

				Location ID:	SC21-SC11	SC21-SC14	SC21-SC18	SC21-SC18	SC21-SCREF
				Sample Name:	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF	SC21-SC18-SURFFD	SC21-SCREF-SURF
				Sample Date:	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021
				Depth Interval (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**					
PCB-170	NSL	NSL	NSL	ug/kg	0.13	0.42	15	22 J+	0.6
PCB-171/173	NSL	NSL	NSL	ug/kg	0.04 J	0.15	5.6	8.8 J+	0.21
PCB-172	NSL	NSL	NSL	ug/kg	0.031 J	0.083	2.9	4.5 J+	0.12
PCB-174	NSL	NSL	NSL	ug/kg	0.13	0.44	18	27 J+	0.63
PCB-175	NSL	NSL	NSL	ug/kg	0.0074 J	0.021 J	0.99	1.4 J+	0.032 J
PCB-176	NSL	NSL	NSL	ug/kg	0.0175 J	0.065	2.9	4.5 J+	0.088
PCB-177	NSL	NSL	NSL	ug/kg	0.077	0.28	11	17 J+	0.4
PCB-178	NSL	NSL	NSL	ug/kg	0.027 J	0.1	4.5	6.8 J+	0.15
PCB-179	NSL	NSL	NSL	ug/kg	0.049 J	0.2	9.6	15 J+	0.27
PCB-180/193	NSL	NSL	NSL	ug/kg	0.27	0.91	34	48 J+	1.3
PCB-181	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.2	0.4 J+	0.018 U
PCB-182	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.051 U	0.033 U	0.018 U
PCB-183/185	NSL	NSL	NSL	ug/kg	0.09 J	0.33	12	17 J+	0.49
PCB-184	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.051 U	0.037 J+	0.018 U
PCB-186	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.051 U	0.033 U	0.018 U
PCB-187	NSL	NSL	NSL	ug/kg	0.15	0.53	18 J	6 J	0.81
PCB-188	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.037 J	0.069 J	0.018 U
PCB-189	NSL	NSL	NSL	ug/kg	0.0053 J	0.02 J	0.65 J	1.2 J	0.027 J
PCB-190	NSL	NSL	NSL	ug/kg	0.028 J	0.085	3	4.4 J+	0.12
PCB-191	NSL	NSL	NSL	ug/kg	0.0036 J	0.016 J	0.61	0.98 J+	0.028 J
PCB-192	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.051 U	0.033 U	0.018 U
PCB-194	NSL	NSL	NSL	ug/kg	0.061 J	0.21	8.6	12	0.29
PCB-195	NSL	NSL	NSL	ug/kg	0.02 J	0.086	3.4	5.1	0.12
PCB-196	NSL	NSL	NSL	ug/kg	0.032 J	0.12	5.3	7.6	0.18
PCB-197/200	NSL	NSL	NSL	ug/kg	0.012 J	0.041 J	2.1	3.2	0.058 J
PCB-198/199	NSL	NSL	NSL	ug/kg	0.085 J	0.29	12	18	0.43
PCB-201	NSL	NSL	NSL	ug/kg	0.01 J	0.036 J	1.5	2.3	0.05 J
PCB-202	NSL	NSL	NSL	ug/kg	0.018 J	0.065 J	2.5	3.9	0.089
PCB-203	NSL	NSL	NSL	ug/kg	0.054 J	0.18	7.7	11	0.26
PCB-204	NSL	NSL	NSL	ug/kg	0.02 U	0.019 U	0.051 U	0.033 U	0.018 U
PCB-205	NSL	NSL	NSL	ug/kg	0.0043 J	0.013 J	0.53	0.75	0.015 J
PCB-206	NSL	NSL	NSL	ug/kg	0.063 J	0.18	5.1	6.8	0.2
PCB-207	NSL	NSL	NSL	ug/kg	0.0058 J	0.023 J	0.78	0.98	0.025 J
PCB-208	NSL	NSL	NSL	ug/kg	0.017 J	0.057 J	1.8	1.8	0.056 J
PCB-209	NSL	NSL	NSL	ug/kg	0.054 J	0.14	3.8 J	1.7 J	0.11
Total PCBs ND=0	59.8	676	59.8	ug/kg	30.6	**170**	**8400**	**17279**	**406**

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded detected values exceed the PEC

Underlined values exceed the Region 4 ESV

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J+ = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased high).

NSL = No Screening Level

PCB = Polychlorinated biphenyl

SC = Swan Creek

U = Compound was analyzed but not detected.

UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.

ug/kg = microgram per kilogram

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Table 3-7a. Core and Surface Grab Sediment Results for 17 PAHs

				Location ID:	SC21-MR01	SC21-MR01	SC21-MR01	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR02	SC21-MR03-A	SC21-MR03-A	SC21-MR03-A	SC21-MR03-B
				Sample Name:	SC21-MR01-0010	SC21-MR01-1020	SC21-MR01-2040	SC21-MR02-0010	SC21-MR02-1020	SC21-MR02-2040	SC21-MR02-4060	SC21-MR02-6080	SC21-MR03-A-0010	SC21-MR03-A-1020	SC21-MR03-A-2040	SC21-MR03-B-0010
				Sample Date:	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021
				Depth Interval (ft):	0-1	1-2	2-4	0-1	1-2	2-4	4-6	6-8	0-1	1-2	2-4	0-1
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**												
2-Methylnaphthalene[(a)]	NSL	NSL	20.2	ug/kg	35 UJ	4.9 J-	1.8 J-	40	42	44	73	85	730	290	120	120 J-
Acenaphthene[(a)]	NSL	NSL	6.71	ug/kg	9.7 J-	31 J-	7.1 J-	140	150	170	280	270	4900 J-	3600	530 J-	910 J-
Acenaphthylene[(a)]	NSL	NSL	5.9	ug/kg	35 UJ	14 J-	2 J-	120	120	120	200	210	1000	680	190	310 J-
Anthracene[(a)]	57.2	845	57	ug/kg	13 J-	37 J-	6.7 J-	**200**	**180**	**230**	**430**	**430**	**4100 J-**	**2600**	**890 J-**	**1100 J-**
Benzo(a)anthracene[(a)]	108	1,050	108	ug/kg	42 J-	83 J-	16 J-	**510 J-**	**420 J-**	**420 J-**	**640 J-**	**710 J-**	**7100 J-**	**3800 J-**	**1300 J-**	**1300 J-**
Benzo(a)pyrene[(a)]	150	1,450	150	ug/kg	47 J-	72 J-	13 J-	**390 J-**	**370 J-**	**370 J-**	**510 J-**	**550 J-**	**5200 J-**	**3200 J-**	**1100 J-**	**1000 J-**
Benzo(b)fluoranthene[(a)]	NSL	NSL	190	ug/kg	74 J-	83 J-	16 J-	430 J-	380 J-	410 J-	490 J-	540 J-	4300 J-	3400	910 J-	920 J-
Benzo(g,h,i)perylene[(a)]	NSL	NSL	170	ug/kg	31 J-	39 J-	9.4 J-	220	200	220	270	300	2100	1500	410 J-	370 J-
Benzo(k)fluoranthene[(a)]	NSL	NSL	240	ug/kg	22 J-	28 J-	5.9 J-	190	180	170	190	260	1700	1200	350	300 J-
Chrysene[(a)]	166	1,290	166	ug/kg	63 J-	79 J-	22 J-	**450 J-**	**470**	**360 J-**	**500 J-**	**570 J-**	**5000 J-**	**4000**	**1000 J-**	**1100 J-**
Dibenzo(a,h)anthracene[(a)]	33	NSL	33	ug/kg	35 UJ	5.4 UJ	4.4 UJ	28 U	29 U	27 U	27 U	27 U	250 U	250 U	23 U	5.1 U
Fluoranthene[(a)]	423	2,230	423	ug/kg	150 J-	220 J-	37 J-	**990 J-**	**820 J-**	**1000 J-**	**1200 J-**	**1400 J-**	**11000 J-**	**7300 J-**	**2500 J-**	**3500 J-**
Fluorene[(a)]	77.4	536	77	ug/kg	11 J-	35 J-	7.3 J-	**170**	**160**	**190**	**340**	**320**	**3800**	**2900**	**430 J-**	**890 J-**
Indeno(1,2,3-cd)pyrene[(a)]	NSL	NSL	200	ug/kg	34 J-	40 J-	7.1 J-	250	240	250	310	350	2100	1700	420 J-	370 J-
Naphthalene[(a)]	176	561	176	ug/kg	35 UJ	5.4 J-	4.4 UJ	51	48	46	79	66	**1200**	**410**	150	130 J-
Phenanthrene[(a)]	204	1,170	204	ug/kg	55 J-	150 J-	34 J-	**600 J-**	**550 J-**	**690 J-**	**1100 J-**	**1200 J-**	**15000 J-**	**11000 J-**	**2200 J-**	**4100 J-**
Pyrene[(a)]	195	1,520	195	ug/kg	99 J-	190 J-	39 J-	**850 J-**	**700 J-**	**800 J-**	**1100 J-**	**1200 J-**	**14000 J-**	**8400 J-**	**2500 J-**	**3300 J-**
Total PAH17 ND=1/2RL	1,610	22,800	1,610	ug/kg	722.7	1114	228.7	**5615**	**5045**	**5504**	**7726**	**8475**	**83360**	**56110**	**15012**	**19722.6**

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

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J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

ug/kg = Microgram per kilogram

SC = Swan Creek

NA = Not applicable

NSL = No Screening Level

PAH = Polycyclic aromatic hydrocarbon

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

RL = Reporting limit

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

(a) Analytes included in Total 17 PAH calculations

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Table 3-7a. Core and Surface Grab Sediment Results for 17 PAHs

				Location ID:	SC21-MR03-B	SC21-MR03-B	SC21-MR03-B	SC21-MR04	SC21-MR04	SC21-MR04	SC21-MR04	SC21-MR05	SC21-MR05	SC21-MR05	SC21-MR06	SC21-MR06
				Sample Name:	SC21-MR03-B-1020	SC21-MR03-B-1020FD	SC21-MR03-B-2040	SC21-MR04-0010	SC21-MR04-1020	SC21-MR04-2040	SC21-MR04-4060	SC21-MR05-0010	SC21-MR05-1020	SC21-MR05-2040	SC21-MR06-0010	SC21-MR06-1020
				Sample Date:	11/8/2021	11/8/2021	11/8/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/5/2021	11/5/2021	11/5/2021	11/7/2021	11/7/2021
				Depth Interval (ft):	1-2	1-2	2-4	0-1	1-2	2-4	4-6	0-1	1-2	2-4	0-1	1-2
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**												
2-Methylnaphthalene[(a)]	NSL	NSL	20.2	ug/kg	380	320	410	2.2 J	1.9 J	1.4 J	3.9 J	110 J-	87 J-	3.4 J-	150	93 J
Acenaphthene[(a)]	NSL	NSL	6.71	ug/kg	2600	3000	2700	2.5 J	2.8 J	2.2 J	4.6 J	920 J-	680 J-	18 J-	1200	680
Acenaphthylene[(a)]	NSL	NSL	5.9	ug/kg	900	910	890	2.7 J	2.2 J	1.1 J	2 J	480 J-	380 J-	8.3 J-	520	210
Anthracene[(a)]	57.2	845	57	ug/kg	**2700**	**2800**	**6100 J-**	3 J	2.7 J	1.6 J	5.7	**800 J-**	**710 J-**	20 J-	**1400**	**1100**
Benzo(a)anthracene[(a)]	108	1,050	108	ug/kg	**4800 J-**	**4400 J-**	**6500 J-**	21	19	11	4.9 J	**2300 J-**	**2100 J-**	43 J-	**4200 J-**	**2100 J-**
Benzo(a)pyrene[(a)]	150	1,450	150	ug/kg	**4100**	**3800**	**4100 J-**	26	21	13	3.7 J	**1700 J-**	**1500 J-**	27 J-	**2900 J-**	**1600 J-**
Benzo(b)fluoranthene[(a)]	NSL	NSL	190	ug/kg	3300	3200	4000 J-	41	30	20	5.5	1600 J-	1400 J-	25 J-	2700 J-	1500
Benzo(g,h,i)perylene[(a)]	NSL	NSL	170	ug/kg	1700	1600	1600	21	17	10	8.7	610 J-	490 J-	14 J-	1100	680
Benzo(k)fluoranthene[(a)]	NSL	NSL	240	ug/kg	1300	1200	1600	15	11	7	5.3 U	480 J-	410 J-	7.7 J-	920	580
Chrysene[(a)]	166	1,290	166	ug/kg	**3700**	**3400**	**4600 J-**	30	25	15	7.3	**1800 J-**	**1500 J-**	32 J-	**3200 J-**	**1600**
Dibenzo(a,h)anthracene[(a)]	33	NSL	33	ug/kg	270 U	270 U	240 U	8.9 U	7.7 U	4.8 U	5.3 U	31 UJ	26 UJ	5.1 UJ	110 U	97 U
Fluoranthene[(a)]	423	2,230	423	ug/kg	**8500 J-**	**8600 J-**	**14000 J-**	62	47	33	13	**4600 J-**	**3400 J-**	71 J-	**8800 J-**	**4200 J-**
Fluorene[(a)]	77.4	536	77	ug/kg	**2200**	**2500**	**3200**	2.8 J	3.5 J	2.4 J	4.9 J	**930 J-**	**760 J-**	22 J-	**1500**	**610**
Indeno(1,2,3-cd)pyrene[(a)]	NSL	NSL	200	ug/kg	1700	1500	1800	19	15	9	2.1 J	640 J-	490 J-	11 J-	1200	710
Naphthalene[(a)]	176	561	176	ug/kg	**430**	**340**	**530**	2.3 J	2.4 J	1.6 J	5.3 U	130 J-	100 J-	3.7 J-	120	86 J
Phenanthrene[(a)]	204	1,170	204	ug/kg	**8600 J-**	**10000 J-**	**15000 J-**	22	20	15	30	**3800 J-**	**3600 J-**	78 J-	**7700 J-**	**3900 J-**
Pyrene[(a)]	195	1,520	195	ug/kg	**8900 J-**	**9000 J-**	**14000 J-**	46	41	27	15	**4400 J-**	**3300 J-**	79 J-	**7400 J-**	**4000 J-**
Total PAH17 ND=1/2RL	1,610	22,800	1,610	ug/kg	**55950**	**56710**	**81150**	323	265.4	172.7	119.4	**25316**	**20920**	465.7	**45065**	**23698**

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

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J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

ug/kg = Microgram per kilogram

SC = Swan Creek

NA = Not applicable

NSL = No Screening Level

PAH = Polycyclic aromatic hydrocarbon

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

RL = Reporting limit

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

(a) Analytes included in Total 17 PAH calculations

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Table 3-7a. Core and Surface Grab Sediment Results for 17 PAHs

	Location ID:	SC21-MRREF	SC21-MRREF	SC21-MRREF	SC21-MRREF	SC21-MRREF	SC21-SC02	SC21-SC02	SC21-SC02	SC21-SC03	SC21-SC03	SC21-SC03	SC21-SC04	SC21-SC04
	Sample Name:	SC21-MRREF-0010	SC21-MRREF-1020	SC21-MRREF-2040	SC21-MRREF-4060	SC21-MRREF-6080	SC21-SC02-0010	SC21-SC02-1020	SC21-SC02-2040	SC21-SC03-0010	SC21-SC03-1020	SC21-SC03-2040	SC21-SC04-0010	SC21-SC04-1020
	Sample Date:	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021
	Depth Interval (ft):	0-1	1-2	2-4	4-6	6-8	0-1	1-2	2-4	0-1	1-2	2-4	0-1	1-2
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**										
2-Methylnaphthalene[(a)]	NSL	NSL	20.2	ug/kg	2.1 J	2.4 J	61	18	11	5.5 J	23	20	23 J	80	3 J	4.3 U	4.3 U
Acenaphthene[(a)]	NSL	NSL	6.71	ug/kg	5.6 J	4.6 J	26	39	42	16	61	63	37	250	17	9.8	4.3 U
Acenaphthylene[(a)]	NSL	NSL	5.9	ug/kg	2.9 J	2.4 J	16	30	37	7.4	22	26	19 J	160	2.5 J	4.9	4.3 U
Anthracene[(a)]	57.2	845	57	ug/kg	8.1	7	48	**75**	**120 J-**	50	**150 J-**	**130 J-**	**88**	**400**	13	25	4.3 U
Benzo(a)anthracene[(a)]	108	1,050	108	ug/kg	28	22	**110 J-**	**200 J-**	**240 J-**	**210 J-**	**540 J-**	**350 J-**	**370**	**1100 J-**	29	72	4.3 U
Benzo(a)pyrene[(a)]	150	1,450	150	ug/kg	24	19	85 J-	**160 J-**	**190 J-**	**230 J-**	**520 J-**	**290 J-**	**370**	**650 J-**	16	65	4.3 U
Benzo(b)fluoranthene[(a)]	NSL	NSL	190	ug/kg	32	27	98 J-	130 J-	170 J-	320 J-	670 J-	380 J-	290 J-	740 J-	21	87	4.3 U
Benzo(g,h,i)perylene[(a)]	NSL	NSL	170	ug/kg	14	13	52	64 J-	64 J-	130 J-	280 J-	140 J-	240	440	9.6 J+	51	4.3 U
Benzo(k)fluoranthene[(a)]	NSL	NSL	240	ug/kg	10	24	34	50	70	110 J-	220 J-	140 J-	150	390	7	38	4.3 U
Chrysene[(a)]	166	1,290	166	ug/kg	27	24	96 J-	160 J-	**170 J-**	**240 J-**	**540 J-**	**330 J-**	**390**	**1200 J-**	29	82	10
Dibenzo(a,h)anthracene[(a)]	33	NSL	33	ug/kg	6.2 U	5.8 U	5.4 U	4.9 U	5.3 U	5.8 U	4.8 U	4.4 U	30 U	30 U	4.5 U	4.3 U	4.3 U
Fluoranthene[(a)]	423	2,230	423	ug/kg	61	52	240 J-	360 J-	**440 J-**	**580 J-**	**1300 J-**	**790 J-**	**690 J-**	**2600 J-**	67	200	13 J+
Fluorene[(a)]	77.4	536	77	ug/kg	6.9	6	29	39	52	26	56 J-	59 J-	43	**230**	12	11	4.3 U
Indeno(1,2,3-cd)pyrene[(a)]	NSL	NSL	200	ug/kg	14	12	48	78	64 J-	140 J-	310 J-	150 J-	250	470	9.2	52	4.3 U
Naphthalene[(a)]	176	561	176	ug/kg	2 J	2.2 J	22	20	14	6.5	19	14	17 J	87	2.6 J	4.3 U	4.3 U
Phenanthrene[(a)]	204	1,170	204	ug/kg	32	24	170 J-	**230 J-**	**410 J-**	**240 J-**	**670 J-**	**420 J-**	**300**	**580 J-**	28	67	7.9 J+
Pyrene[(a)]	195	1,520	195	ug/kg	54	43	**220 J-**	**430 J-**	**490 J-**	**440 J-**	**960 J-**	**660 J-**	**460 J-**	**2100 J-**	66	150	14 J+
Total PAH17 ND=1/2RL	1,610	22,800	1,610	ug/kg	326.7	287.5	1357.7	**2085.5**	**2586.7**	**2754.3**	**6343.4**	**3964.2**	**3757**	**11497**	334.2	921.3	73.5

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

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U = Compound was analyzed but not detected.

ug/kg = Microgram per kilogram

SC = Swan Creek

NA = Not applicable

NSL = No Screening Level

PAH = Polycyclic aromatic hydrocarbon

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

RL = Reporting limit

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

(a) Analytes included in Total 17 PAH calculations

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Table 3-7a. Core and Surface Grab Sediment Results for 17 PAHs

					Location ID:	SC21-SC04	SC21-SC04	SC21-SC04	SC21-SC04	SC21-SC06	SC21-SC06	SC21-SC06	SC21-SC07	SC21-SC07	SC21-SC07	SC21-SC07	SC21-SC07	SC21-SC08
					Sample Name:	SC21-SC04-2040	SC21-SC04-4060	SC21-SC04-4060FD	SC21-SC04-6080	SC21-SC06-0010	SC21-SC06-1020	SC21-SC06-2040	SC21-SC07-0010	SC21-SC07-1020	SC21-SC07-2040	SC21-SC07-2040FD	SC21-SC07-4060	SC21-SC08-0010
					Sample Date:	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/8/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/3/2021
					Depth Interval (ft):	2-4	4-6	4-6	6-8	0-1	1-2	2-4	0-1	1-2	2-4	2-4	4-6	0-1
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**														
2-Methylnaphthalene[(a)]	NSL	NSL	20.2	ug/kg	5.1 U	1.5 J	1.1 J	4.4 U	4.3 U	4.1 U	3.7 U	58	3.5 J	4.7	0.58 J	2.5 J	9.5
Acenaphthene[(a)]	NSL	NSL	6.71	ug/kg	5.1 U	18	4.2 U	4.4 U	4.3 U	7	3.7 U	190 J-	7	2.9 J	1.9 J	2.2 J	5.1
Acenaphthylene[(a)]	NSL	NSL	5.9	ug/kg	5.1 U	4.3 U	4.2 U	4.4 U	4.3 U	4.1 U	3.7 U	120 J-	4.6	1.3 J	0.91 J	1.7 J	0.95 J
Anthracene[(a)]	57.2	845	57	ug/kg	5.1 U	18	4.2 U	4.4 U	4.3 U	24	3.7 U	**130 J-**	4 J	1.8 J	1.2 J	2.7 J	5.7
Benzo(a)anthracene[(a)]	108	1,050	108	ug/kg	5.1 U	9.7	1.2 J	4.4 U	4.3 U	51	3.7 U	**670 J-**	22	6.8	3.4 J	8	2.6 J
Benzo(a)pyrene[(a)]	150	1,450	150	ug/kg	5.1 U	4.7	4.2 U	4.4 U	4.3 U	56	3.7 U	**350 J-**	13	3.9 J	1.9 J	4.8	2 J
Benzo(b)fluoranthene[(a)]	NSL	NSL	190	ug/kg	5.1 U	4.8	0.95 J	4.4 U	4.3 U	62	3.7 U	400 J-	17	5	2.3 J	6.2	3.3 J
Benzo(g,h,i)perylene[(a)]	NSL	NSL	170	ug/kg	5.1 U	12 J+	4.2 U	4.4 U	4.3 U	28	3.7 U	120 J-	7.1	2.5 J	1.2 J	2.9 J	5.8
Benzo(k)fluoranthene[(a)]	NSL	NSL	240	ug/kg	5.1 U	1.8 J	4.2 U	4.4 U	4.3 U	18	3.7 U	160 J-	5.2	1.5 J	0.85 J	2.1 J	3.9 U
Chrysene[(a)]	166	1,290	166	ug/kg	5.1 U	9.6	1.9 J	4.4 U	4.3 U	55	3.7 U	**520 J-**	20	6.4	3.4 J	7.2	7.7
Dibenzo(a,h)anthracene[(a)]	33	NSL	33	ug/kg	2 J	4.3 U	4.2 U	4.4 U	4.3 U	4.1 U	0.44 J	4.3 U	4.4 U	4.2 U	4.2 U	4.1 U	0.76 J
Fluoranthene[(a)]	423	2,230	423	ug/kg	5.1 U	28	4.2 U	4.4 U	4.3 U	98	3.7 U	**1400 J-**	53	18	7.6	17	4
Fluorene[(a)]	77.4	536	77	ug/kg	5.1 U	21	4.2 U	4.4 U	4.3 U	12	3.7 U	**100 J-**	3.9 J	2.1 J	1.3 J	2.3 J	5
Indeno(1,2,3-cd)pyrene[(a)]	NSL	NSL	200	ug/kg	5.1 U	1.7 J	4.2 U	4.4 U	4.3 U	28	3.7 U	120 J-	6.3	1.9 J	0.88 J	2.7 J	0.68 J
Naphthalene[(a)]	176	561	176	ug/kg	5.1 U	2.2 J	1.9 J	4.4 U	4.3 U	4.1 U	3.7 U	82 J-	5	7.1	0.83 J	2.9 J	4.7
Phenanthrene[(a)]	204	1,170	204	ug/kg	6.9 J+	48	6.2	4.9 J+	5.1 J+	44	17	190 J-	14	4.6	3.1 J	9.9	32
Pyrene[(a)]	195	1,520	195	ug/kg	5.1 U	25	4.3	4.4 U	4.3 U	94	3.7 U	**1300 J-**	50	15	8.1	14	9.6
Total PAH17 ND=1/2RL	1,610	22,800	1,610	ug/kg	47.9	210.4	38.55	40.1	40.3	585.4	45.94	**5912.2**	237.8	87.6	41.55	91.2	101.39

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

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U = Compound was analyzed but not detected.

ug/kg = Microgram per kilogram

SC = Swan Creek

NA = Not applicable

NSL = No Screening Level

PAH = Polycyclic aromatic hydrocarbon

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

RL = Reporting limit

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

(a) Analytes included in Total 17 PAH calculations

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Table 3-7a. Core and Surface Grab Sediment Results for 17 PAHs

				Location ID:	SC21-SC09	SC21-SC09	SC21-SC09	SC21-SC10	SC21-SC11	SC21-SC11	SC21-SC11	SC21-SC11	SC21-SC12	SC21-SC12	SC21-SC12	SC21-SC13	SC21-SC13
				Sample Name:	SC21-SC09-0010	SC21-SC09-1020	SC21-SC09-2040	SC21-SC10-0010	SC21-SC11-0010	SC21-SC11-0010FD	SC21-SC11-1020	SC21-SC11-2040	SC21-SC12-0010	SC21-SC12-1020	SC21-SC12-2040	SC21-SC13-0010	SC21-SC13-1020
				Sample Date:	11/9/2021	11/9/2021	11/9/2021	11/5/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/11/2021	11/11/2021	11/11/2021	11/9/2021	11/9/2021
				Depth Interval (ft):	0-1	1-2	2-4	0-1	0-1	0-1	1-2	2-4	0-1	1-2	2-4	0-1	1-2
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**													
2-Methylnaphthalene[(a)]	NSL	NSL	20.2	ug/kg	890	890	270	11 J-	50 J	23 J	66	2.4 J	7.5	6.1	5.2	19 J	26 J
Acenaphthene[(a)]	NSL	NSL	6.71	ug/kg	89000	24000	3800	6.2 J-	1600 J-	810 J-	2600 J-	61	4.9	3.5 J	4 U	100	300
Acenaphthylene[(a)]	NSL	NSL	5.9	ug/kg	1200	880	230	1.8 J-	750 J	200 J	180	3.7 J	4.1 U	4.2 U	4 U	28 J	49
Anthracene[(a)]	57.2	845	57	ug/kg	**28000**	**15000**	**1500**	6.1 J-	**820 J**	**350 J**	**910 J-**	17	3.5 J	2.3 J	4 U	**100**	**160**
Benzo(a)anthracene[(a)]	108	1,050	108	ug/kg	**17000**	**8100**	**1500**	3 J-	**2800 J-**	**880 J-**	**1100 J-**	22	1.9 J	4.2 U	0.59 J	**400**	**680 J-**
Benzo(a)pyrene[(a)]	150	1,450	150	ug/kg	**8400 J**	**3700 J**	**890**	1.8 J-	**1900 J-**	**600 J-**	**610 J-**	9.9	1.7 J	0.61 J	0.51 J	**380**	**670 J-**
Benzo(b)fluoranthene[(a)]	NSL	NSL	190	ug/kg	9600 J	4400 J	960	3.1 J-	1800 J-	670 J-	690 J-	10	2.1 J	1.4 J	0.69 J	550	960 J-
Benzo(g,h,i)perylene[(a)]	NSL	NSL	170	ug/kg	2000 J	1400	310	5 J-	710 J	280 J	240	5.7 J	6.8	3.6 J	2.1 J	270	460
Benzo(k)fluoranthene[(a)]	NSL	NSL	240	ug/kg	3200 J	1500 J	350	4 UJ	590 J	260 J	230	4.2 J	4.1 U	4.2 U	4 U	480	310
Chrysene[(a)]	166	1,290	166	ug/kg	**14000**	**6100**	**1300**	4.8 J-	**2000 J-**	**680 J-**	**850 J-**	21	5.6	3.7 J	1.8 J	**470**	**790 J-**
Dibenzo(a,h)anthracene[(a)]	33	NSL	33	ug/kg	120 U	100 U	25 U	4 UJ	53 U	25 U	22 U	3.9 J	4.1 U	4.2 U	4 U	34 U	35 U
Fluoranthene[(a)]	423	2,230	423	ug/kg	**81000**	**31000**	**4600**	5 J-	**6500 J-**	**2300 J-**	**3300 J-**	67	3.7 J	0.94 J	0.82 J	**1000 J-**	**1800 J-**
Fluorene[(a)]	77.4	536	77	ug/kg	**52000**	**22000**	**3200**	6.1 J-	**1200 J-**	**460 J-**	**2900 J-**	56	3.8 J	2.6 J	1.3 J	**88**	**250**
Indeno(1,2,3-cd)pyrene[(a)]	NSL	NSL	200	ug/kg	2300 J	1600	360	0.89 J-	820 J	310 J	270	6.6	0.88 J	4.2 U	4 U	260	450
Naphthalene[(a)]	176	561	176	ug/kg	**270**	**480**	150	3.4 J-	110 J	43 J	130	4.6 J	4.1 U	2.7 J	1.5 J	19 J	30 J
Phenanthrene[(a)]	204	1,170	204	ug/kg	**140000**	**57000**	**6700**	30 J-	**840 J-**	**460 J-**	**2400 J-**	46	25	18	11	**410**	**780 J-**
Pyrene[(a)]	195	1,520	195	ug/kg	**59000**	**23000**	**3500**	7.8 J-	**5800 J-**	**1900 J-**	**2800 J-**	59	7.3	4.1 J	2.7 J	**780 J-**	**1400 J-**
Total PAH17 ND=1/2RL	1,610	22,800	1,610	ug/kg	**507920**	**201100**	**29633**	99.99	**28317**	**10239**	**19287**	400	83.08	60.05	40.21	**5371**	**9133**

NOTES:

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Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

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TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

(a) Analytes included in Total 17 PAH calculations

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Table 3-7a. Core and Surface Grab Sediment Results for 17 PAHs

				Location ID:	SC21-SC13	SC21-SC15	SC21-SC15	SC21-SC15	SC21-SC16	SC21-SC16	SC21-SC16	SC21-SC16	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC17	SC21-SC17
				Sample Name:	SC21-SC13-2040	SC21-SC15-0010	SC21-SC15-1020	SC21-SC15-2040	SC21-SC16-0010	SC21-SC16-1020	SC21-SC16-2040	SC21-SC16-4060	SC21-SC17-0010	SC21-SC17-1020	SC21-SC17-2040	SC21-SC17-4060	SC21-SC17-6080
				Sample Date:	11/9/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/7/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/10/2021
				Depth Interval (ft):	2-4	0-1	1-2	2-4	0-1	1-2	2-4	4-6	0-1	1-2	2-4	4-6	6-8
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**													
2-Methylnaphthalene[(a)]	NSL	NSL	20.2	ug/kg	98	11 J	550	1000	260	92	17 J	13 J	88	310	18	7	12
Acenaphthene[(a)]	NSL	NSL	6.71	ug/kg	6000 J-	270	13000 J-	26000 J-	9700 J-	2100 J-	150	36	1000 J-	2700	58 J	23	56
Acenaphthylene[(a)]	NSL	NSL	5.9	ug/kg	270	22 J	860	2300	400	83	14 J	13 J	310	820	11	7.2	3.9 J
Anthracene[(a)]	57.2	845	57	ug/kg	**3600 J-**	**140**	**9000 J-**	**21000 J-**	**5000 J-**	**1400 J-**	**170**	**81**	**1100 J-**	**4300 J-**	**70 J-**	37	**92 J-**
Benzo(a)anthracene[(a)]	108	1,050	108	ug/kg	**3900 J-**	**340**	**8300 J-**	**11000 J-**	**3400 J-**	**860 J-**	**280**	**150**	**1400 J-**	**3200 J-**	100 J-	74	**130 J-**
Benzo(a)pyrene[(a)]	150	1,450	150	ug/kg	**1800 J-**	**340**	**4300 J-**	**5600 J-**	**1500 J-**	**440 J-**	**190**	120	**900 J-**	**2700**	78 J-	57	100 J-
Benzo(b)fluoranthene[(a)]	NSL	NSL	190	ug/kg	2000 J-	360 J-	4800 J-	5500 J-	1800 J-	470 J-	180	130	900 J-	2400	84 J-	57	100 J-
Benzo(g,h,i)perylene[(a)]	NSL	NSL	170	ug/kg	590	210	1500	2400	770	190	74	57	300 J-	890	50	29	54
Benzo(k)fluoranthene[(a)]	NSL	NSL	240	ug/kg	800	150	2100	3700	820 J-	200	60	40	380 J-	920	34	21	45
Chrysene[(a)]	166	1,290	166	ug/kg	**3000 J-**	**380**	**6400 J-**	**8000 J-**	**2700 J-**	**670 J-**	**190**	120	**1100 J-**	**2800**	83 J-	53	100 J-
Dibenzo(a,h)anthracene[(a)]	33	NSL	33	ug/kg	51 U	30 U	280 U	280 U	58 U	23 U	23 U	24 U	27 U	240 U	4.5 U	4.6 U	4.2 U
Fluoranthene[(a)]	423	2,230	423	ug/kg	**13000 J-**	**700 J-**	**27000 J-**	**36000 J-**	**14000 J-**	**3600 J-**	**450 J-**	310	**3300 J-**	**8000 J-**	250 J-	140 J-	330 J-
Fluorene[(a)]	77.4	536	77	ug/kg	**4900 J-**	**210**	**11000 J-**	**22000 J-**	**6000 J-**	**1400 J-**	**150**	47	**1100 J-**	**3300 J-**	64	27	55
Indeno(1,2,3-cd)pyrene[(a)]	NSL	NSL	200	ug/kg	640	240	2000	3400	930	230	85	63	320 J-	1000	48	28	60
Naphthalene[(a)]	176	561	176	ug/kg	71	8.7 J	**190 J**	**1800**	63	25	14 J	12 J	99	**900**	19	9.3	12
Phenanthrene[(a)]	204	1,170	204	ug/kg	**16000 J-**	**370 J-**	**34000 J-**	**67000 J-**	**16000 J-**	**4400 J-**	**450 J-**	**230**	**3300 J-**	**13000 J-**	**250 J-**	130 J-	**330 J-**
Pyrene[(a)]	195	1,520	195	ug/kg	**10000 J-**	**500 J-**	**20000 J-**	**26000 J-**	**9200 J-**	**2400 J-**	**320 J-**	**290**	**2800 J-**	**6200 J-**	**210 J-**	130 J-	**270 J-**
Total PAH17 ND=1/2RL	1,610	22,800	1,610	ug/kg	**66695**	**4271.7**	**145140**	**242840**	**72572**	**18572**	**2806**	**1724**	**18411**	**53560**	1429.3	831.8	**1752**

NOTES:

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Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

(a) Analytes included in Total 17 PAH calculations

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Table 3-7a. Core and Surface Grab Sediment Results for 17 PAHs

				Location ID:	SC21-SC19	SC21-SC19	SC21-SC19	SC21-SC19	SC21-SC20	SC21-SC20	SC21-SC21	SC21-SC21	SC21-SC21	SC21-SC22	SC21-SC22	SC21-SC23	SC21-SC23
				Sample Name:	SC21-SC19-0010	SC21-SC19-1020	SC21-SC19-2040	SC21-SC19-4060	SC21-SC20-0010	SC21-SC20-1020	SC21-SC21-0010	SC21-SC21-1020	SC21-SC21-2040	SC21-SC22-0010	SC21-SC22-1020	SC21-SC23-0010	SC21-SC23-1020
				Sample Date:	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/4/2021	11/4/2021	11/5/2021	11/5/2021
				Depth Interval (ft):	0-1	1-2	2-4	4-6	0-1	1-2	0-1	1-2	2-4	0-1	1-2	0-1	1-2
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**													
2-Methylnaphthalene[(a)]	NSL	NSL	20.2	ug/kg	120 J-	18 J-	9.2 J-	5.5 J-	10 J-	4.8 J-	410 J-	980 J-	3200 J-	61	8.3 J	76 J-	120 J-
Acenaphthene[(a)]	NSL	NSL	6.71	ug/kg	1700 J-	94 J-	48 J-	25 J-	30 J-	5.3 J-	730 J-	3000 J-	7400 J-	120	14 J	430 J-	1800 J-
Acenaphthylene[(a)]	NSL	NSL	5.9	ug/kg	320 J-	25 J-	19 J-	18 J-	2.8 J-	0.91 J-	360 J-	540 J-	2500 J-	210	14 J	110 J-	250 J-
Anthracene[(a)]	57.2	845	57	ug/kg	**1700 J-**	**140 J-**	**71 J-**	53 J-	27 J-	4.2 J-	**910 J-**	**4200 J-**	**7000 J-**	**420**	42	**410 J-**	**1500 J-**
Benzo(a)anthracene[(a)]	108	1,050	108	ug/kg	**1800 J-**	**280 J-**	**140 J-**	**120 J-**	19 J-	1.1 J-	**2000 J-**	**3100 J-**	**7600 J-**	**810 J-**	77	**1300 J-**	**2800 J-**
Benzo(a)pyrene[(a)]	150	1,450	150	ug/kg	**990 J-**	**190 J-**	110 J-	110 J-	5.9 J-	0.56 J-	**1300 J-**	**1700 J-**	**5200 J-**	**680 J-**	58	**1200 J-**	**1600 J-**
Benzo(b)fluoranthene[(a)]	NSL	NSL	190	ug/kg	980 J-	210 J-	110 J-	110 J-	7.2 J-	1.3 J-	1500 J-	1900 J-	5300 J-	570 J-	51	1600 J-	1800 J-
Benzo(g,h,i)perylene[(a)]	NSL	NSL	170	ug/kg	270 J-	77 J-	61 J-	61 J-	5.4 J-	2.1 J-	500 J-	470 J-	2300 J-	400	24 J+	670 J-	480 J-
Benzo(k)fluoranthene[(a)]	NSL	NSL	240	ug/kg	370 J-	60 J-	45 J-	48 J-	2.4 J-	3.9 UJ	560 J-	530 J-	2600 J-	280	16 J	590 J-	760 J-
Chrysene[(a)]	166	1,290	166	ug/kg	**1400 J-**	**220 J-**	110 J-	100 J-	20 J-	2.9 J-	**1700 J-**	**2400 J-**	**6400 J-**	**600 J-**	60	**1400 J-**	**2200 J-**
Dibenzo(a,h)anthracene[(a)]	33	NSL	33	ug/kg	5.1 UJ	5.3 UJ	4.9 UJ	4.7 UJ	4.1 UJ	3.9 UJ	27 UJ	27 UJ	260 UJ	49 U	21 U	81 UJ	55 UJ
Fluoranthene[(a)]	423	2,230	423	ug/kg	**4900 J-**	**620 J-**	290 J-	270 J-	73 J-	6.9 J-	**4100 J-**	**7800 J-**	**19000 J-**	**1300 J-**	120	**3700 J-**	**8400 J-**
Fluorene[(a)]	77.4	536	77	ug/kg	**2300 J-**	**100 J-**	61 J-	34 J-	27 J-	4.6 J-	**1200 J-**	**4500 J-**	**10000 J-**	**160**	18 J	**390 J-**	**2400 J-**
Indeno(1,2,3-cd)pyrene[(a)]	NSL	NSL	200	ug/kg	310 J-	80 J-	61 J-	62 J-	2.7 J-	3.9 UJ	540 J-	530 J-	2600 J-	420	23	790 J-	650 J-
Naphthalene[(a)]	176	561	176	ug/kg	**210 J-**	25 J-	11 J-	6.2 J-	4.5 J-	1.6 J-	**280 J-**	**760 J-**	**4000 J-**	120	7.9 J	150 J-	**180 J-**
Phenanthrene[(a)]	204	1,170	204	ug/kg	**6900 J-**	**570 J-**	**250 J-**	190 J-	64 J-	19 J-	**4300 J-**	**14000 J-**	**15000 J-**	**710 J-**	120	**1200 J-**	**7300 J-**
Pyrene[(a)]	195	1,520	195	ug/kg	**3800 J-**	**510 J-**	**270 J-**	**240 J-**	70 J	6.7 J-	**3600 J-**	**6400 J-**	**17000 J-**	**1500 J-**	130	**2700 J-**	**6400 J-**
Total PAH17 ND=1/2RL	1,610	22,800	1,610	ug/kg	**28072.6**	**3221.7**	**1668.7**	1455.1	373	67.97	**24004**	**52824**	**117230**	**8386**	794.2	**16757**	**38668**

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

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J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

ug/kg = Microgram per kilogram

SC = Swan Creek

NA = Not applicable

NSL = No Screening Level

PAH = Polycyclic aromatic hydrocarbon

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

RL = Reporting limit

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

(a) Analytes included in Total 17 PAH calculations

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Table 3-7a. Core and Surface Grab Sediment Results for 17 PAHs

				Location ID:	SC21-SC23	SC21-SC24	SC21-SC24	SC21-SC24	SC21-SC25	SC21-SC25	SC21-SC25	SC21-SC25	SC21-SC25	SC21-SC26	SC21-SC26	SC21-SC28	SC21-SC28
				Sample Name:	SC21-SC23-2040	SC21-SC24-0010	SC21-SC24-1020	SC21-SC24-2040	SC21-SC25-0010	SC21-SC25-1020	SC21-SC25-2040	SC21-SC25-2040FD	SC21-SC25-4060	SC21-SC26-0010	SC21-SC26-1020	SC21-SC28-0010	SC21-SC28-0010FD
				Sample Date:	11/5/2021	11/5/2021	11/5/2021	11/5/2021	11/4/2021	11/4/2021	11/4/2021	11/4/2021	11/4/2021	11/3/2021	11/3/2021	11/4/2021	11/4/2021
				Depth Interval (ft):	2-4	0-1	1-2	2-4	0-1	1-2	2-4	2-4	4-6	0-1	1-2	0-1	0-1
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**													
2-Methylnaphthalene[(a)]	NSL	NSL	20.2	ug/kg	1900 J-	4500 J-	5700 J-	63000 J-	72 J	64 J	540 J	230 J	700	1100 J-	270 J-	2000	2200
Acenaphthene[(a)]	NSL	NSL	6.71	ug/kg	5400 J-	17000 J-	15000 J-	60000 J-	360 J	910	3600 J-	4200 J-	2000	9200 J-	1300 J-	13000 J-	13000 J-
Acenaphthylene[(a)]	NSL	NSL	5.9	ug/kg	1400 J-	3600 J-	1600 J-	5700 J-	140 J	220 J	1700 J	650 J	580	1300 J-	160 J-	3600	4200 J-
Anthracene[(a)]	57.2	845	57	ug/kg	**10000 J-**	**18000 J-**	**12000 J-**	**39000 J-**	**610**	**690**	**2600 J-**	**2600**	**1900**	**12000 J-**	**1700 J-**	**20000 J-**	**20000 J-**
Benzo(a)anthracene[(a)]	108	1,050	108	ug/kg	**9000 J-**	**18000 J-**	**12000 J-**	**24000 J-**	**1700**	**2500**	**6300 J-**	**4800 J-**	**3600**	**9300 J-**	**1400 J-**	**17000 J-**	**21000 J-**
Benzo(a)pyrene[(a)]	150	1,450	150	ug/kg	**4800 J-**	**12000 J-**	**7700 J-**	**18000 J-**	**1800**	**1900**	**3500 J-**	**3500**	**2400**	**5700 J-**	**960 J-**	**13000 J-**	**16000 J-**
Benzo(b)fluoranthene[(a)]	NSL	NSL	190	ug/kg	5500 J-	11000 J-	7000 J-	14000 J-	2600	2300	4100 J-	4000	2600	5300 J-	830 J-	10000 J-	14000 J-
Benzo(g,h,i)perylene[(a)]	NSL	NSL	170	ug/kg	1600 J-	4700 J-	3400 J-	5300 J-	1100	900	2900 J	1200 J	1000	1800 J-	330 J-	4400 J-	6300 J-
Benzo(k)fluoranthene[(a)]	NSL	NSL	240	ug/kg	2100 J-	4700 J-	2600 J-	6400 J-	870	870	3700 J	1300 J	860	1700 J-	340 J-	3900	5200 J-
Chrysene[(a)]	166	1,290	166	ug/kg	**7000 J-**	**14000 J-**	**8000 J-**	**18000 J-**	**2300**	**2300**	**5400 J-**	**3800 J-**	**2800**	**7000 J-**	**1100 J-**	**12000 J-**	**15000 J-**
Dibenzo(a,h)anthracene[(a)]	33	NSL	33	ug/kg	270 UJ	330 UJ	310 UJ	250 UJ	400 U	350 U	310 U	280 U	290 U	54 U	4.5 U	260 U	260 U
Fluoranthene[(a)]	423	2,230	423	ug/kg	**21000 J-**	**44000 J-**	**25000 J-**	**54000 J-**	**5100**	**4700**	**14000 J-**	**14000 J-**	**7700 J-**	**22000 J-**	**3400 J-**	**35000 J-**	**43000 J-**
Fluorene[(a)]	77.4	536	77	ug/kg	**11000 J-**	**16000 J-**	**10000 J-**	**27000 J-**	**410**	**380**	**2800 J-**	**3300 J-**	**2200**	**8900 J-**	**1400 J-**	**10000 J-**	**9800 J-**
Indeno(1,2,3-cd)pyrene[(a)]	NSL	NSL	200	ug/kg	1900 J-	4900 J-	3200 J-	5400 J-	1200	1000	3700 J	1400 J	1100	1800 J-	350 J-	3900 J-	5900 J-
Naphthalene[(a)]	176	561	176	ug/kg	**1400 J-**	**4700 J-**	**4600 J-**	**170000 J-**	67 J	74 J	**770 J**	**360 J**	**790**	**1100 J-**	**240 J-**	**2400**	**3600**
Phenanthrene[(a)]	204	1,170	204	ug/kg	**33000 J-**	**63000 J-**	**41000 J-**	**110000 J-**	**1800**	**1300**	**5700 J-**	**7200 J-**	**6600 J-**	**34000 J-**	**5000 J-**	**55000 J-**	**53000 J-**
Pyrene[(a)]	195	1,520	195	ug/kg	**17000 J-**	**42000 J-**	**30000 J-**	**63000 J-**	**3800**	**3900**	**10000 J-**	**9900 J-**	**5800 J-**	**21000 J-**	**3400 J-**	**39000 J-**	**43000 J-**
Total PAH17 ND=1/2RL	1,610	22,800	1,610	ug/kg	**134140**	**282270**	**188960**	**682930**	**24129**	**24188**	**71470**	**62580**	**42780**	**143227**	**22182.3**	**244330**	**275330**

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

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J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

ug/kg = Microgram per kilogram

SC = Swan Creek

NA = Not applicable

NSL = No Screening Level

PAH = Polycyclic aromatic hydrocarbon

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

RL = Reporting limit

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

(a) Analytes included in Total 17 PAH calculations

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Table 3-7a. Core and Surface Grab Sediment Results for 17 PAHs

					Location ID:	SC21-SC28	SC21-SC28	SC21-SC28	SC21-SC29	SC21-SC30	SC21-SC30	SC21-SC30	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC31	SC21-SC32
					Sample Name:	SC21-SC28-1020	SC21-SC28-2040	SC21-SC28-4060	SC21-SC29-0010	SC21-SC30-0010	SC21-SC30-1020	SC21-SC30-2040	SC21-SC31-0010	SC21-SC31-1020	SC21-SC31-2040	SC21-SC31-4060	SC21-SC31-6080	SC21-SC32-0010
					Sample Date:	11/4/2021	11/4/2021	11/4/2021	11/3/2021	11/4/2021	11/4/2021	11/4/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/3/2021
					Depth Interval (ft):	1-2	2-4	4-6	0-1	0-1	1-2	2-4	0-1	1-2	2-4	4-6	6-8	0-1
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**														
2-Methylnaphthalene[(a)]	NSL	NSL	20.2	ug/kg	7900 J-	11000 J-	12000 J-	1600 J-	1100	1800	1200	280	770 J-	3000 J-	37000	58000 J-	23 J
Acenaphthene[(a)]	NSL	NSL	6.71	ug/kg	21000 J-	22000 J-	18000 J-	9500 J-	4100	7900 J-	6700 J-	1100 J-	3800 J-	7900 J-	42000	49000 J-	85
Acenaphthylene[(a)]	NSL	NSL	5.9	ug/kg	4300 J-	4500 J-	3300 J-	1700 J-	1400	2600	1600	690	1000 J-	1800 J-	5800 J	4500 J-	59
Anthracene[(a)]	57.2	845	57	ug/kg	**33000 J-**	**38000 J-**	**28000 J-**	**9500 J-**	**4400**	**14000 J-**	**12000 J-**	**1700 J-**	**6100 J-**	**13000 J-**	**50000**	**47000 J-**	**230**
Benzo(a)anthracene[(a)]	108	1,050	108	ug/kg	**26000 J-**	**28000 J-**	**22000 J-**	**9000 J-**	**5700 J-**	**10000 J-**	**7400 J-**	**3600 J-**	**6000 J-**	**12000 J-**	**38000**	**31000 J-**	**590**
Benzo(a)pyrene[(a)]	150	1,450	150	ug/kg	**21000 J-**	**22000 J-**	**17000 J-**	**5800 J-**	**4200**	**6200 J-**	**4500 J-**	**2900 J-**	**3900 J-**	**7400 J-**	**25000**	**20000 J-**	**690**
Benzo(b)fluoranthene[(a)]	NSL	NSL	190	ug/kg	16000 J-	16000 J-	12000 J-	5400 J-	3900	5800 J-	4200 J-	3400 J-	3800 J-	6900 J-	20000	18000 J-	1000
Benzo(g,h,i)perylene[(a)]	NSL	NSL	170	ug/kg	6400 J-	6800 J-	5400 J-	1900 J-	1500	3300	1500	1300 J-	1400 J-	2200 J-	8100 J	6200 J-	400
Benzo(k)fluoranthene[(a)]	NSL	NSL	240	ug/kg	5600 J-	7400 J-	4100 J-	2300 J-	1500	2800	1500	1000 J-	1200 J-	2500 J-	8600 J	5300 J-	280
Chrysene[(a)]	166	1,290	166	ug/kg	**19000 J-**	**21000 J-**	**16000 J-**	**7000 J-**	**4600**	**7600 J-**	**5700 J-**	**3200 J-**	**4500 J-**	**8600 J-**	**28000**	**23000 J-**	**820**
Dibenzo(a,h)anthracene[(a)]	33	NSL	33	ug/kg	250 U	250 U	270 U	54 U	320 U	290 U	270 U	66 U	57 U	56 U	52 U	59 U	33 U
Fluoranthene[(a)]	423	2,230	423	ug/kg	**52000 J-**	**60000 J-**	**41000 J-**	**23000 J-**	**14000 J-**	**26000 J-**	**22000 J-**	**7300 J-**	**14000 J-**	**28000 J-**	**97000**	**81000 J-**	**1800**
Fluorene[(a)]	77.4	536	77	ug/kg	**16000 J-**	**20000 J-**	**14000 J-**	**9600 J-**	**4400**	**8300 J-**	**9800 J-**	**1300 J-**	**4700 J-**	**9700 J-**	**42000**	**43000 J-**	**120**
Indeno(1,2,3-cd)pyrene[(a)]	NSL	NSL	200	ug/kg	6400 J-	7000 J-	4500 J-	2000 J-	1800	3600	1800	1400 J-	1400 J-	2400 J-	8000 J	6100 J-	450
Naphthalene[(a)]	176	561	176	ug/kg	**4600 J-**	**4700 J-**	**4000 J-**	**1700 J-**	**910**	**1800**	**1200**	**220**	**530 J-**	**1100 J-**	**15000**	**87000 J-**	16 J
Phenanthrene[(a)]	204	1,170	204	ug/kg	**90000 J-**	**100000 J-**	**74000 J-**	**29000 J-**	**15000 J-**	**38000 J-**	**34000 J-**	**4900 J-**	**17000 J-**	**37000 J-**	**150000**	**150000 J-**	**600**
Pyrene[(a)]	195	1,520	195	ug/kg	**57000 J-**	**63000 J-**	**54000 J-**	**20000 J-**	**11000 J-**	**21000 J-**	**18000 J-**	**6300 J-**	**12000 J-**	**25000 J-**	**85000**	**77000 J-**	**1200**
Total PAH17 ND=1/2RL	1,610	22,800	1,610	ug/kg	**386330**	**431530**	**329440**	**139027**	**79670**	**160850**	**133240**	**40623**	**82129**	**168528**	**659526**	**706130**	**8380**

NOTES:

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U = Compound was analyzed but not detected.

ug/kg = Microgram per kilogram

SC = Swan Creek

NA = Not applicable

NSL = No Screening Level

PAH = Polycyclic aromatic hydrocarbon

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

RL = Reporting limit

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

(a) Analytes included in Total 17 PAH calculations

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Table 3-7a. Core and Surface Grab Sediment Results for 17 PAHs

				Location ID:	SC21-SC32	SC21-SC32	SC21-SC32	SC21-SC32	SC21-SC33	SC21-SC33	SC21-SC33
				Sample Name:	SC21-SC32-1020	SC21-SC32-2040	SC21-SC32-4060	SC21-SC32-6080	SC21-SC33-0010	SC21-SC33-1020	SC21-SC33-2040
				Sample Date:	11/3/2021	11/3/2021	11/3/2021	11/3/2021	11/4/2021	11/4/2021	11/4/2021
				Depth Interval (ft):	1-2	2-4	4-6	6-8	0-1	1-2	2-3.4
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**							
2-Methylnaphthalene[(a)]	NSL	NSL	20.2	ug/kg	15 J	17 J	41	22	91 J	1200	950
Acenaphthene[(a)]	NSL	NSL	6.71	ug/kg	74	130	120 J-	19	1200	9500 J-	6000 J-
Acenaphthylene[(a)]	NSL	NSL	5.9	ug/kg	89	100	63	5.3	180 J	2300	1300
Anthracene[(a)]	57.2	845	57	ug/kg	**190**	**270**	**160 J-**	19	**1200**	**13000 J-**	**6000 J-**
Benzo(a)anthracene[(a)]	108	1,050	108	ug/kg	**620**	**770**	**360 J-**	36	**2000**	**14000 J-**	**7300 J-**
Benzo(a)pyrene[(a)]	150	1,450	150	ug/kg	**690**	**700**	**320 J-**	28	**1200**	**8100 J-**	**5900 J-**
Benzo(b)fluoranthene[(a)]	NSL	NSL	190	ug/kg	930	1000	380 J-	32	1500	8300 J-	5000 J-
Benzo(g,h,i)perylene[(a)]	NSL	NSL	170	ug/kg	450	450	160 J-	16	480	3200	2400
Benzo(k)fluoranthene[(a)]	NSL	NSL	240	ug/kg	320	340	120 J-	12	510	3500	2200
Chrysene[(a)]	166	1,290	166	ug/kg	**700**	**790**	**320 J-**	35	**1500**	**10000 J-**	**5500 J-**
Dibenzo(a,h)anthracene[(a)]	33	NSL	33	ug/kg	31 U	29 U	5 U	4.8 U	300 U	290 U	260 U
Fluoranthene[(a)]	423	2,230	423	ug/kg	**1600**	**1800**	**800 J-**	64	**4500**	**36000 J-**	**16000 J-**
Fluorene[(a)]	77.4	536	77	ug/kg	**100**	**180**	**130 J-**	20	**1400**	**9600 J-**	**3800 J-**
Indeno(1,2,3-cd)pyrene[(a)]	NSL	NSL	200	ug/kg	450	410	150 J-	16	590	4000	2800
Naphthalene[(a)]	176	561	176	ug/kg	16 J	23 J	53	19	130 J	**1700**	**2100**
Phenanthrene[(a)]	204	1,170	204	ug/kg	**470**	**740**	**500 J-**	52	**3600**	**46000 J-**	**21000 J-**
Pyrene[(a)]	195	1,520	195	ug/kg	**1100**	**1400**	**610 J-**	66	**4300**	**29000 J-**	**15000 J-**
Total PAH17 ND=1/2RL	1,610	22,800	1,610	ug/kg	**7830**	**9135**	**4289.5**	463.7	**24581**	**199550**	**103380**

NOTES:

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TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

(a) Analytes included in Total 17 PAH calculations

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Table 3-7b. Composite Sediment Results for 17 PAHs

					Location ID:	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
					Sample Name:	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-05FD	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
					Sample Date:	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/10/2021	11/11/2021	11/11/2021
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**										
2-Methylnaphthalene[(a)]	NSL	NSL	20.2	ug/kg		17	52	130 J	130	650	860	33	700	4700
Acenaphthene[(a)]	NSL	NSL	6.71	ug/kg		63	190 J	2800	3300	14000	16000	1200	4900	7800
Acenaphthylene[(a)]	NSL	NSL	5.9	ug/kg		45	120 J	110 J	490	1000	1400	63	970	1300
Anthracene[(a)]	57.2	845	57	ug/kg		**160**	**320**	**1500**	**2700**	**12000**	**15000**	**1000**	**4300**	**7300**
Benzo(a)anthracene[(a)]	108	1,050	108	ug/kg		**470 J-**	**570 J-**	**690 J-**	**3400**	**7500 J-**	**9400 J-**	**1100**	**5700 J-**	**6300 J-**
Benzo(a)pyrene[(a)]	150	1,450	150	ug/kg		**430**	**380**	840 U	**1800**	**4000 J**	**5200**	**640**	**4300**	**4400**
Benzo(b)fluoranthene[(a)]	NSL	NSL	190	ug/kg		500	380	340 J	2000	4400 J	5600	640	3900	4200
Benzo(g,h,i)perylene[(a)]	NSL	NSL	170	ug/kg		200	150 J	98 J	650	1300 J-	1300 J	210 J	1300 J	1500 J
Benzo(k)fluoranthene[(a)]	NSL	NSL	240	ug/kg		180	190 J	110 J	830	1500 J-	2400 J	260 J	1500 J-	1500 J-
Chrysene[(a)]	166	1,290	166	ug/kg		**440 J-**	**500 J-**	**490 J-**	**3000**	**5900 J-**	**7400 J-**	**800**	**4600 J-**	**5100 J-**
Dibenzo(a,h)anthracene[(a)]	33	NSL	33	ug/kg		4.9 U	4.4 U	4.2 U	56 U	100 U	100 U	4.6 U	110 U	110 U
Fluoranthene[(a)]	423	2,230	423	ug/kg		**1100**	**1400**	**2100**	**6600**	**23000**	**30000**	**2900**	**12000**	**16000**
Fluorene[(a)]	77.4	536	77	ug/kg		77	**200 J**	**2300**	**2500**	**15000**	**16000**	**980**	**3600**	**4300**
Indeno(1,2,3-cd)pyrene[(a)]	NSL	NSL	200	ug/kg		230	160 J	110 J	820	1500 J-	1700 J	230 J	1400 J	1500 J
Naphthalene[(a)]	176	561	176	ug/kg		26	45	**180 J**	100	**620**	**850**	23	**950**	**8100**
Phenanthrene[(a)]	204	1,170	204	ug/kg		**570**	**1300**	**4700**	**5200**	**40000**	**49000**	**3500**	**15000**	**21000**
Pyrene[(a)]	195	1,520	195	ug/kg		**930**	**1300**	**1800**	**5300**	**19000**	**23000**	**2500**	**12000**	**15000**
Total PAH17 ND=1/2RL	1,610	22,800	1,610	ug/kg		**5441**	**7259**	**17880**	**38848**	**151420**	**185160**	**16081**	**77175**	**110055**

NOTES:

Bolded detected values exceed the TEC

Bolded and shaded values exceed the PEC

Underlined values exceed the Region 4 ESV

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

U = Compound was analyzed but not detected.

ug/kg = Microgram per kilogram

SC = Swan Creek

NA = Not applicable

NSL = No Screening Level

PAH = Polycyclic aromatic hydrocarbon

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

RL = Reporting limit

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).

(a) Analytes included in Total 17 PAH calculations

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Table 3-8. Sediment Results for 34 PAHs

	Location ID:	SC21-MR06	SC21-MR06	SC21-MRREF	SC21-SC01	SC21-SC05	SC21-SC11	SC21-SC14	SC21-SC18	SC21-SC21	SC21-SC27	SC21-SC30	SC21-SC33	SC21-SCREF
	Sample Name:	SC21-MR06-SURF	SC21-MR06-SURFFD	SC21-MRREF-SURF	SC21-SC01-SURF	SC21-SC05-SURF	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF	SC21-SC21-SURF	SC21-SC27-SURF	SC21-SC30-SURF	SC21-SC33-SURF	SC21-SCREF-SURF
	Sample Date:	11/8/2021	11/8/2021	11/8/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	11/8/2021	11/9/2021
	Depth Interval (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Analyte	**TEC**	**PEC**	**Region 4 ESV**	**Unit**										
Acenaphthene*	NSL	NSL	6.7	ug/kg	2157.65	1932.63	6.88	35.49	20.36	370.03	108.05	13251.94	102.08	116.95	451.68	108.77	16.39
Acenaphthylene*	NSL	NSL	5.9	ug/kg	391.53	414.9	3.39	4.56	11.52	17.5	23.84	503.63	50.45	26.87	50.54	44.05	7.1
Anthracene*	57.2	845	57	ug/kg	**2565.97**	**2821.8**	19.32	46.15	**63.11**	**208.06**	**179.92**	**8921.98**	**213.39**	**216.04**	**483.05**	**262.15**	**63.39**
Benzo(a)anthracene*	108	1,050	108	ug/kg	**8030.88**	**7874.54**	77.18	86.04	**316.9**	**653.3**	**1018.25**	**11391.02**	**1142.85**	**1199.65**	**1479.24**	**1312.21**	**510.17**
Benzo(a)pyrene*	150	1,450	150	ug/kg	**7155.67**	**6016.81**	90.15	54.71	**337.78**	**730.24**	**1273.71**	**6520.23**	**1454.25**	**1647.47**	**1647.14**	**1593.42**	**677**
Benzo(b)fluoranthene*	NSL	NSL	190	ug/kg	5671.88	4988.3	118.01	105.02	422.1	1116.42	1511.14	5337.84	1435.34	2087.5	2266.43	1849.14	994.67
Benzo(e)pyrene*	NSL	NSL	NSL	ug/kg	4627.63	3904.66	87.07	74.01	295.19	606.64	1150.02	4269.63	1317.28	1610.03	1528.63	1435.31	638.06
Benzo(g,h,i)perylene*	NSL	NSL	170	ug/kg	4597.21	3676.8	92.51	71.3	325.52	683.24	1455.01	3400.01	1502.68	1877.56	1971.93	1645.53	734.39
Benzo(k)fluoranthene*	NSL	NSL	240	ug/kg	6230.87	5613.62	107.67	82.25	432.26	649	1258.93	7978.79	1478.23	1874.37	1656.19	1624.15	773.69
C1-Chrysenes*	NSL	NSL	NSL	ug/kg	2881.42 J	3132.6 J	42.25 J	56.99 J	101.3 J	206.96 J	313.52 J	3042.08 J	377.42 J	404.14 J	586.14 J	431.88 J	165.37 J
C1-Fluoranthenes/Pyrenes*	NSL	NSL	NSL	ug/kg	7967.76 J	10318.81 J	84.87 J	153.08 J	299.97 J	587.52 J	890.64 J	11998.93 J	975.44 J	1129.27 J	1813.77 J	1156.16 J	421.32 J
C1-Fluorenes*	NSL	NSL	NSL	ug/kg	853.84 J	1476.6 J	7.96 J	50.09 J	19.29 J	44.14 J	26.75 J	1591.51 J	29.87 J	34.88 J	186.37 J	40.63 J	9.84 J
C1-Naphthalenes*	NSL	NSL	NSL	ug/kg	667.11 J	612.46 J	12.3 J	123.53 J	32.23 J	63.08 J	43.73 J	400.1 J	69.99 J	42.58 J	118.96 J	46.76 J	12.39 J
C1-Phenanthrenes/Anthracenes*	NSL	NSL	NSL	ug/kg	7851.63 J	10435.77 J	64.44 J	290.34 J	169.43 J	332.34 J	393.37 J	8049.29 J	454.26 J	492.56 J	1536.27 J	546.85 J	182.9 J
C2-Chrysenes*	NSL	NSL	NSL	ug/kg	1291.91 J	1492.98 J	28.37 J	70.78 J	54.49 J	89.68 J	138.6 J	1582.53 J	171.94 J	177.73 J	255.4 J	189.04 J	69.53 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	NSL	ug/kg	3143.83 J	3593.97 J	67.03 J	130.39 J	190.55 J	305 J	568.55 J	3886.23 J	667.55 J	772.55 J	935.06 J	766.87 J	315.78 J
C2-Fluorenes*	NSL	NSL	NSL	ug/kg	1015.47 J	1562.64 J	14.29 J	92.23 J	43.94 J	48.68 J	38.2 J	1434.39 J	42.38 J	45.4 J	225.61 J	52.92 J	19.19 J
C2-Naphthalenes*	NSL	NSL	NSL	ug/kg	1065.98 J	1299.51 J	23.69 J	321.22 J	54.84 J	86.18 J	47.94 J	1085.66 J	66.29 J	53.99 J	415.63 J	57.82 J	19.97 J
C2-Phenanthrenes/Anthracenes*	NSL	NSL	NSL	ug/kg	5536.33 J	6916.63 J	67.21 J	319.49 J	171.12 J	212.15 J	252.98 J	6115.3 J	305.57 J	305.79 J	996.01 J	353.68 J	122.88 J
C3-Chrysenes*	NSL	NSL	NSL	ug/kg	942.73 J	1274.82 J	26.21 J	64.05 J	50.12 J	92.01 J	144.36 J	1548.85 J	176.33 J	187.71 J	233.67 J	189.87 J	70.78 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	NSL	ug/kg	1472.54 J	1820.95 J	34.85 J	97.13 J	90.01 J	134.93 J	220.94 J	2420.4 J	262.47 J	293.86 J	366.87 J	284.95 J	113.65 J
C3-Fluorenes*	NSL	NSL	NSL	ug/kg	885.56 J	1098.81 J	17.76 J	128.11 J	74.96 J	99.19 J	153.86 J	1590.67 J	150.75 J	202.21 J	272.75 J	209.36 J	87.73 J
C3-Naphthalenes*	NSL	NSL	NSL	ug/kg	1823.18 J	3042.73 J	36.83 J	482.49 J	103.28 J	93.66 J	53.41 J	2536.7 J	77.86 J	66.78 J	458.31 J	77.55 J	37.5 J
C3-Phenanthrenes/Anthracenes*	NSL	NSL	NSL	ug/kg	2867.57 J	3567.88 J	57.72 J	302.31 J	125.48 J	118.79 J	149.65 J	4786.06 J	178.44 J	174.31 J	400.15 J	195.9 J	73.78 J
C4-Chrysenes*	NSL	NSL	NSL	ug/kg	1029.3 J	1062.77 J	26.96 J	69 J	72.94 J	136.77 J	257.2 J	1202.77 J	277.08 J	349.05 J	342.78 J	319.27 J	120.36 J
C4-Naphthalenes*	NSL	NSL	NSL	ug/kg	1031.38 J	1849.97 J	39.77 J	429.92 J	110.82 J	79.34 J	51.07 J	1804.45 J	66.13 J	60.72 J	274.8 J	66.67 J	39.49 J
C4-Phenanthrenes/Anthracenes*	NSL	NSL	NSL	ug/kg	1441.08 J	1778.59 J	55.76 J	128.77 J	55.66 J	71.32 J	81.37 J	2924.36 J	102.17 J	95.12 J	196.81 J	97.53 J	36.45 J
Chrysene*	166	1,290	166	ug/kg	**7287.94**	**6639.52**	105.95	151.44	**391.42**	**768.04**	**1494.17**	**9865.99**	**1511.52**	**1817.41**	**2159.3**	**1679.15**	**732.27**
Dibenzo(a,h)anthracene*	33.0	NSL	33	ug/kg	**937.11**	**918.1**	15.94	11.16	**54.89**	**123.36**	**244.82**	**875.12**	**260.18**	**320.55**	**322.49**	**297.07**	**129.52**
Fluoranthene*	423	2,230	423	ug/kg	**15503.18**	**18327.57**	221.05	**484.94 J**	**865.15**	**2481.78**	**3769.92**	**41538.04**	**3539.07**	**4696.1**	**4945.79**	**4450.51**	**1928.55**
Fluorene*	77	536	77	ug/kg	**1900.01**	**2687.01**	12.26	58.94	31.6	**253.3**	**107.39**	**11759.72**	**114.67**	**130.52**	**446.69**	**127.34**	26.81
Indeno(1,2,3-cd)pyrene*	NSL	NSL	200	ug/kg	4172.38	3283.02	100.99	48.82	314.21	771.67	1630.87	3011.31	1681.9	1850.51	1735.44	1680.86	757.85
Naphthalene*	176	561	176	ug/kg	**741.32**	**611.36**	7.3	15.57	23.23	40.49	40.75	**449.65**	133.61	45.74	163.93	51.65	9.97
Perylene*	NSL	NSL	NSL	ug/kg	2043.69	1721.74	542.04	49.12	110.86	252.99	428.12	2135.87	479.71	543.72	562.09	538.36	232.91
Phenanthrene*	204	1170	204	ug/kg	**14188.54**	**15117.36**	90.26	**295.48 J**	**308.68**	**1024.02**	**1104.85**	**20478.37**	**1204.82**	**1526.74**	**2502.6**	**1374.13**	**566.61**
Pyrene*	195	1520	195	ug/kg	**14611.04**	**16313.77**	177.98	**361.16 J**	**645.81**	**1674.79**	**2576.25**	**28580.16**	**2728.6**	**3512.88**	**3844.86**	**3381.7**	**1177.63**
Total PAH34 ND=1/2RL	1,610	22,800	1,610	ug/kg	**141966.75**	**153787.08**	**2482.34**	**5118.56**	**6510.46**	**14786.68**	**22412.66**	**231962.95**	**23872.55**	**28922.85**	**36531.45**	**27487.39**	**11466.46**

NOTES:
Bolded detected values exceed the TEC
Bolded and shaded values exceed the PEC
Underlined values exceed the Region 4 ESV
B = Compound was found in the blank and sample
D = Sample was analyzed at a higher dilution factor
E = Quantitation of compound exceeded the calibration range.
FD = Field Duplicate
equal to the method detection limit (value is estimated).
U = Indicates the analyte was analyzed but not detected
ug/kg = Microgram per kilogram
SC = Swan Creek
NA = Not applicable
NSL = No Screening Level
PAH = Polycyclic aromatic hydrocarbon
PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000
RL = Reporting limit
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Region 4 ESV = Ecological Screening Value (EPA Region 4 2018).
* Analytes included in Total 34 PAH calculations

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Table 3-9. Composite Sediment Results for Nutrients

	Location ID:	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
	Sample Name:	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-05FD	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
	Sample Date:	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/10/2021	11/11/2021	11/11/2021
Analyte	**Unit**									
Ammonia	mg/kg	82	16	14	73	110	120	180	200	230
Total Kjeldahl Nitrogen	mg/kg	940	820	600	1400	1500	1800	1200	1700	1800
Total Phosphorus	mg/kg	370	450	610	700	950	1100 J-	740	710	880

NOTES:

FD = Field Duplicate

J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).

mg/kg = milligrams per kilogram

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Table 3-10. Composite Sediment Results for Cyanide

	Location ID:	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
	Sample Name:	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-05FD	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
	Sample Date:	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/10/2021	11/11/2021	11/11/2021
Analyte	**EPA Region 5 Eco ***	**Unit**								
Cyanide, Total	0.0001	mg/kg	0.74 U	0.67 U	0.65 U	0.85 U	0.79 U	0.8 U	0.72 U	**0.43 J**	**10**

NOTES:

Source: * EPA Region 5 Resource Conservation and Recovery Act (EPA 2003).

Bolded values exceed the Region 5 Ecological Screening Value

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

SC = Swan Creek

mg/kg = milligrams per kilogram

U = Indicates the analyte was analyzed but not detected.

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Table 3-11. Sample Results for TCLP Leachate for Core Composites

Analyte	Units	Reporting Limit	TCLP Regulatory[(a)] Levels	Location ID	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
				Sample Name	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
				Sample Date	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/11/2021	11/10/2021	11/11/2021	11/11/2021
TCLP HERBICIDES												
2,4-D	mg/L	0.02	10.0		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
SILVEX (2,4,5-TP)	mg/L	0.005	1.0		0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
TCLP METALS												
ARSENIC	mg/L	0.15	5.0		0.15 U	0.072 J	0.15 U	0.15 U	0.052 J	0.055 J	0.049	0.065 J
BARIUM	mg/L	0.25	100		0.37	0.63	0.81	0.5	0.66	0.59	0.82	0.7
CADMIUM	mg/L	0.05	1.0		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
CHROMIUM	mg/L	0.10	5.0		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
LEAD	mg/L	0.10	5.0		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.061	0.1 U
MERCURY	mg/L	0.002	0.2		0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
SELENIUM	mg/L	0.20	1.0		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
SILVER	mg/L	0.10	5.0		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
TCLP PESTICIDES												
CHLORDANE (TECHNICAL)	mg/L	0.004	0.03		0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
ENDRIN	mg/L	0.0004	0.02		0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
GAMMA-BHC (LINDANE)	mg/L	0.0004	0.4		0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
HEPTACHLOR	mg/L	0.0004	0.008		0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
HEPTACHLOR EPOXIDE	mg/L	0.0004	0.008		0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
METHOXYCHLOR	mg/L	0.0016	10		0.0016 U	0.0016 U	0.0016 U	0.0016 U	0.0016 U	0.0016 U	0.0016 U	0.0016 U
TOXAPHENE	mg/L	0.008	0.5		0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U
TCLP SVOC's												
1,4-DICHLOROBENZENE	mg/L	0.04	7.5		0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2,4,5-TRICHLOROPHENOL	mg/L	0.04	400		0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2,4,6-TRICHLOROPHENOL	mg/L	0.04	2.0		0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2,4-DINITROTOLUENE	mg/L	0.08	0.13		0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
2-METHYLPHENOL (O-CRESOL)	mg/L	0.04	200		0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
4-METHYLPHENOL (P-CRESOL)	mg/L	0.04	200		0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
HEXACHLOROBENZENE	mg/L	0.04	0.13		0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
HEXACHLOROBUTADIENE	mg/L	0.04	0.5		0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
HEXACHLOROETHANE	mg/L	0.04	3.0		0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
NITROBENZENE	mg/L	0.04	2.0		0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
PENTACHLOROPHENOL	mg/L	0.20	100		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PYRIDINE	mg/L	0.04	5.0		0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
TCLP VOC's												
1,1-DICHLOROETHENE	mg/L	0.05	0.7		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-DICHLOROETHANE	mg/L	0.05	0.5		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
2-BUTANONE (MEK)	mg/L	0.10	200		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZENE	mg/L	0.05	0.5		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.019	0.05 U
CARBON TETRACHLORIDE	mg/L	0.05	0.5		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
CHLOROBENZENE	mg/L	0.05	100		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
CHLOROFORM	mg/L	0.05	6.0		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
TETRACHLOROETHENE	mg/L	0.05	0.7		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
TRICHLOROETHENE	mg/L	0.05	0.5		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
VINYL CHLORIDE	mg/L	0.01	0.2		0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
OTHER												
IGNITABILITY	deg F	140	--		140 >	140 >	140 >	140 >	140 >	140 >	140 >	140 >
PH	su	--	--		7.5	7.5	8.1	7.5	7.4	7.8	7.4	7.7
PAINT FILTER	none	--	--		Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass

(a) **Source:** 40 CFR 261.24 (June 2018).

Notes:
-- = No value available.
F = Fahrenheit
J = Compound was detected, but below the reporting limit (value is estimated).
U = Compound was analyzed, but not detected.
mg/L = Milligram(s) per liter.
su = Standard units
TCLP = Toxicity Characteristic Leaching Procedure

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Table 3-12. Surface Water and Standard Elutriate Results for TPH

			Surface Water				Standard Elutriates								
		Location:	SC21-CDF-WAT	SC21-MR-WAT	SC21-SC-WAT	SC21-SC-WAT	SC21-COMP-01	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
		Sample Name:	SC21-CDF-WAT	SC21-MR-WAT	SC21-SC-WAT	SC21-SC-WATFD	SC21-COMP-01-SET	SC21-COMP-01-SETFD	SC21-COMP-02-SET	SC21-COMP-03-SET	SC21-COMP-04-SET	SC21-COMP-05-SET	SC21-COMP-06-SET	SC21-COMP-07-SET	SC21-COMP-08-SET
		Sample Date:	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021
Analyte	**Aquatic Criteria[(a)]**	**Unit**													
Diesel Range Organics (C10-C28)	NSL	mg/L	0.31	0.24	0.22	0.25	0.34	0.22	0.33	0.24	0.56	0.67	0.27	0.88	0.58
Oil Range Organics (C28-C40)	NSL	mg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

Notes:

(a) *Source* = Ohio Lake Erie Drainage Basin aquatic life water quality criteria (OMZA). OAC 3745-1-35. Ohio EPA 2021

Bolded values exceed the screening criteria

mg/L = Milligram(s) per liter

CDF = Confined Disposal Facility

FD = Field Duplicate

MR = Maumee River

NSL = No Screening Level

SC = Swan Creek

U = Compound was analyzed but not detected.

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Table 3-13. Surface Water and Standard Elutriate Results for Oil and Grease

			Surface Water				Standard Elutriates								
		Location:	SC21-CDF-WAT	SC21-MR-WAT	SC21-SC-WAT	SC21-SC-WAT	SC21-COMP-01	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
		Sample Name:	SC21-CDF-WAT	SC21-MR-WAT	SC21-SC-WAT	SC21-SC-WATFD	SC21-COMP-01-SET	SC21-COMP-01-SETFD	SC21-COMP-02-SET	SC21-COMP-03-SET	SC21-COMP-04-SET	SC21-COMP-05-SET	SC21-COMP-06-SET	SC21-COMP-07-SET	SC21-COMP-08-SET
		Sample Date:	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021
Analyte	**Aquatic Criteria[(a)]**	**Unit**													
HEM (OIL & GREASE)	NSL	mg/L	4.1 J	3.6 J	2.6 J	11	5.6 U	4.6 J	3 J	3.6 J	4.9 J	3.8 J	5.7 U	4.9 J	3.3 J

Notes:

(a) *Source* = Ohio Lake Erie Drainage Basin aquatic life water quality criteria (OMZA). OAC 3745-1-35. Ohio EPA 202

Bolded values exceed the screening criteria

mg/L = Milligram(s) per liter

CDF = Confined Disposal Facility

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

MR = Maumee River

NSL = No Screening Level

SC = Swan Creek

U = Compound was analyzed but not detected.

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Table 3-14. Surface Water and Standard Elutriate Results for Metals

			Surface Water				Standard Elutriates								
		Location:	SC21-CDF-WAT	SC21-MR-WAT	SC21-SC-WAT	SC21-SC-WAT	SC21-COMP-01	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
		Sample Name:	SC21-CDF-WAT	SC21-MR-WAT	SC21-SC-WAT	SC21-SC-WATFD	SC21-COMP-01-SET	SC21-COMP-01-SETFD	SC21-COMP-02-SET	SC21-COMP-03-SET	SC21-COMP-04-SET	SC21-COMP-05-SET	SC21-COMP-06-SET	SC21-COMP-07-SET	SC21-COMP-08-SET
		Sample Date:	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021
Analyte	**Aquatic Criteria[a]**	**Unit**													
Aluminum	NSL	µg/L	1610	1560	75.2 J	75.1 J	4560 J	6740 J	8140 J	5400 J	22000 J	8120 J	9280 J	5000 J	5670 J
Antimony	190	µg/L	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U
Arsenic	150	µg/L	10 U	10 U	10 U	10 U	5.2 J	4.5 J	36.3	7.8 J	14.6	18.4	8.6 J	20.7	13
Barium	640	µg/L	45.8 J	47 J	64.9 J	64.7 J	139 J	156 J	176 J	129 J	305	172 J	138 J	131 J	146 J
Beryllium	11	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.88 J	5 U	5 U	5 U	5 U
Cadmium	2.5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	2.2 J	5 U	2.4 J	0.74 J	5 U	0.74 J	0.88 J
Calcium	NSL	µg/L	63900	67200	96600	96400	90900	93600	100000	99500	131000	86100	82000	76000	84400
Chromium	86	µg/L	10 U	10 U	10 U	10 U	7.7 J	11.4	15.2	8.6 J	42.5	12.8	13	11.3	83.2
Cobalt	24	µg/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	12.7 J	50 U	50 U	50 U	50 U
Copper	9.3	µg/L	25 U	25 U	25 U	25 U	**14.7 J**	**19 J**	**29.9**	**20.3 J**	**115**	**26.5**	**23 J**	**16.8 J**	**56.5**
Iron	NSL	µg/L	1720	1640	294	297	5490	8370	9360	7320	32900	10800	10600	5700	6770
Lead	6.4	µg/L	10 U	10 U	10 U	10 U	**17.7**	**23.8**	**94.5**	**46**	**209**	**52.9**	**47.5**	**50.7**	**81.2**
Magnesium	NSL	µg/L	16400	17000	21700	21700	21400	22400	25300	24700	34400	25000	26000	26200	22300
Manganese	NSL	µg/L	36.1	33.2	46.8	46.9	860	914	391	149	1340	1360	253	454	378
Mercury	0.91	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.21	0.2 U	0.26	0.11 J	0.15 J	0.2 U	0.21
Nickel	52	µg/L	40 U	40 U	40 U	40 U	8.9 J	11.5 J	15.6 J	11.8 J	40.4	14.1 J	14.4 J	9.9 J	13.9 J
Potassium	NSL	µg/L	6500	6270	5050	5040	6070	6520	5940	6180	9440	6740	6970	7380	6700
Selenium	5	µg/L	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Silver	0.06	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	NSL	µg/L	17500	14600	50100	49700	50600	50500	66000	50100	50300	49700	52000	61900	49600
Thallium	17	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Vanadium	44	µg/L	3.5 J	50 U	50 U	50 U	5.7 J	9.7 J	12.7 J	9.9 J	37.4 J	10.5 J	13.3 J	5.9 J	7.6 J
Zinc	120	µg/L	9.9 J	60 U	60 U	60 U	48 J	71	119	53.7 J	**375**	**121**	86	74.3	**128**

Notes:
(a) *Source* = Ohio Lake Erie Drainage Basin aquatic life water quality criteria (OMZA). OAC 3745-1-35. Ohio EPA 2021
Bolded values exceed the screening criteria
µg/L = Microgram(s) per liter
CDF = Confined Disposal Facility
FD = Field Duplicate
J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).
MR = Maumee River
NSL = No Screening Level
SC = Swan Creek
U = Compound was analyzed but not detected.

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Table 3-15. Surface Water and Standard Elutriate Results for PCBs Aroclors

			Surface Water				Standard Elutriates								
		Location:	SC21-CDF-WAT	SC21-MR-WAT	SC21-SC-WAT	SC21-SC-WAT	SC21-COMP-01	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
		Sample Name:	SC21-CDF-WAT	SC21-MR-WAT	SC21-SC-WAT	SC21-SC-WATFD	SC21-COMP-01-SET	SC21-COMP-01-SETFD	SC21-COMP-02-SET	SC21-COMP-03-SET	SC21-COMP-04-SET	SC21-COMP-05-SET	SC21-COMP-06-SET	SC21-COMP-07-SET	SC21-COMP-08-SET
		Sample Date:	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021
Analyte	**Aquatic Criteria[(a)]**	**Unit**													
PCB-1016	NSL	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PCB-1221	NSL	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PCB-1232	NSL	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PCB-1242	NSL	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.33 J	3.5 J	0.73 J	1 U	1 U
PCB-1248	NSL	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PCB-1254	NSL	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PCB-1260	NSL	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PCB-1262	NSL	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PCB-1268	NSL	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total PCBs ND=0	0.00012	µg/L	0	0	0	0	0	0	0	0	**0.33**	**3.5**	**0.73**	0	0

Notes:
(a) *Source* = Ohio Lake Erie Drainage Basin aquatic life water quality criteria (OMZA). OAC 3745-1-35. Ohio EPA 202
Bolded values exceed the screening criteria
µg/L = Microgram(s) per liter
CDF = Confined Disposal Facility
FD = Field Duplicate
J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).
MR = Maumee River
NSL = No Screening Level
PCB = Polychlorinated biphenyls
SC = Swan Creek
U = Compound was analyzed but not detected.

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Table 3-16. Surface Water and Standard Elutriate Results for PAHs

			Surface Water				Standard Elutriates								
		Location:	SC21-CDF-WAT	SC21-MR-WAT	SC21-SC-WAT	SC21-SC-WAT	SC21-COMP-01	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
		Sample Name:	SC21-CDF-WAT	SC21-MR-WAT	SC21-SC-WAT	SC21-SC-WATFD	SC21-COMP-01-SET	SC21-COMP-01-SETFD	SC21-COMP-02-SET	SC21-COMP-03-SET	SC21-COMP-04-SET	SC21-COMP-05-SET	SC21-COMP-06-SET	SC21-COMP-07-SET	SC21-COMP-08-SET
		Sample Date:	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021
Analyte	**Aquatic Criteria[a]**	**Unit**													
2-Methylnaphthalene	NSL	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.02 J	0.1 U	0.23	0.86	0.054 J	0.32	0.26
Acenaphthene	15	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.025 J	0.02 J	0.43	1.7	**24**	**17**	12	13	6.3
Acenaphthylene	13	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.13	0.077 J	0.11	3.6	0.3	1.6	0.21
Anthracene	0.02	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	**0.021 J**	**0.023 J**	0.1 U	**0.12**	**1.1**	**0.57**	**0.53**	**1.1**	**1**
Benzo(a)anthracene	4.7	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.047 J	0.043 J	0.035 J	0.14	0.21	0.43	0.15	0.59	0.44
Benzo(a)pyrene	0.06	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.042 J-	0.037 J	0.1 U	0.035 J	**0.068 J**	0.1 U	0.046 J	**0.27**	**0.18**
Benzo(b)fluoranthene	2.6	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.065 J-	0.07 J	0.03 J	0.037 J	0.079 J	0.2	0.061 J	0.25	0.2
Benzo(g,h,i)perylene	NSL	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.035 J-	0.037 J	0.1 U	0.0086 J	0.025 J	0.1 U	0.1 U	0.097 J	0.062 J
Benzo(k)fluoranthene	0.13 [b]	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.019 J-	0.021 J	0.1 U	0.016 J	0.035 J	0.085 J	0.02 J	0.11	0.084 J
Chrysene	4.7	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.068 J	0.067 J	0.055 J	0.11	0.18	0.37	0.11	0.47	0.35
Dibenz(a,h)anthracene	0.0013 [b]	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Fluoranthene	0.8	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.19	0.2	0.35	**1.5**	**1.6 J**	**2.7**	**1.3 J**	**2.3**	**1.9**
Fluorene	19	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.021 J	0.02 J	0.45	0.38	9.4	14	2	1.5 J	2.2
Indeno(1,2,3-c,d)pyrene	0.013 [b]	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	**0.031 J-**	**0.03 J**	0.1 U	0.1 U	**0.025 J**	**0.048 J**	0.1 U	**0.085 J**	**0.057 J**
Naphthalene	21	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.039 J	0.1 U	0.079 J	0.24	0.035 J	0.44	0.31
Phenanthrene	2.3	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.11	0.12	0.8	0.098 J	**7.5**	**16**	0.28	1.1	1.4
Pyrene	4.6	µg/L	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.13	0.15	0.11	1.2	1.3	1.6 J	0.99	2.3	1.7
Total PAH17 ND=1/2RL	NSL	µg/L	0.85	0.85	0.85	0.85	1.004	1.04	2.75	5.62	46.0	57.9	18.0	25.6	16.7

Notes:
(a) *Source* = Ohio Lake Erie Drainage Basin aquatic life water quality criteria (OMZA). OAC 3745-1-35. Ohio EPA 2021
(b) *Source* = Ohio River Basin aquatic life water quality criteria nondrink human health values. OAC 3745-1-32. Ohio EPA 2021
Bolded values exceed the screening criteria
µg/L = Microgram(s) per liter
CDF = Confined Disposal Facility
FD = Field Duplicate
J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).
J- = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated and potentially biased low).
MR = Maumee River
NA = Not applicable
NSL = No Screening Level
PAHs = Polycyclic aromatic hydrocarbons
RL = Reporting limit
SC = Swan Creek
UJ = Compound was analyzed but not detected. The reported quantitation limit is approximate.
U = Compound was analyzed but not detected.

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Table 3-17. Surface Water and Standard Elutriate Results - Nutrients and Cyanide

			Site Water				Standard Elutriates								
		Location:	SC21-CDF-WAT	SC21-MR-WAT	SC21-SC-WAT	SC21-SC-WAT	SC21-COMP-01	SC21-COMP-01	SC21-COMP-02	SC21-COMP-03	SC21-COMP-04	SC21-COMP-05	SC21-COMP-06	SC21-COMP-07	SC21-COMP-08
		Sample Name:	SC21-CDF-WAT	SC21-MR-WAT	SC21-SC-WAT	SC21-SC-WATFD	SC21-COMP-01-SET	SC21-COMP-01-SETFD	SC21-COMP-02-SET	SC21-COMP-03-SET	SC21-COMP-04-SET	SC21-COMP-05-SET	SC21-COMP-06-SET	SC21-COMP-07-SET	SC21-COMP-08-SET
		Sample Date:	11/10/2021	11/10/2021	11/10/2021	11/10/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021	11/22/2021
Analyte	**Aquatic Criteria[(a)]**	**Unit**													
Cyanide	5.2	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Nitrogen, Ammonia (as N)	0.5	mg/L	0.13	0.1	0.05 J	0.035 J	**5.4**	**6.2**	**1.3**	0.31	**5**	**6.3**	**8.6**	**13**	**8.7**
Nitrogen, Kjeldahl, Total	NSL	mg/L	1.2	1.1	0.5	0.49	5.9	6.9	2.7	1	7.6	7.9	8.7	14	8.7
Phosphorus, Total (as P)	NSL	mg/L	0.19	0.17	0.041 J	0.048 J	0.37	0.41	0.39	0.11	1.2	0.31	0.26	0.28	0.22

Notes:

(a) *Source* = Ohio Lake Erie Drainage Basin aquatic life water quality criteria (OMZA). OAC 3745-1-35. Ohio EPA 2021

Bolded values exceed the screening criteria

mg/L = Milligram(s) per liter

CDF = Confined Disposal Facility

FD = Field Duplicate

J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).

MR = Maumee River

NSL = No Screening Level

SC = Swan Creek

U = Compound was analyzed but not detected.

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Table 3-18. Summary of PEC Exceedances,
Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

Analyte	Total Number of Submitted Samples	Total Number of Submitted Samples (Without FDs)	Total Number of Detects (Without FDs)	Maximum Detected Concentration	Units	Maximum Location	Depth Interval of Maximum Concentration	PEC	Number of PEC Exceedances*	Units	Percentage of Samples That Exceeded PEC
PAHs											
Total PAH17 ND=1/2RL	131	124	124	706130	µg/kg	SC21-SC31-6080	6-8	22,800	50	µg/kg	40.3
PCB Aroclors											
Total PCBs ND=0	139	132	132	31400	µg/kg	SC21-SC15-1020	1-2	676	13	µg/kg	9.8
Metals											
Arsenic	144	136	136	394	mg/kg	SC21-SC31-2040	2-4	33	19	mg/kg	14.0
Cadmium	144	136	131	11.5	mg/kg	SC21-SC21-2040	2-4	4.98	6	mg/kg	4.4
Chromium	144	136	136	1820	mg/kg	SC21-SC19-0010	0-1	111	7	mg/kg	5.1
Copper	144	136	136	1210	mg/kg	SC21-SC19-0010	0-1	149	26	mg/kg	19.1
Lead	144	136	136	1290	mg/kg	SC21-SC21-2040	2-4	128	52	mg/kg	38.2
Mercury	144	136	117	4.6	mg/kg	SC21-SC31-2040	2-4	1.06	29	mg/kg	21.3
Nickel	144	136	136	97.1	mg/kg	SC21-SC29-0010	0-1	48.6	6	mg/kg	4.4
Zinc	144	136	136	1290	mg/kg	SC21-SC25-4060	4-6	459	23	mg/kg	16.9

Notes:

*Field duplicate samples not included in number of PEC exceedances.

µg/kg = micrograms per kilogram

FD = Field duplicate

mg/kg = milligrams per kilogram

NA = Not applicable

ND = Non-detect

NSL = No screening level

PAH = Polycyclic aromatic hydrocarbon

PCB = Polychlorinated biphenyl

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

RL= reporting limit

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Table 4-1. Summary of Elutriate Bioassay Survival Results for *Daphnia magna*, Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

Sample Identification	EA Accession Number	Test Number	48-Hour Survival (%)						
			Lab Control	Percent Elutriate					48-hour LC50 (% elutriate)
				100%	50%	25%	12.5%	6.25%	
SC21-SC-WAT	AT1-853	TN-21-750	100	95	---	---	---	---	>100
SC21-COMP-01	AT1-854	TN-21-733	95	100	100	100	100	100	>100
SC21-COMP-02	AT1-855	TN-21-734	100	100	100	100	100	100	>100
SC21-COMP-03	AT1-856	TN-21-735	100	100	100	100	100	100	>100
SC21-COMP-04	AT1-857	TN-21-736	100	100	95	100	100	100	>100
SC21-COMP-05	AT1-858	TN-21-737	100	100	100	100	100	100	>100
SC21-COMP-06	AT1-859	TN-21-738	100	100	100	100	100	100	>100
SC21-COMP-07	AT1-860	TN-21-739	100	95	95	95	100	100	>100
SC21-COMP-08	AT1-861	TN-21-740	100	100	100	100	100	100	>100

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Table 4-2. Summary of Elutriate Bioassay Survival Results for *Pimephales promelas*, Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

Sample Identification	EA Accession Number	Test Number	96-Hour Survival (%)						
			Lab Control	Percent Elutriate					96-hour LC50 (% elutriate)
				100%	50%	25%	12.5%	6.25%	
SC21-SC-WAT	AT1-853	TN-21-749	100	98	---	---	---	---	>100
SC21-COMP-01	AT1-854	TN-21-786	96	92	100	86	92	98	>100
SC21-COMP-02	AT1-855	TN-21-742	98	100	100	100	100	98	>100
SC21-COMP-03	AT1-856	TN-21-743	98	98	100	98	100	100	>100
SC21-COMP-04	AT1-857	TN-21-744	100	94	100	100	100	98	>100
SC21-COMP-05	AT1-858	TN-21-745	92	96	100	98	100	100	>100
SC21-COMP-06	AT1-859	TN-21-746	98	90	98	98	98	92	>100
SC21-COMP-07	AT1-860	TN-21-747	94	46	100	100	100	96	96.1
SC21-COMP-08	AT1-861	TN-21-748	100	98	100	100	100	100	>100

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Table 4-3. Summary of Survival and Growth Results for *Chironomus dilutus*
Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

Sample Identification	EA Accession Number	10-Day Survival (percent)	Mean Ash Free Dry Weight as mg/Organism (±SD)
Laboratory Control	AT1-697	90	1.156 (±0.168)[(c)]
SC21-SCREF-SURF	AT1-873	85	1.621 (±0.190)
SC21-MRREF-SURF	AT1-863	84	1.280 (±0.398)[(c)]
SC21-SC01-SURF	AT1-864	89	1.065 (±0.391)[(c)]
SC21-SC05-SURF	AT1-865	88	1.487 (±0.605)
SC21-SC11-SURF	AT1-866	83[(a)]	1.827 (±0.331)
SC21-SC14-SURF	AT1-867	90	1.658 (±0.379)
SC21-SC18-SURF	AT1-868	3[(abc)]	0.750 (±1.047)
SC21-SC21-SURF	AT1-869	90	1.905 (±0.422)
SC21-SC27-SURF	AT1-870	84[(a)]	1.392 (±0.356)
SC21-SC30-SURF	AT1-871	79[(a)]	0.714 (±0.182)[(abc)]
SC21-SC33-SURF	AT1-872	76[(abc)]	1.493 (±0.409)
SC21-MR06-SURF	AT1-862	35[(abc)]	0.713 (±0.209)[(abc)]

Notes:

(a) Significantly different (p=0.05) from laboratory control.

(b) Significantly different (p=0.05) from SC21-MRREF-SURF (AT1-863).

(c) Significantly different (p=0.05) from SC21-SCREF-SURF (AT1-873).

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Table 4-4. Summary of Survival and Growth Results for *Hyalella azteca*, Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

Sample Identification	EA Accession Number	10-Day Survival (percent)	Mean Dry Weight as mg/Organism (±SD)
Laboratory Control	AT1-697	91	0.125 (±0.020)
SC21-SCREF-SURF	AT1-873	85[(a)]	0.065 (±0.022)[(ab)]
SC21-MRREF-SURF	AT1-863	90	0.099 (±0.007)[(a)]
SC21-SC01-SURF	AT1-864	80[(ab)]	0.079 (±0.018)[(ab)]
SC21-SC05-SURF	AT1-865	36[(abc)]	0.066 (±0.022)[(ab)]
SC21-SC11-SURF	AT1-866	49[(abc)]	0.064 (±0.023)[(ab)]
SC21-SC14-SURF	AT1-867	55[(abc)]	0.056 (±0.035)[(ab)]
SC21-SC18-SURF	AT1-868	59[(abc)]	0.052 (±0.009)[(ab)]
SC21-SC21-SURF	AT1-869	74[(abc)]	0.029 (±0.013)[(abc)]
SC21-SC27-SURF	AT1-870	74[(abc)]	0.031 (±0.010)[(abc)]
SC21-SC30-SURF	AT1-871	83[(ab)]	0.043 (±0.008)[(abc)]
SC21-SC33-SURF	AT1-872	74[(abc)]	0.053 (±0.014)[(ab)]
SC21-MR06-SURF	AT1-862	56[(abc)]	0.066 (±0.014)[(ab)]

Notes:

(a) Significantly different (p=0.05) from laboratory control.

(b) Significantly different (p=0.05) from SC21-MRREF-SURF (AT1-863).

(c) Significantly different (p=0.05) from SC21-SCREF-SURF (AT1-873).

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Table 4-5. Tissue Recovery Results for *Lumbriculus variegatus* Bioaccumulation Testing Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

Sample Identification	EA Accession Number	Organism Weight Loaded (g)	Organism Weight Recovered (g)				
			A	B	C	D	E
Laboratory Control	AT1-697	15	15	15	15	15	15
SC21-SCREF-SURF	AT1-873	15	11	12	10	13	10
SC21-SC11-SURF	AT1-866	15	15	15	15	15	15
SC21-SC14-SURF	AT1-867	15	10	10	12	11	15
SC21-SC18-SURF	AT1-868	15	10	8	10	8	8

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Table 4-6. Mean Lipid Concentrations (Percent of Total Body Wet Weight) in *Lumbriculus Variegatus,* Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

Sample Identification	Lipid Concentration (Percent)
Pre-test	2.24
Control	1.34
Reference Site	1.088
SC21-SC11-SURF	1.26
SC21-SC14-SURF	1.32
SC21-SC18-SURF	2.0

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Table 4-7a. Lipid-Normalized Mean Concentrations in *L. Variegatus* Tissues

		Pre-test	Swan Creek Reference	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF
Analyte	**Units**	**%Lipids = 2.24**	**%Lipids = 1.088**	**%Lipids = 1.26**	**%Lipids = 1.32**	**%Lipids = 2**
PCB-1	µg/kg-%lipid	0.00209	0.00834	0.756	0.034	0.505
PCB-2	µg/kg-%lipid	ND	ND	0.033	0.0168	0.153
PCB-3	µg/kg-%lipid	ND	ND	0.148	0.0182	0.203
PCB-4	µg/kg-%lipid	0.00377	0.0884	9.37	0.583	13.2
PCB-5	µg/kg-%lipid	ND	0.00674	0.232	0.053	1.33
PCB-6	µg/kg-%lipid	0.0124	0.0948	1.89	1.5	51.9
PCB-7	µg/kg-%lipid	ND	0.00946	0.472	0.06	1.52
PCB-8	µg/kg-%lipid	0.00935	0.105	5.45	1.18	38.5
PCB-9	µg/kg-%lipid	0.00722	0.00997	0.171	0.102	2.71
PCB-10	µg/kg-%lipid	ND	0.00432	0.213	0.028	0.781
PCB-11	µg/kg-%lipid	ND	0.0673	0.232	0.19	4.04
PCB-12	µg/kg-%lipid	0.00422	0.0363	0.861	0.631	18.1
PCB-14	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-15	µg/kg-%lipid	0.00418	0.0639	1.46	0.549	17.0
PCB-16	µg/kg-%lipid	0.0117	0.12	1.97	1.52	55.6
PCB-17	µg/kg-%lipid	0.0229	0.274	15.4	3.14	103
PCB-18	µg/kg-%lipid	0.0301	0.29	7.2	4.55	111
PCB-19	µg/kg-%lipid	0.004	0.0745	4.66	0.607	16.4
PCB-20	µg/kg-%lipid	0.0501	0.678	17.6	8.86	159
PCB-21	µg/kg-%lipid	0.00563	0.094	3.02	0.741	23.1
PCB-22	µg/kg-%lipid	0.0132	0.168	3.32	1.98	67.3
PCB-23	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-24	µg/kg-%lipid	0.00371	0.00632	ND	0.07	1.47
PCB-25	µg/kg-%lipid	0.0193	0.16	3.84	3.05	95.2
PCB-26	µg/kg-%lipid	0.0292	0.269	6.04	5.1	129
PCB-27	µg/kg-%lipid	0.00285	0.0491	2.05	0.393	12.4
PCB-31	µg/kg-%lipid	0.0482	0.587	17.1	8.23	143
PCB-32	µg/kg-%lipid	0.0129	0.181	8.31	1.93	61.4
PCB-34	µg/kg-%lipid	0.0072	ND	0.224	0.114	4.01
PCB-35	µg/kg-%lipid	ND	ND	ND	0.0821	2.3
PCB-36	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-37	µg/kg-%lipid	0.00398	0.0872	1.39	0.634	24.3
PCB-38	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-39	µg/kg-%lipid	ND	ND	0.181	ND	2.02
PCB-40	µg/kg-%lipid	0.0169	0.385	9.25	3.58	98.2
PCB-41	µg/kg-%lipid	ND	0.0401	1.15	0.183	1.49
PCB-42	µg/kg-%lipid	0.0124	0.26	5.04	2.29	71.1
PCB-43	µg/kg-%lipid	0.00247	0.0476	1.22	0.366	11.1
PCB-44	µg/kg-%lipid	0.0419	0.987	20.4	8.46	173
PCB-45	µg/kg-%lipid	0.00917	0.179	3.05	1.5	44.9

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Table 4-7a. Lipid-Normalized Mean Concentrations in *L. Variegatus* Tissues

		Pre-test	Swan Creek Reference	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF
Analyte	**Units**	**%Lipids = 2.24**	**%Lipids = 1.088**	**%Lipids = 1.26**	**%Lipids = 1.32**	**%Lipids = 2**
PCB-46	µg/kg-%lipid	0.00442	0.0659	1.31	0.625	19.8
PCB-48	µg/kg-%lipid	0.0057	0.117	3.79	0.975	26.0
PCB-49	µg/kg-%lipid	0.0255	0.632	13.5	5.74	117
PCB-50	µg/kg-%lipid	0.00822	0.129	3.71	1.32	43.6
PCB-51	µg/kg-%lipid	0.00324	0.0573	2.02	0.489	15.0
PCB-52	µg/kg-%lipid	0.0456	1.12	21.3	8.99	136
PCB-54	µg/kg-%lipid	0.000256	0.00464	0.21	0.047	1.12
PCB-55	µg/kg-%lipid	ND	0.0167	ND	ND	ND
PCB-56	µg/kg-%lipid	0.00606	0.222	5.94	1.39	34.6
PCB-57	µg/kg-%lipid	0.000407	0.00945	0.192	0.098	2.81
PCB-58	µg/kg-%lipid	ND	0.0162	ND	0.0343	1.39
PCB-59	µg/kg-%lipid	0.00476	0.121	2.96	0.793	22.9
PCB-60	µg/kg-%lipid	0.00167	0.101	3.8	0.433	4.51
PCB-61	µg/kg-%lipid	0.0256	0.852	26.6	6.08	140
PCB-63	µg/kg-%lipid	0.00199	0.0574	1.31	0.435	11.8
PCB-64	µg/kg-%lipid	0.0172	0.474	9.52	3.63	89.3
PCB-66	µg/kg-%lipid	0.0125	0.506	13.1	3.14	74.7
PCB-67	µg/kg-%lipid	0.000981	0.0273	0.641	0.262	5.57
PCB-68	µg/kg-%lipid	0.000373	0.0114	0.146	0.088	1.71
PCB-72	µg/kg-%lipid	0.00213	0.0102	0.133	0.068	2.98
PCB-73	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-77	µg/kg-%lipid	0.00103	0.0517	1.27	0.317	7.93
PCB-78	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-79	µg/kg-%lipid	ND	0.00995	0.13	0.034	0.781
PCB-80	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-81	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-82	µg/kg-%lipid	0.00118	0.085	1.8	0.386	6.96
PCB-83	µg/kg-%lipid	0.00136	0.0944	1.3	0.446	8.57
PCB-84	µg/kg-%lipid	0.00607	0.231	3.49	1.36	36.7
PCB-85	µg/kg-%lipid	0.00174	0.146	3.32	0.664	9.15
PCB-88	µg/kg-%lipid	0.00409	0.202	3.05	0.971	21.4
PCB-89	µg/kg-%lipid	0.000594	0.0252	0.524	0.162	3.2
PCB-90	µg/kg-%lipid	0.0112	0.76	9.56	2.93	55.8
PCB-92	µg/kg-%lipid	0.00303	0.193	2.11	0.755	15.6
PCB-93	µg/kg-%lipid	0.00676	0.0201	0.363	0.12	2.36
PCB-94	µg/kg-%lipid	ND	ND	0.278	0.091	1.71
PCB-95	µg/kg-%lipid	0.014	0.657	8.77	3.15	73.1
PCB-96	µg/kg-%lipid	0.000556	0.0163	0.357	0.118	2.6
PCB-98	µg/kg-%lipid	0.00138	0.066	1.43	0.432	7.54
PCB-99	µg/kg-%lipid	0.00501	0.346	5.35	1.45	26.0

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Table 4-7a. Lipid-Normalized Mean Concentrations in *L. Variegatus* Tissues

		Pre-test	Swan Creek Reference	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF
Analyte	**Units**	**%Lipids = 2.24**	**%Lipids = 1.088**	**%Lipids = 1.26**	**%Lipids = 1.32**	**%Lipids = 2**
PCB-100	µg/kg-%lipid	0.00676	0.0201	0.363	0.12	2.36
PCB-102	µg/kg-%lipid	0.00138	0.066	1.43	0.432	7.54
PCB-103	µg/kg-%lipid	ND	0.0184	0.17	0.071	1.49
PCB-104	µg/kg-%lipid	ND	0.000594	0.014	0.004	0.061
PCB-105	µg/kg-%lipid	0.00234	0.198	3.83	0.602	8.94
PCB-106	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-107	µg/kg-%lipid	ND	0.0309	0.468	0.084	0.905
PCB-108	µg/kg-%lipid	0.00696	0.46	8.22	2.07	36.7
PCB-109	µg/kg-%lipid	0.000535	0.0513	0.776	0.177	3.41
PCB-110	µg/kg-%lipid	0.0124	0.853	11.9	3.61	78.8
PCB-111	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-112	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-114	µg/kg-%lipid	ND	0.0169	0.433	0.062	0.94
PCB-118	µg/kg-%lipid	0.00599	0.47	7.41	1.75	32.3
PCB-119	µg/kg-%lipid	0.00696	0.46	8.22	2.07	36.4
PCB-120	µg/kg-%lipid	ND	ND	ND	ND	0.241
PCB-121	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-122	µg/kg-%lipid	ND	0.0167	0.267	0.048	0.643
PCB-123	µg/kg-%lipid	ND	0.0162	0.29	0.05	0.626
PCB-126	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-127	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-128	µg/kg-%lipid	0.00115	0.0984	0.427	0.158	1.79
PCB-129	µg/kg-%lipid	0.00839	0.641	2.98	1.2	8.16
PCB-130	µg/kg-%lipid	0.000471	0.0495	0.223	0.092	0.976
PCB-131	µg/kg-%lipid	ND	0.00862	0.057	0.02	0.265
PCB-132	µg/kg-%lipid	0.00221	0.2	1.08	0.499	6.53
PCB-133	µg/kg-%lipid	0.000141	0.0138	0.06	0.028	0.265
PCB-134	µg/kg-%lipid	0.00674	0.0332	0.181	0.085	1.16
PCB-135	µg/kg-%lipid	0.00321	0.235	1.16	0.566	4.99
PCB-136	µg/kg-%lipid	0.00109	0.0757	0.416	0.213	2.63
PCB-137	µg/kg-%lipid	0.00533	0.0216	0.108	0.047	0.356
PCB-139	µg/kg-%lipid	0.00712	0.0165	0.09	0.037	0.376
PCB-141	µg/kg-%lipid	ND	0.053	0.206	0.107	0.849
PCB-142	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-144	µg/kg-%lipid	0.000208	0.0256	0.135	0.055	0.487
PCB-145	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-146	µg/kg-%lipid	0.00122	0.0972	0.386	0.182	1.63
PCB-147	µg/kg-%lipid	0.00643	0.512	2.53	1.19	11.4
PCB-148	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-150	µg/kg-%lipid	ND	ND	ND	ND	0.06

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Table 4-7a. Lipid-Normalized Mean Concentrations in *L. Variegatus* Tissues

		Pre-test	Swan Creek Reference	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF
Analyte	**Units**	**%Lipids = 2.24**	**%Lipids = 1.088**	**%Lipids = 1.26**	**%Lipids = 1.32**	**%Lipids = 2**
PCB-152	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-153	µg/kg-%lipid	0.00687	0.458	2.0	0.853	7.1
PCB-154	µg/kg-%lipid	0.00354	0.00996	0.046	0.025	0.272
PCB-155	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-156	µg/kg-%lipid	0.000534	0.065	0.338	0.115	1.13
PCB-158	µg/kg-%lipid	0.000358	0.055	0.251	0.095	0.953
PCB-159	µg/kg-%lipid	ND	0.00357	0.011	0.00511	0.037
PCB-160	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-161	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-162	µg/kg-%lipid	0.00704	0.00289	0.013	0.00441	0.033
PCB-164	µg/kg-%lipid	0.000571	0.06	0.236	0.104	0.917
PCB-165	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-167	µg/kg-%lipid	0.000198	0.026	0.11	0.043	0.317
PCB-169	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-170	µg/kg-%lipid	0.00118	0.104	0.36	0.158	0.888
PCB-171	µg/kg-%lipid	0.000596	0.0404	0.156	0.0647	0.472
PCB-172	µg/kg-%lipid	0.000194	0.0261	0.087	0.0392	0.198
PCB-174	µg/kg-%lipid	0.00137	0.117	0.431	0.194	0.989
PCB-175	µg/kg-%lipid	0.00369	0.00674	0.028	0.011	0.073
PCB-176	µg/kg-%lipid	0.000406	0.0249	0.099	0.042	0.288
PCB-177	µg/kg-%lipid	0.00166	0.0812	0.295	0.126	0.799
PCB-178	µg/kg-%lipid	0.000981	0.0416	0.143	0.065	0.388
PCB-179	µg/kg-%lipid	0.00145	0.0708	0.277	0.127	0.811
PCB-180	µg/kg-%lipid	ND	0.0803	0.248	0.152	0.807
PCB-181	µg/kg-%lipid	ND	0.00979	0.0116	0.0139	0.0202
PCB-182	µg/kg-%lipid	ND	0.0157	0.00372	0.0114	0.0137
PCB-183	µg/kg-%lipid	0.0026	0.0708	0.277	0.116	0.615
PCB-184	µg/kg-%lipid	0.00319	0.000922	0.002	0.0011	ND
PCB-185	µg/kg-%lipid	0.000425	0.0232	0.107	0.044	0.201
PCB-186	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-187	µg/kg-%lipid	0.00652	0.308	1.15	0.504	1.35
PCB-188	µg/kg-%lipid	0.00514	0.000582	0.002	0.001	0.004
PCB-189	µg/kg-%lipid	0.000372	0.00464	0.016	0.007	0.029
PCB-190	µg/kg-%lipid	0.000501	0.0251	0.086	0.0374	0.175
PCB-191	µg/kg-%lipid	ND	0.00366	0.015	0.00555	0.037
PCB-192	µg/kg-%lipid	ND	ND	ND	ND	ND
PCB-194	µg/kg-%lipid	ND	0.0156	0.039	0.027	0.07
PCB-195	µg/kg-%lipid	0.000358	0.0133	0.036	0.02	0.059
PCB-196	µg/kg-%lipid	0.00709	0.0167	0.049	0.029	0.092
PCB-197	µg/kg-%lipid	0.0000748	0.00378	0.012	0.00486	0.018

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Table 4-7a. Lipid-Normalized Mean Concentrations in *L. Variegatus* Tissues

		Pre-test	Swan Creek Reference	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF
Analyte	**Units**	**%Lipids = 2.24**	**%Lipids = 1.088**	**%Lipids = 1.26**	**%Lipids = 1.32**	**%Lipids = 2**
PCB-198	µg/kg-%lipid	0.00229	0.096	0.288	0.138	0.369
PCB-200	µg/kg-%lipid	0.00032	0.014	0.051	0.0203	0.077
PCB-201	µg/kg-%lipid	0.000412	0.0159	0.058	0.024	0.079
PCB-202	µg/kg-%lipid	0.000678	0.0193	0.057	0.029	0.09
PCB-203	µg/kg-%lipid	0.00131	0.0438	0.123	0.0621	0.161
PCB-204	µg/kg-%lipid	ND	0.0124	ND	ND	ND
PCB-205	µg/kg-%lipid	ND	0.00272	0.008	0.004	0.009
PCB-206	µg/kg-%lipid	0.000792	0.0281	0.065	0.0355	0.0611
PCB-207	µg/kg-%lipid	0.00683	0.0041	0.01	0.00527	0.00841
PCB-208	µg/kg-%lipid	0.000375	0.0138	0.03	0.0164	0.0248
PCB-209	µg/kg-%lipid	0.000449	0.0221	0.033	0.0215	0.0162
TOTAL PCBs (ND=0)[(a)]	µg/kg-%lipid	0.681	19.6	368	129	2,870

NOTES: For all tissue tests n = 5.

Lumbriculus variegatus species used for worm tissue tests.

The mean concentrations and statistical comparisons presented on the table are lipid-normalized.

[(a)] lipid-normalized concentration.

ND = Not detected or was detected below the reporting limit in each of the tested tissue replicates.

NA = Not analyzed

RL = Reporting limit

µg/kg = Microgram(s) per kilogram

Analyte concentration is significantly higher than the reference site concentration ($p<0.05$)

Analyte concentration is significantly higher than the reference site concentration ($p<0.05$) and the pre-test tissue concentration ($p<0.05$)

As described in the Quality Assurance Project Plan, there is no current fish tissue screening level for polychlorinated biphenyls. The most conservative Aroclor fish tissue screening level from the 2018 EPA RSL is 2.1 µg/kg, concentrations at all locations exceed this screening value as well as the reference site concentration ($p<0.05$) and the pre-test tissue concentration ($p<0.05$) as indicated.

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Table 4-7b. Mean Concentrations in *L. Variegatus* Tissues

		Pre-test	Swan Creek Reference	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF
Analyte	**Units**	**%Lipids = 2.24**	**%Lipids = 1.09**	**%Lipids = 1.26**	**%Lipids = 1.32**	**%Lipids = 2**
PCB-1	µg/kg	0.00478	0.00898	0.952	0.044	1.04
PCB-2	µg/kg	ND	ND	0.042	0.0216	0.316
PCB-3	µg/kg	ND	ND	0.186	0.0234	0.418
PCB-4	µg/kg	0.00842	0.0944	11.8	0.758	27.2
PCB-5	µg/kg	ND	0.00726	0.29	0.07	2.68
PCB-6	µg/kg	0.0278	0.1	2.38	1.96	106
PCB-7	µg/kg	ND	0.0101	0.594	0.078	3.12
PCB-8	µg/kg	0.021	0.112	6.86	1.54	79.6
PCB-9	µg/kg	0.0158	0.0106	0.216	0.133	5.62
PCB-10	µg/kg	ND	0.00458	0.266	0.037	1.59
PCB-11	µg/kg	ND	0.0732	0.292	0.248	8.32
PCB-12	µg/kg	0.00948	0.0388	1.09	0.822	37.6
PCB-14	µg/kg	ND	ND	ND	ND	ND
PCB-15	µg/kg	0.00938	0.0686	1.82	0.716	35.4
PCB-16	µg/kg	0.0262	0.128	2.48	1.98	115
PCB-17	µg/kg	0.0514	0.292	19.4	4.1	208
PCB-18	µg/kg	0.0676	0.308	9.08	5.94	222
PCB-19	µg/kg	0.00896	0.0796	5.84	0.79	33.6
PCB-20	µg/kg	0.112	0.724	22.0	11.6	316
PCB-21	µg/kg	0.0126	0.101	3.78	0.964	47.6
PCB-22	µg/kg	0.0296	0.18	4.16	2.58	138
PCB-23	µg/kg	ND	ND	ND	ND	ND
PCB-24	µg/kg	0.00811	0.00676	ND	0.091	3.01
PCB-25	µg/kg	0.0432	0.17	4.82	3.99	190
PCB-26	µg/kg	0.0654	0.286	7.58	6.65	256
PCB-27	µg/kg	0.0064	0.0526	2.58	0.512	25.4
PCB-31	µg/kg	0.108	0.626	21.4	10.7	284
PCB-32	µg/kg	0.0288	0.194	10.5	2.51	124
PCB-34	µg/kg	0.0158	ND	0.282	0.149	8.2
PCB-35	µg/kg	ND	ND	ND	0.107	4.66
PCB-36	µg/kg	ND	ND	ND	ND	ND
PCB-37	µg/kg	0.0089	0.094	1.72	0.826	50.0
PCB-38	µg/kg	ND	ND	ND	ND	ND
PCB-39	µg/kg	ND	ND	0.228	ND	4.06
PCB-40	µg/kg	0.038	0.414	11.7	4.68	196
PCB-41	µg/kg	ND	0.0432	1.44	0.234	3.08
PCB-42	µg/kg	0.0278	0.28	6.34	2.99	145
PCB-43	µg/kg	0.00554	0.0512	1.5	0.478	22.6
PCB-44	µg/kg	0.0938	1.06	25.6	11.0	340
PCB-45	µg/kg	0.0206	0.192	3.84	1.96	92.4

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Table 4-7b. Mean Concentrations in *L. Variegatus* Tissues

		Pre-test	Swan Creek Reference	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF
Analyte	**Units**	**%Lipids = 2.24**	**%Lipids = 1.09**	**%Lipids = 1.26**	**%Lipids = 1.32**	**%Lipids = 2**
PCB-46	µg/kg	0.0099	0.0704	1.62	0.816	40.4
PCB-48	µg/kg	0.0128	0.125	4.76	1.27	53.2
PCB-49	µg/kg	0.0572	0.678	17.0	7.48	230
PCB-50	µg/kg	0.0184	0.138	4.66	1.72	88.2
PCB-51	µg/kg	0.00724	0.0614	2.54	0.636	30.2
PCB-52	µg/kg	0.102	1.2	26.8	11.7	268
PCB-54	µg/kg	0.000568	0.00494	0.264	0.061	2.24
PCB-55	µg/kg	ND	0.0181	ND	ND	ND
PCB-56	µg/kg	0.0136	0.24	7.46	1.81	70.8
PCB-57	µg/kg	0.000916	0.0102	0.242	0.127	5.7
PCB-58	µg/kg	ND	0.0175	ND	0.0442	2.74
PCB-59	µg/kg	0.0107	0.13	3.74	1.03	47.0
PCB-60	µg/kg	0.00374	0.11	4.78	0.56	9.3
PCB-61	µg/kg	0.0572	0.918	33.4	7.9	282
PCB-63	µg/kg	0.00446	0.0618	1.62	0.566	24.0
PCB-64	µg/kg	0.0386	0.51	12.0	4.74	178
PCB-66	µg/kg	0.028	0.546	16.4	4.08	152
PCB-67	µg/kg	0.0022	0.0294	0.808	0.341	11.4
PCB-68	µg/kg	0.000836	0.0122	0.184	0.114	3.48
PCB-72	µg/kg	0.00433	0.0111	0.17	0.088	6.04
PCB-73	µg/kg	ND	ND	ND	ND	ND
PCB-77	µg/kg	0.0023	0.0558	1.6	0.412	16.3
PCB-78	µg/kg	ND	ND	ND	ND	ND
PCB-79	µg/kg	ND	0.0107	0.164	0.044	1.6
PCB-80	µg/kg	ND	ND	ND	ND	ND
PCB-81	µg/kg	ND	ND	ND	ND	ND
PCB-82	µg/kg	0.00264	0.0916	2.26	0.5	14.3
PCB-83	µg/kg	0.00306	0.101	1.62	0.582	17.6
PCB-84	µg/kg	0.0136	0.248	4.38	1.77	75.2
PCB-85	µg/kg	0.00388	0.158	4.2	0.858	18.9
PCB-88	µg/kg	0.00914	0.218	3.8	1.26	43.6
PCB-89	µg/kg	0.00133	0.027	0.662	0.211	6.5
PCB-90	µg/kg	0.025	0.82	12.0	3.8	114
PCB-92	µg/kg	0.00678	0.208	2.64	0.982	31.8
PCB-93	µg/kg	0.0158	0.0216	0.456	0.155	4.74
PCB-94	µg/kg	ND	ND	0.35	0.119	3.46
PCB-95	µg/kg	0.0314	0.71	11.0	4.1	149
PCB-96	µg/kg	0.00124	0.0174	0.45	0.154	5.3
PCB-98	µg/kg	0.00308	0.0714	1.8	0.562	15.4
PCB-99	µg/kg	0.0112	0.374	6.7	1.87	53.4

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Table 4-7b. Mean Concentrations in *L. Variegatus* Tissues

		Pre-test	Swan Creek Reference	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF
Analyte	**Units**	**%Lipids = 2.24**	**%Lipids = 1.09**	**%Lipids = 1.26**	**%Lipids = 1.32**	**%Lipids = 2**
PCB-100	µg/kg	0.0158	0.0216	0.456	0.155	4.74
PCB-102	µg/kg	0.00308	0.0714	1.8	0.562	15.4
PCB-103	µg/kg	ND	0.0196	0.214	0.093	3.02
PCB-104	µg/kg	ND	0.000638	0.018	0.005	0.122
PCB-105	µg/kg	0.00522	0.214	4.82	0.778	18.5
PCB-106	µg/kg	ND	ND	ND	ND	ND
PCB-107	µg/kg	ND	0.0336	0.588	0.108	1.82
PCB-108	µg/kg	0.0156	0.496	10.2	2.68	75.4
PCB-109	µg/kg	0.0012	0.0554	0.974	0.23	7.0
PCB-110	µg/kg	0.0278	0.92	15.0	4.68	161
PCB-111	µg/kg	ND	ND	ND	ND	ND
PCB-112	µg/kg	ND	ND	ND	ND	ND
PCB-114	µg/kg	ND	0.0184	0.546	0.079	1.89
PCB-118	µg/kg	0.0134	0.508	9.3	2.26	66.6
PCB-119	µg/kg	0.0156	0.496	10.2	2.68	74.8
PCB-120	µg/kg	ND	ND	ND	ND	0.478
PCB-121	µg/kg	ND	ND	ND	ND	ND
PCB-122	µg/kg	ND	0.018	0.336	0.062	1.34
PCB-123	µg/kg	ND	0.0176	0.366	0.065	1.31
PCB-126	µg/kg	ND	ND	ND	ND	ND
PCB-127	µg/kg	ND	ND	ND	ND	ND
PCB-128	µg/kg	0.00258	0.106	0.536	0.204	3.7
PCB-129	µg/kg	0.0188	0.692	3.74	1.54	17.3
PCB-130	µg/kg	0.00106	0.0532	0.28	0.119	2.0
PCB-131	µg/kg	ND	0.00924	0.072	0.026	0.548
PCB-132	µg/kg	0.00496	0.216	1.36	0.646	13.5
PCB-133	µg/kg	0.000316	0.015	0.075	0.036	0.544
PCB-134	µg/kg	0.0158	0.0358	0.228	0.11	2.38
PCB-135	µg/kg	0.0072	0.254	1.46	0.73	10.2
PCB-136	µg/kg	0.00246	0.0816	0.524	0.276	5.4
PCB-137	µg/kg	0.0115	0.0232	0.136	0.06	0.742
PCB-139	µg/kg	0.0155	0.0178	0.114	0.047	0.778
PCB-141	µg/kg	ND	0.0572	0.26	0.138	1.74
PCB-142	µg/kg	ND	ND	ND	ND	ND
PCB-144	µg/kg	0.000468	0.0276	0.17	0.071	1.01
PCB-145	µg/kg	ND	ND	ND	ND	ND
PCB-146	µg/kg	0.00274	0.105	0.484	0.234	3.34
PCB-147	µg/kg	0.0144	0.552	3.18	1.54	23.6
PCB-148	µg/kg	ND	ND	ND	ND	ND
PCB-150	µg/kg	ND	ND	ND	ND	0.12

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Table 4-7b. Mean Concentrations in *L. Variegatus* Tissues

		Pre-test	Swan Creek Reference	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF
Analyte	**Units**	**%Lipids = 2.24**	**%Lipids = 1.09**	**%Lipids = 1.26**	**%Lipids = 1.32**	**%Lipids = 2**
PCB-152	µg/kg	ND	ND	ND	ND	ND
PCB-153	µg/kg	0.0154	0.494	2.5	1.1	14.7
PCB-154	µg/kg	0.00773	0.0107	0.058	0.032	0.556
PCB-155	µg/kg	ND	ND	ND	ND	ND
PCB-156	µg/kg	0.00119	0.0702	0.424	0.148	2.34
PCB-158	µg/kg	0.0008	0.0592	0.316	0.123	1.96
PCB-159	µg/kg	ND	0.00384	0.014	0.007	0.076
PCB-160	µg/kg	ND	ND	ND	ND	ND
PCB-161	µg/kg	ND	ND	ND	ND	ND
PCB-162	µg/kg	0.0154	0.00314	0.016	0.006	0.068
PCB-164	µg/kg	0.00128	0.0648	0.296	0.133	1.89
PCB-165	µg/kg	ND	ND	ND	ND	ND
PCB-167	µg/kg	0.000444	0.028	0.138	0.056	0.658
PCB-169	µg/kg	ND	ND	ND	ND	ND
PCB-170	µg/kg	0.00264	0.112	0.452	0.204	1.8
PCB-171	µg/kg	0.00134	0.0436	0.196	0.084	0.982
PCB-172	µg/kg	0.000432	0.0282	0.109	0.051	0.41
PCB-174	µg/kg	0.00306	0.126	0.542	0.25	2.0
PCB-175	µg/kg	0.00791	0.00726	0.035	0.014	0.151
PCB-176	µg/kg	0.000908	0.0268	0.124	0.054	0.594
PCB-177	µg/kg	0.00372	0.0876	0.37	0.162	1.61
PCB-178	µg/kg	0.0022	0.045	0.18	0.084	0.8
PCB-179	µg/kg	0.00326	0.0764	0.348	0.164	1.63
PCB-180	µg/kg	ND	0.0864	0.312	0.196	1.69
PCB-181	µg/kg	ND	0.00996	0.0139	0.0178	0.042
PCB-182	µg/kg	ND	0.0171	0.00468	0.0135	0.0282
PCB-183	µg/kg	0.00558	0.0762	0.348	0.15	1.27
PCB-184	µg/kg	0.00765	0.001	0.002	0.001	ND
PCB-185	µg/kg	0.000962	0.0256	0.134	0.056	0.414
PCB-186	µg/kg	ND	ND	ND	ND	ND
PCB-187	µg/kg	0.0146	0.334	1.44	0.648	2.76
PCB-188	µg/kg	0.0116	0.000628	0.002	0.001	0.008
PCB-189	µg/kg	0.000866	0.00498	0.02	0.009	0.06
PCB-190	µg/kg	0.00112	0.0272	0.108	0.048	0.364
PCB-191	µg/kg	ND	0.00396	0.018	0.007	0.076
PCB-192	µg/kg	ND	ND	ND	ND	ND
PCB-194	µg/kg	ND	0.0168	0.048	0.035	0.145
PCB-195	µg/kg	0.000802	0.0144	0.045	0.026	0.121
PCB-196	µg/kg	0.0155	0.018	0.061	0.037	0.189
PCB-197	µg/kg	0.000168	0.00406	0.015	0.006	0.037

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Table 4-7b. Mean Concentrations in *L. Variegatus* Tissues

		Pre-test	Swan Creek Reference	SC21-SC11-SURF	SC21-SC14-SURF	SC21-SC18-SURF
Analyte	**Units**	**%Lipids = 2.24**	**%Lipids = 1.09**	**%Lipids = 1.26**	**%Lipids = 1.32**	**%Lipids = 2**
PCB-198	µg/kg	0.00512	0.104	0.362	0.178	0.766
PCB-200	µg/kg	0.000716	0.0152	0.064	0.026	0.159
PCB-201	µg/kg	0.000926	0.0172	0.072	0.031	0.164
PCB-202	µg/kg	0.00152	0.0208	0.072	0.037	0.186
PCB-203	µg/kg	0.00294	0.0474	0.154	0.08	0.334
PCB-204	µg/kg	ND	0.0131	ND	ND	ND
PCB-205	µg/kg	ND	0.00292	0.01	0.005	0.018
PCB-206	µg/kg	0.00176	0.0302	0.081	0.046	0.127
PCB-207	µg/kg	0.0154	0.0044	0.012	0.007	0.018
PCB-208	µg/kg	0.000834	0.0148	0.038	0.021	0.051
PCB-209	µg/kg	0.00101	0.0238	0.042	0.0278	0.0332
TOTAL PCBs (ND=0)	µg/kg	1.53	21.1	462	168	5,790

NOTES: For all tissue tests n = 5.

Lumbriculus variegatus species used for worm tissue tests.

The mean concentrations and statistical comparisons presented on the table are based on whole body concentrations.

ND = Not detected or was detected below the reporting limit in each of the tested tissue replicates.

NA = Not analyzed

RL = Reporting limit

µg/kg = Microgram(s) per kilogram

Analyte concentration is significantly higher than the reference site concentration ($p<0.05$)

Analyte concentration is significantly higher than the reference site concentration ($p<0.05$) and the pre-test tissue concentration ($p<0.05$)

As described in the Quality Assurance Project Plan, there is no current fish tissue screening level for polychlorinated biphenyls. The most conservative Aroclor fish tissue screening level from the 2018 EPA RSL is 2.1 µg/kg, concentrations at all locations exceed this screening value as well as the reference site concentration ($p<0.05$) and the pre-test tissue concentration ($p<0.05$) as indicated.

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Table 4-8a. Interpretation of *Chironomus dilutus* Benthic Toxicity Testing Results in Accordance with EPA/USACE Dredging Guidance, Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio

Sample Identification	Survival Statistical Difference Control	Survival >20% Different From Control	Survival Statistical Difference at Least 1 Reference	Survival >20% Different From at Least 1 Reference	Growth Statistical Difference Control	Growth >10% Different Than Control	Growth Statistical Difference at Least 1 Reference	Growth >10% Different Than Reference	Growth Less Than 0.6 mg
SC21-SCREF-SURF	NO	NO	NO	NO	NO	NO	NO	NO	NO
SC21-MRREF-SURF	NO	NO	NO	NO	NO	NO	YES	YES	NO
SC21-SC01-SURF	NO	NO	NO	NO	NO	NO	YES	YES	NO
SC21-SC05-SURF	NO	NO	NO	NO	NO	NO	NO	NO	NO
SC21-SC11-SURF	YES	NO	NO	NO	NO	NO	NO	NO	NO
SC21-SC14-SURF	NO	NO	NO	NO	NO	NO	NO	NO	NO
SC21-SC18-SURF	YES	YES	YES	YES	NO	YES	NO	YES	NO
SC21-SC21-SURF	NO	NO	NO	NO	NO	NO	NO	NO	NO
SC21-SC27-SURF	YES	NO	NO	NO	NO	NO	NO	YES	NO
SC21-SC30-SURF	YES	NO	NO	NO	YES	YES	YES	YES	NO
SC21-SC33-SURF	YES	NO	YES	NO	NO	NO	NO	NO	NO
SC21-MR06-SURF	YES	YES	YES	YES	YES	YES	YES	YES	NO

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Table 4-8b. Interpretation of *Hyalella azteca* Benthic Toxicity Testing Results in Accordance with EPA/USACE Dredging Guidance, Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio

Sample Identification	Survival Statistical Difference Control	Survival >10% Different From Control	Survival Statistical Difference at Least 1 Reference	Survival >10% Different From at Least 1 Reference	Growth Statistical Difference Control	Growth Statistical Difference at Least 1 Reference
SC21-SCREF-SURF	YES	NO	NO	NO	YES	YES
SC21-MRREF-SURF	NO	NO	NO	NO	YES	NO
SC21-SC01-SURF	YES	YES	YES	YES	YES	YES
SC21-SC05-SURF	YES	YES	YES	YES	YES	YES
SC21-SC11-SURF	YES	YES	YES	YES	YES	YES
SC21-SC14-SURF	YES	YES	YES	YES	YES	YES
SC21-SC18-SURF	YES	YES	YES	YES	YES	YES
SC21-SC21-SURF	YES	YES	YES	YES	YES	YES
SC21-SC27-SURF	YES	YES	YES	YES	YES	YES
SC21-SC30-SURF	YES	NO	YES	NO	YES	YES
SC21-SC33-SURF	YES	YES	YES	YES	YES	YES
SC21-MR06-SURF	YES	YES	YES	YES	YES	YES

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Table 5-1. Combined Summary of Findings for Toxicity and Bioccumulation Testing, Chemical Exceedances, and SEM/AVS
Swan Creek Assessment of Contaminated Sediments, Maumee Area of Concern, Toledo, Ohio (November 2021)

	Chironomus dilutus 10-DAY TOXICITY TESTING		*Hyalella azteca* 10-DAY TOXICITY TESTING		Screening Criteria Exceedance[2]				*Lumbriculus variegatus* 28-DAY BIOACCUMULATION TEST	SEM/AVS Results	
Sample Identification	Significant[1] for SURVIVAL	Significant[1] for GROWTH	Significant[1] for SURVIVAL	Significant[1] for GROWTH	Metals		Organics[3]		Significance[1]	SEM/AVS Ratio > 1	(Σ SEM - AVS) / foc > 130 µmole/goc
					SRV	PEC	TEC	PEC	Total PCBs		
SC21-SC01-SURF	No	No	Yes	Yes	X		X		Not tested	X	No
SC21-SC05-SURF	No	No	Yes	Yes			X		Not tested	No	No
SC21-SC11-SURF	No	No	Yes	Yes	X		X	X	Yes	No	No
SC21-SC14-SURF	No	No	Yes	Yes	X		X	X	Yes	No	No
SC21-SC18-SURF	Yes	No	Yes	Yes	X	X	X	X	Yes	No	No
SC21-SC21-SURF	No	No	Yes	Yes	X		X	X	Not tested	No	No
SC21-SC27-SURF	No	No	Yes	Yes			X	X	Not tested	No	No
SC21-SC30-SURF	No	Yes	Yes	Yes			X	X	Not tested	No	No
SC21-SC33-SURF	Yes	No	Yes	Yes			X	X	Not tested	No	No
SC21-MR06-SURF	Yes	Yes	Yes	Yes	X	X	X	X	Not tested	No	No
SC21-MRREF-SURF	Reference	Reference	Reference	Reference	X		X		Not tested	No	No
SC21-SCREF-SURF	Reference	Reference	Reference	Reference			X		Reference	No	No

Notes:
1. Statistically different from one or more reference locations and the laboratory control.
2. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000). Ohio SRV = Ecological Risk Assessment Guidance Document (Ohio EPA 2018).
3. Organics exceedances noted if individual analytes or summed totals exceeded sediment screening levels.
Shading indicates significant result or result exceeding screening criteria.
AVS = Acid volatile sulfides
foc = fraction organic carbon
PEC = Probable Effect Concentration
SEM = Simultaneously extracted metals
SRV = Ohio-specific Sediment Reference Values
TEC = Threshold Effect Concentration
µmole/g = micromole per gram

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Appendix A

Field Logbooks and Data Collection Forms

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Core Collection Field Logbook

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11/2/2021
arrive @ 1020 Water St @ 0800
Wait for affiliated to finish Set up
Weather 34°F Wind: SW 7mph
Crew: EA: M. Durbano Affiliated D. Gulke
M. Renik A. IZZO
R. Sanderlin

0830 Safety meeting
0845 en route to collect reference point on Green buoy #63
0850 en route to SC21-SC02
0930 ~~Arrived @~~
Log jam near SC06, may need to contact City for removal?
0935 Attempt to Clear Log jam
0950 en route to SC21-SC07 Log jam Not able to be removed
arrive @ ↗
0955 Spud Down and Probe
↳ Sounded hard Rock!, Attempting to punch through
1010 ~~1~~ Attempt no recovery, Strong current in center of channel
1015 Another Attempt made no recovery, Shifting position to try and find softer material. found soft closer to shore.
1030 * try offset site... will need to offset more than 10 ft
1035 arrive @ SC21-SC08 probe
1040 1st Attempt made. Penetration of 20ft recovery of 1.7ft
1045 bent spud due to ~~Strong~~ Strong Current breaking us free.
1110 cut and move on
1120 arrive a spud SC21-SC09 Probe
1130 1st Attempt, no recovery Adjusted Position + Attempt again
1140 2nd Attempt, No recovery leaf debris in core catcher
1150 3rd Attempt ~~offset~~ shift again to find another spot within 10ft reding
refusal @ 2.1ft recovery 1.1ft
No additional Core Not taken at this time - will return after EPA talk
1200 * en route to SC21-SC10
1205 Arrive @ ↗ spud down + probe
Probe entire 10ft radius. All Rock a hard sediments - Abandon for now. will return after EPA talks
1210 SC21-SC11 probe. center of point all gravel. Probing all around point to see if Do-able. Checking near shore to see sediment softness. Both Shore lines have hard Rock substrate can not probe past a few inches.
1220 SC21-SC12 Probe. centers hard substrate/gravel
~~1~~ inch of sand noted, below hard compact substrate

Scale: 1 square = _____

Rite in the Rain

1225 SC21-SC13

1240 arrive @ SC13 spud down.

1245 1st Attempt refusal @ 3.8 ft recovery of 2.2 ft

1255 2nd Attempt refusal @ 8.0 ft recovery of 3.0 ft

1310 3rd Attempt refusal @ 2.9 ft recovery of 0.8 ft

Total 6.0 ft

1320 en route to 1020 water st core Drop off.

1340 arrive at 1020 water st.

1405 en route to SC21-SC33

1415 arrive @ ↗ spud down @ Probe

1425 ~~Attempt refusal @~~ Sample ~~recovered~~ fell out of core retry

1430 1st Attempt. refusal @ 4.7 ft recovery of 2.5 ft

1445 2nd Attempt refusal @ 4.5 ft recovery of 2.7 ft

1505 3rd Attempt refusal @ 4.5 ft recovery of 2.7 ft

Total 7.9 ft

1515 en route to SC21-SC32

1520 arrive @ ↗ spud down @ Probe

1530 1st attempt ~~refusal~~ 8 ft push recovery of 7.8 ft

1545 2nd additional core 8ft push recovery of 6.6 ft

Total 14.4 ft

1600 arrive @ SC21-SC31

1605 spud down @ ↗ @ Probe

1610 1st Attempt full 8ft push recovery of 7.7 ft

1625 en route to SC21-SC30

1630 arrive and spud down at ~~set~~ set up Frame. Probed harder material will make attempts, softer under layers.

1640 1st attempt refusal @ 3.3ft recovery of 1.9 ft

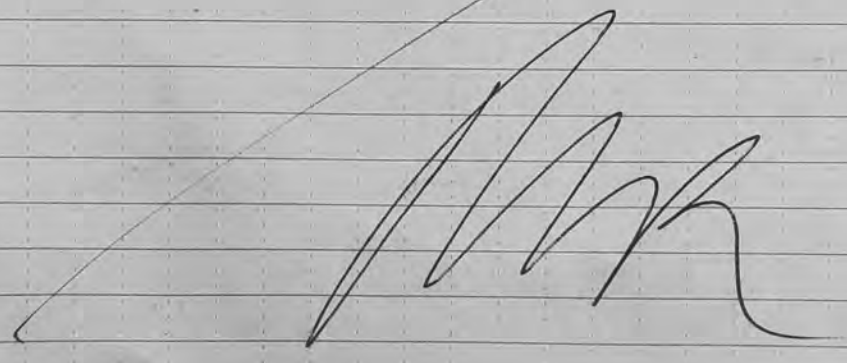
1650 2nd Attempt refusal @ 3.2ft recovery of 1.4 ft

1700 3rd Attempt refusal @ 2.9ft recovery of 1.4 ft

Total 4.7 ft

1720 Spuds up, head back to Dock processing facility

1730 arrive @ Dock, unload cores End of Day on River



Scale: 1 square = _____

11/3/2021
Crew: EA — Affiliated — Weather: 32°F — Wind: SW 2mph
M. Renill — A. Izzo — Clear Skies
D. Gerke — Frost on vehicles / Boat
R. Sanderlin

0745 Arrive on site
0755 Affiliated arrive & set up electronics
0825 push off Dock + Check reference point
0830 en route to [SC21-SC33] for final additional core
0840 arrive @ ↗ set up frame + probe station
0850 Additional core refusal @ 4.2ft recovery of 3.3ft
0900 take down Frame + head to [SC21-SC30]
0905 arrive @ SC30, set up frame probe
0915 Additional core refusal @ 4.1ft recovery of 3.4ft
Noticable odor when retrieved. Sheen on top
0925 en route to [SC21-SC29]
0930 arrive @ SC29. Probe, prepare to anchor, too deep to spud.
0945 Anchors Set
0950 1st Attempt refusal @ 2.8 ft recovery of 1.7 ft
1000 2nd Attempt refusal @ 2.8 ft recovery of 1.8 ft
1010 3rd Attempt refusal @ 2.8 ft recovery of 1.6 ft
Total 5.1ft
1026 Anchors up en route to [SC21-SC28]
1035 arrive @ SC28 anchors set
1045 Probed all gravel, poking around area / banks to find softer material
1050 anchors set at new spot, opposite bank
1100 1st Attempt refusal @ 0.8 ft recovery of 0 ft
1105 readjusting position again to find greater penetrating depth.
1120 Spud down @ new location
1130 1st Attempt refusal @ 5.5ft recovery of 5.3 ft Oil odor.
1140 2nd Attempt full 8ft push recovery of 4.1ft
Total 9.4ft
1150 en route to [SC21-SC26]
1155 arrive @ SC26 probe rock a gravel, may need to relocate
1200 Probed area, found spot outside 10ft radius to attempt core.
1215 1st Attempt refusal @ 3.1ft recovery of 2.7ft
1235 Additional core collected refusal @ 3.5 ft recovery of 1.6 ft
Total 4.3ft
1250 arrive @ Drop off point for cores & Liners. Eat Lunch
1315 en route to [SC21-SC25]
1320 arrive @ SC25 & set up Frame. Site in very shallow water.
1330 1st Attempt full 8ft push. Recovery of 5.6 ft
1335 Additional core collected 8ft push Recovery of 6.3ft
11.9ft
1340 En route to [SC21-SC24]
1350 arrive @ SC24 Spud down

Scale: 1 square = _____

1350 arrive @ SC24

1355 1st Attempt refusal @ 6.5 ft recovery of 4.3 ft
1410 2nd Attempt refusal @ 6.6 ft recovery of 2.1 ft
1425 3rd Attempt refusal @ 6.1 ft recovery of 3.5 ft
→ Rock caught in base of core catcher.

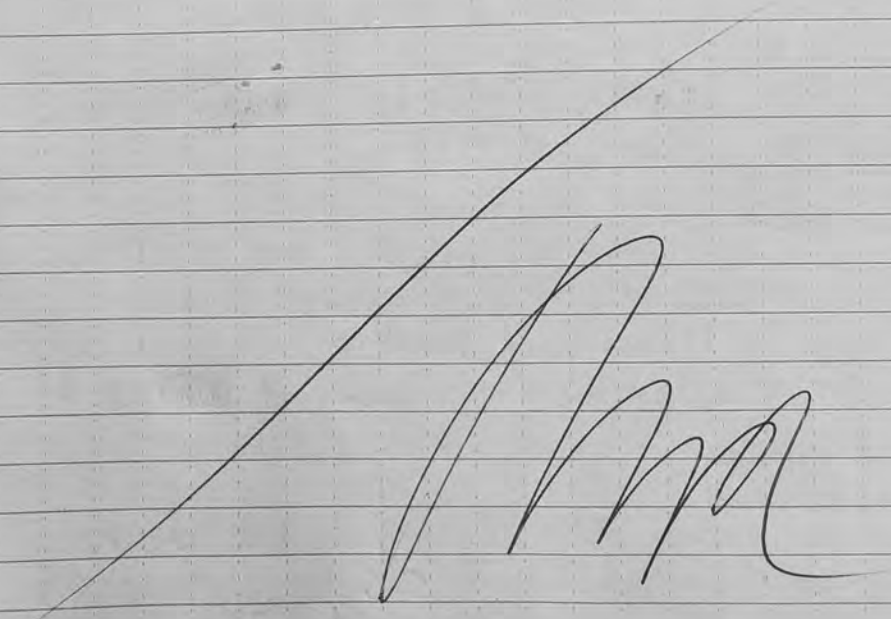
Total 9.9 ft

1440 en route to SC21-SC23
1445 arrive & prepare to anchor
1450 anchors set @ SC23
stronger current in center of channel
1505 1st Attempt refusal @ 1.4 ft recovery of 0 ft
Sticks + Rock in core catcher.
adjusting ~10ft for 2nd attempt.
1515 2nd attempt refusal @ 1.7 ft recovery of 1.1 ft
1530 Attempting to shift again to get better return
1535 spud + Probe
1540 3rd attempt refusal @ 4.7 ft recovery of 3.7 ft
1550 additional core taken refused @ 5.1 ft recovery of 3.7 ft

Total 8.5 ft

1600 en route to SC21-SC22
1605 arrive @ SC22 Spud + Probe
1615 1st Attempt refusal @ 3.6 ft recovery of 2.9 ft
1625 Additional Core collected refusal @ 1.7 ft recovery of 1.4 ft
1635 Spuds up en route to 1020 Water Street.
1700 arrive @ 1020 Water Street, unload Cores
1715 help pack coolers for Shipment

Total 4.3 ft



Scale: 1 square = _____

11/4/2021

CREW: EA — Affiliated
M. Rank — D. Gerke
A. Izzo
R. Sanderlin

Weather: 35°F Wind: ESE 1m/h
Partly Cloudy

0740 Arrive @ 1020 Water Street
0745 affiliated arrive to set up
0830 check reference point + en route to SC21-SC10
0910 arrive @ SC10 spud a set up coring frame
probed rocky/gravel hard. Stronger current.
0930 1st Attempt refusal @ 1.2 ft recovery of 1.7 ft
all Clay recovery. with the clay being Malesble, the recovery seems greater than actual penetration. reality should be 100% recovery
Talked with MD regarding completion, gave the ok to proceed.
0950 en route to SC21-SC19
1010 Hypack issue, needed to troubleshoot
1030 use trimble, hypack Not receiving signal. arrive @ SC19
Set up frame + probe. restarting computer fixed issue
1035 1st Attempt refusal @ 7.2ft recovery of 5.2ft
1045 spuds up enroute to SC21-SC21
1050 arrive @ SC21 spud down probe
1055 1st Attempt refusal @ 2.9 ft recovery of 0.7 ft
1105 2nd Attempt refusal 2.3 ft No recovery. all rock in catcher of core
1110 find New location probed ~4-4.5ft
1120 3rd Attempt refusal @ 5.0ft recovery of 4.2 ft
1130 Additional core for MS/MSD
refusal @ 5.4ft recovery of 4.3 ft. Noticable odor
Total 9.2ft
1145 enroute to SC21-SC20
1150 arrive @ SC20. Tree directly over spot. Can see on map. Took photo.
shifting site down stream slightly to avoid tree, getting as close as possible to original location. Shift of 21 ft from center of original location
1200 anchors set @ SC20. current @ location
1210 1st Attempt refusal @ 0.6ft recovery of 0. No recovery
1215 Adjust position ~10ft try again
1220 2nd Attempt refusal @ 1.9 ft recovery of 2.1 ft (core length)
Clay recovered. similar to location SC10. recovered slightly longer than refusal
1230 Additional core collected. refusal @ 2.1 ft recovery of 1.7 ft
Total 3.8ft
1240 eat lunch
1255 en route to SC21-SC17

Scale: 1 square = _____

1305 Arrive @ SC17 set up frame
1310 1st Attempt ~~refusal~~ @ full 8ft push recovery of 7.4ft > total 14.0 ft
1325 Additional Core taken, full 8ft push Recovery of 6.6ft
1330 en route to 1020 water ST for core drop off, new liners from Shannon
1355 arrive @ Dock for core Drop off Prep cores
1455 en route to SC21-MR-06
1505 arrive @ MR-06 & set anchors
able to Probe, felt soft layer then hard below ~ 2-3 ft
1515 1st Attempt refusal @ 2.2ft recovery of 2.2 ft. odor noticed
1525 Anchors up @ MR-06
1530 en route to SC21-MR-05
1535 anchors set @ MR-05 too deep to probe
1545 1st Attempt refusal @ 5.2 ft. Recovery of 4.9 ft
1555 anchors up @ MR-05, en route to SC21-MR-03
1600 anchors set @ MR-03
1610 1st attempt refusal @ 7.5 ft recovery of 4.9 ft
1625 2nd Attempt refusal @ 7.5ft recovery of 3.0 ft
~3ft Lost on retrieval -- can see the slide marks on ~~the~~ core liner
total 11.2 ft
1630 adjusted position
1640 3rd attempt refusal @ 3.5 ft recovery of 3.3 ft
1650 anchors up en route to SC21-MR-02
1655 Anchors set at MR-02
1700 1st attempt full 8ft push recovery of 7.6 ft
1715 Anchors up @ MR-02 en route to 1020 water Street
1725 arrive @ Dock for Core Drop off
1740 Cores unloaded. continue with Core processing

Scale: 1 square =

11/5/2021

CREW: EA — Affiliated — Weather: 33°F Wind: No
M. Renick — A. Izzo — Partly Cloudy
B. Sanderlin

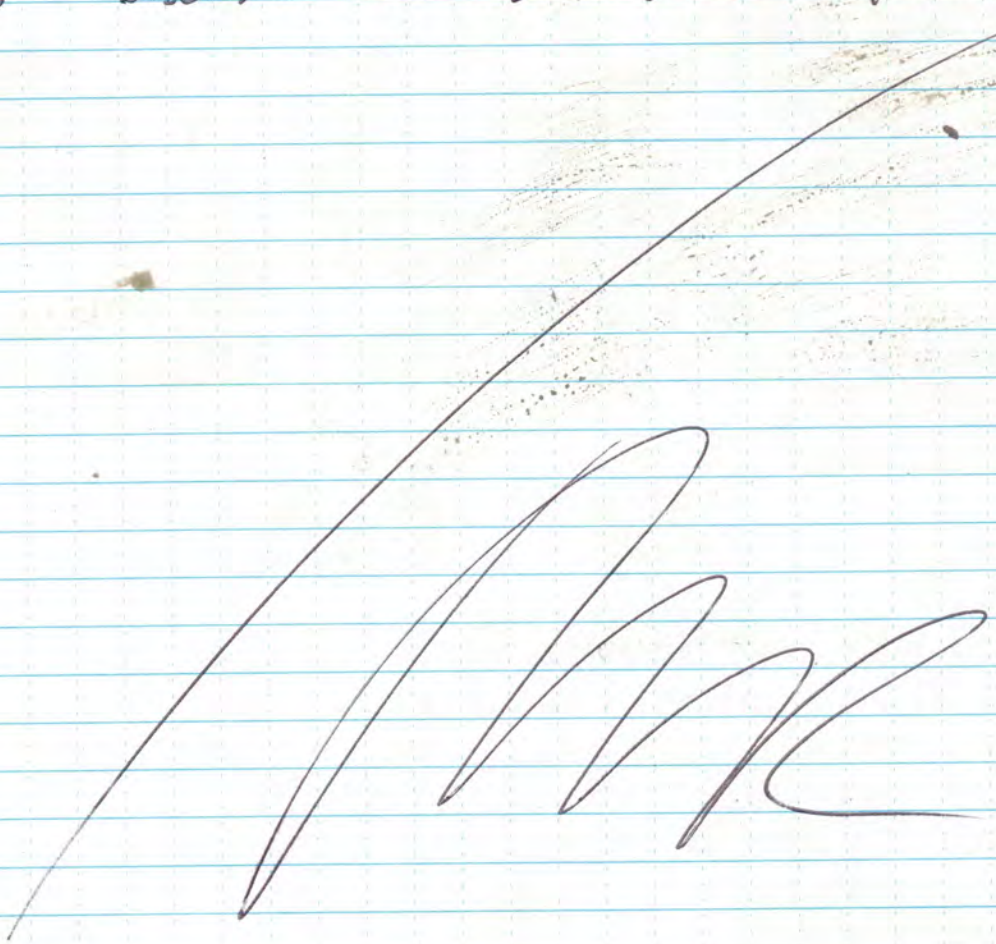
0740 Arrive @ 1020 Water Street
Wait for Affiliated to arrive - Down D. Gerke today Due to family matter. Upon arrival Affiliated plans to prep 8ft core liners for use the rest of the trip. I will help processing crew until cores are ready + we can go out.
0830 Affiliated arrived, load prep boat + Cores ~ 30 min
0920 en route to SC1-SC02 Check reference point before going to SC02. Scout ahead to SCREF, Make sure no log jams that need removal
1030 arrive @ SCREF, No log jam issues, Continue back to SC02
1055 arrive @ SC02 Spud & Set up frame
1110 1st Attempt refusal @ 1.9 ft recovery of 1.1 ft
1124 readjust position spud down for 2nd attempt
1130 2nd Attempt refusal @ 1.0 ft recovery of 0.9 ft
1145 readjust position for additional cores for better recovery
1155 probe around until soft material found. center of River all rocky
Set spuds + prep for additional cores
1200 1st additional core taken refusal @ 5.1 ft recovery of 3.6 ft
1215 2nd additional Core taken refusal @ 5.7 ft recovery of 4.2 ft
1225 3rd additional core taken refusal @ 5.4 ft recovery of 3.8 ft
1245 4th additional Core taken refusal @ 5.7 ft recovery of 3.9 ft
Total 17.5 ft
1250 eat lunch
1310 en route to SC1-SC03
1315 arrive & Spud @ SC03 some current probing hard substrate/gravel
1325 1st Attempt refusal @ 0.6ft No recovery. only small gravel in catcher moving for 2nd Attempt.
1340 2nd Attempt refusal @ 1.0ft recovery
moving to find better recovery for additional cores
1405 after probing lots of area. found possible location lots of rock throughout the stretch of river + current.
1410 1st additional core. 6ft push recovery of 3.5 ft
1425 2nd additional Core refusal @ 5.4 ft recovery of 2.1 ft
Total 7.2 ft
~~3rd additional Core for volume~~
1435 en route to SC1-SC04
1445 Arrive @ SC04 spud & set up frame

Scale: 1 square = _____

Rite in the Rain

11/5/2024

1445 arrive @ SC04 spud & set up frame
1455 1st Attempt full 8ft push. recovery of 7.4ft → Total
1510 2nd attempt refusal @ 5.3ft. recovery of 4.3ft → 17.2 ft
1520 3rd attempt 6ft push recovery of 5.5ft
1535 spuds up frame down en route to SC21-SC16
1655 arrive @ SC16 spud down.
1605 1st attempt 0.8ft Push refusal, NO recovery
hard gravel layer on surface.
Shifted position & make 2nd attempt
1615 2nd attempt refusal @ 8ft push recovery of 4.5ft → 12.6 ft
Shifting again to attempt > 65% recovery
1635 3rd attempt 8ft push recovery of 6.4 ft
1650 additional core collected 6ft push recovery of 3.7ft
1700 take down frame pick up spuds en route to Dock
for core drop off
1725 arrive @ 1020 Water Street
1735 unload cores.
1745 Discussion with MD on sites I had questions on.



Scale: 1 square =

11/6/2021

Crew: EA — mrenik; affiliated — A. Izzo, R. Sanderlin, D. Gerke: 1200 - End of Day

Weather: 33°F Wind: NNE 1mph Clear Skies

0750 Arrive @ 1020 Water Street

0800 Affiliated arrive, set up their boat. Core liner inventory done this morning total of 26 liners remaining. will not be enough to finish at this time. Looking at remaining stations, roughly 40 would be needed to complete... That is worse case senario, every station requires 3 attempts, plus site specific additional cores

0815 prep more liners with core catchers.

0915 en route to reference buoy + SC21-SC15

0940 arrive @ SC15

0955 anchor @ SC15, set up frame & probe hard gravel layer on top

1010 1st Attempt refusal @ 2.1 ft recovery of 0 ft
Small gravel in core catcher. shifting for 2nd Attempt.

1025 2nd Attempt 1.6 ft push recovery of 0 ft shifting for 3rd Attempt to find softer Material center of channel very hard gravel.

1040 found softer material after probing all hard rock/gravel for our third attempt & additional cores.

1050 3rd Attempt Refusal @ 5.5 ft recovery of 3.4 ft
4 still less than 65% recovery.
talked with MD. Continue to probe to find soft material for recovery. May need to discuss alternate?
Everywhere probed, from Bridge down to end of zone historical sites. Straight gravel/rock.

1145 found Location upstream of Bridge. Marked and will return.

1150 On route to pick up D. Gerke from Market Erie then continue on to the Maumee River locations

1200 arrive @ Erie Market dock to pick up D. Gerke eat lunch

1215 en route to SC21-MR03 for 2 additional attempts per EPA.

1240 Needed to run back to dock.

1245 arrive @ MR03 for 2 additional attempts set anchors

1250 anchors set. Set up frame

1255 1st Additional Attempt full 8ft push recovery of 4.0 ft

1320 Shifted for 2nd. refusal @ 4.0 ft recovery of 3.5 ft

1325 taking one more punch 6 ft push recovery of 4.3 ft

Total 11.8 ft

1335 anchors up @ MR03, en route to SC21-MRREF

1350 arrive @ MRREF, spud & probe

1355 1st Attempt. @ 8ft Push, recovery of 7.1 ft

Scale: 1 square =

11/6/2024

1410 en route to SC21-MR01

1415 arrive @ MR01 prepare to anchor

1420 anchors set to keep to probe

1425 1st attempt refusal @ 4.1 ft recovery of 3.4 ft

1435 anchors up @ MR01 en route to SC21-MR04

1450 anchors set

1500 1st Attempt 8ft push recovery of 5.6 ft

1515 anchors up @ MR04 en route to 1020 water St for Core Drop off

1520 arrive @ Dock for core drop off

1525 en route to SC21-SC15

1550 arrive @ SC15, new location for additional Core volume.

1555 1st Core refusal @ 2.7 ft recovery of 2.5 ft

1610 2nd Core 6ft push. recovery of 4.2 ft

1615 3rd Core 6ft push recovery of 3.6 ft

1625 4th Core 3.1 ft push, hard rejection, Rock? recovery of 2.7 ft

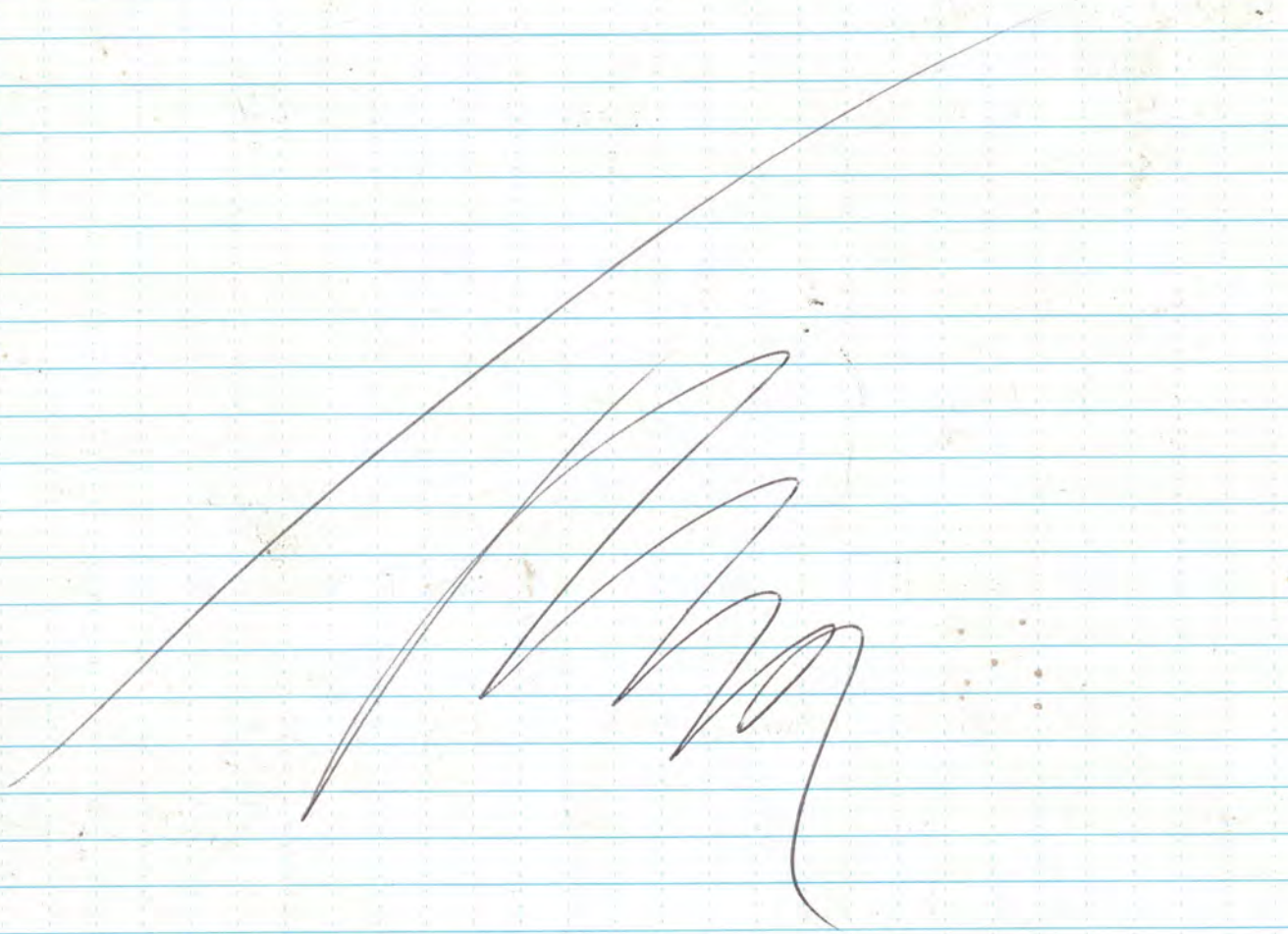
total

1635 en route to SC21-SC13

1645 1st attempt refusal @ 2.5 ft recovery of 1.0 ft

1650 en route to 1020 water Street for core drop off.

1715 arrive @ Dock to unload cores



Scale: 1 square =

11/7/2021
CREW: EA — Affiliated — weather: 41°F Wind: SW 6mph Sunny
M. Renill — A. Izzo
D. Gerke
R. Sandeman

0740 Arrive @ 1020 Water Street
Affiliated arrive set up boat.
0800 Ohio core network not working on devices for RTK corrections. Proceed to set up base station to get a known point for correction accuracy. MR Help with Core processing during down time.
0925 got corrections working, preparing to depart
0935 en route to SC21-SC06
0945 Bathroom stop @ market
1030 arrive @ SC06
1035 spuds down & set up frame
1050 1st attempt barrel must have gotten into some clay, upon retrieval, felt bump in the vibracore head, barrel didn't come up. Barrel found ~3.5-4ft down in sediment. Couldn't retrieve. attempt again
1105 1st attempt refusal @ 4.2 ft recovery of 4.3 ft
1120 1st additional core refusal @ 3.9 ft recovery of 4.3 ft
1130 2nd additional core refusal @ 4.4 ft recovery of 4.6 ft
1140 Additional Core taken for MS/MSD refusal @ 4.8ft recovery of 36 ft
1150 take down frame, spuds up en route to SC21-SC03 for 1-2 additional attempts
1205 After probing around found ~4.0ft probe penetration to attempt for better recovery. set up frame & spud down.
1220 1st attempt 5.0ft push, recovery of 4.6ft — 3 — Total
1225 2nd attempt 5.5ft, hard rejection. recovery of 4.0 ft — 3 — 8.6ft
Both attempts > 70% recovery
1235 eat lunch.
1250 en route to SC21-SC07
1305 arrive @ SC07. making Attempt within 10ft radius 1st. revisited site set up frame & spud down. Probed bottom. all rock.
1315 1st attempt. 1.0ft refusal, no recovery
Shifted position just outside of 10ft radius. Spud, ~1-2ft probe penetration.
1320 2nd attempt refusal @ 6.9ft, recovery of 1.6ft
1330 move position to find better recovery, probe downstream of bridge first.
1335 spud down above bridge, found softer sediments.
1345 3rd Attempt refusal @ 6.0ft recovery 5.9ft
1350 1st additional core 6ft push. recovery 2.9ft
1405 2nd additional Refusal @ 3.9ft recovery of 3.7ft

Scale: 1 square =

11/7/2024

1410 3rd additional core 5ft Rush recovery of 1.6 Ct

1425 Take down frame + pull spuds. en route to Dock for Core Drop off.

1500 arrive @ 1020 Water Street. Core drop off. Affiliated put more core catchers in Liners. MR continue to help with core processing

11/8/2021

CREW: EA — Affiliated — Weather: 45°F WIND: SW 8mph
m. Renik — D. Gerke — Sunny
A. Izzo
R. Sanderlin

0745 Arrive @ 1020 Water Street
AR. Arrive & Set up boat for coring.
0830 Check reference point. en route to SC21-SC09
0905 Arrive @ SC09. had to work around low hanging tree limbs to set on target.
0910 Spud down and set up frame.
0915 1st Attempt refusal @ 2.3 ft recovery of 0 ft
lots of small woody debris and gravel in core catcher
can not get closer to point due to trees in the way.
taking 2nd attempt on opposite bank. Photos
0930 2nd attempt refusal @ 1.3 ft recovery of 1.4 ft
0935 probing halfway between each point up & down stream. to find better recovery material, lots of hard clay & gravel throughout stretch that was probed.
0950 found sufficient spot with ~ 2-3 ft probe penetration
0955 3rd attempt. refusal @ 6.0 ft recovery of 4.3 ft
1000 4th attempt refusal @ 5.0 ft recovery of 2.4 ft
1010 spuds up @ SC09, en route to SC21-SC11
1015 arrive @ SC11 Spud & probe. all hard rock on location
1st Attempt refusal @ 0 ft recovery of 0 ft
hard rejection on 1st attempt, sm gravel in catcher
1030 shifted for 2nd attempt
refusal @ 1.9 ft recovery of 0.9 ft
1040 Shifting to find soft material for >65% recovery
Probed entire downstream stretch until large outfall clearing
all hard substrate + gravel. probed 22.5 ft hard refusal below.
1100 3rd attempt refusal @ 3.4 ft. recovery of 0.9 ft
1120 4th attempt refusal @ 5.0 ft recovery of 3.7 ft
1140 ~~spuds~~ up 5th Attempt 6 ft push recovery of 3.5 ft
spuds up en route to SC21-SC12
1145 arrive @ SC12 spud.
1150 1st Attempt refusal @ 2.1 ft recovery of 2.2 ft.
recovered super dense clay
1155 2nd attempt refusal @ 4.0 ft recovery of 3.4 ft
1200 Lunch Break

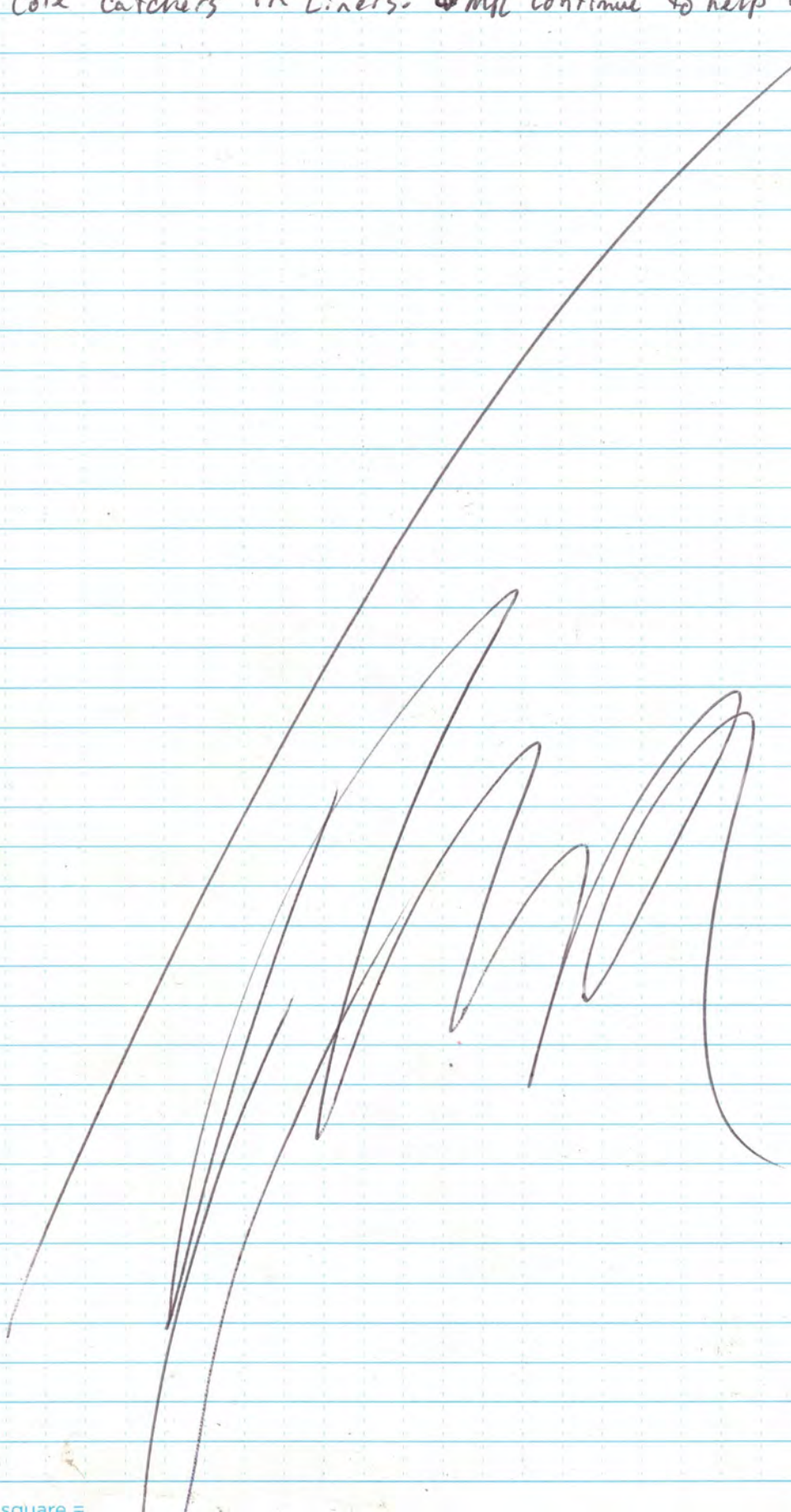
Scale: 1 square = _____

11/7/2024

1410 3rd additional core 5ft Rush recovery of 1.6 Ct

1425 Take down frame + pull spuds. en route to Dock for Core Drop off.

1500 arrive @ 1020 Water Street. core drop off. Affiliated put more core catchers in Liners. @ MR continue to help with core processing



Scale: 1 square =

11/8/2024

1225 en route to SC21-SC13 take down frame to fit under trees.

1240 probed Right descending bank, all hard rock/substrate
Left descending bank found a spot with ~4-5 ft of probe penetration.
set spuds & set up frame on spot to try for >4ft recovery.

1245 1st Attempt 8ft push. recovery of 5.0ft

1255 2nd attempt 6ft push recovery of 3.9ft.

1300 Spuds up. en route to 1020 water st. for core dropoff.
de-mob coring equipment & set up ponar equipment.

1330 arrive @ Dock. unload cores. Prep for Ponars

1430 en route to SC21-MR06 Ponar - FI

1445 arrive & anchor @ MR06 Ponar

1520 anchors up @ MR06 en route to SC21-MREF Ponar

1530 arrive @ MR06 Ponar & Spud.

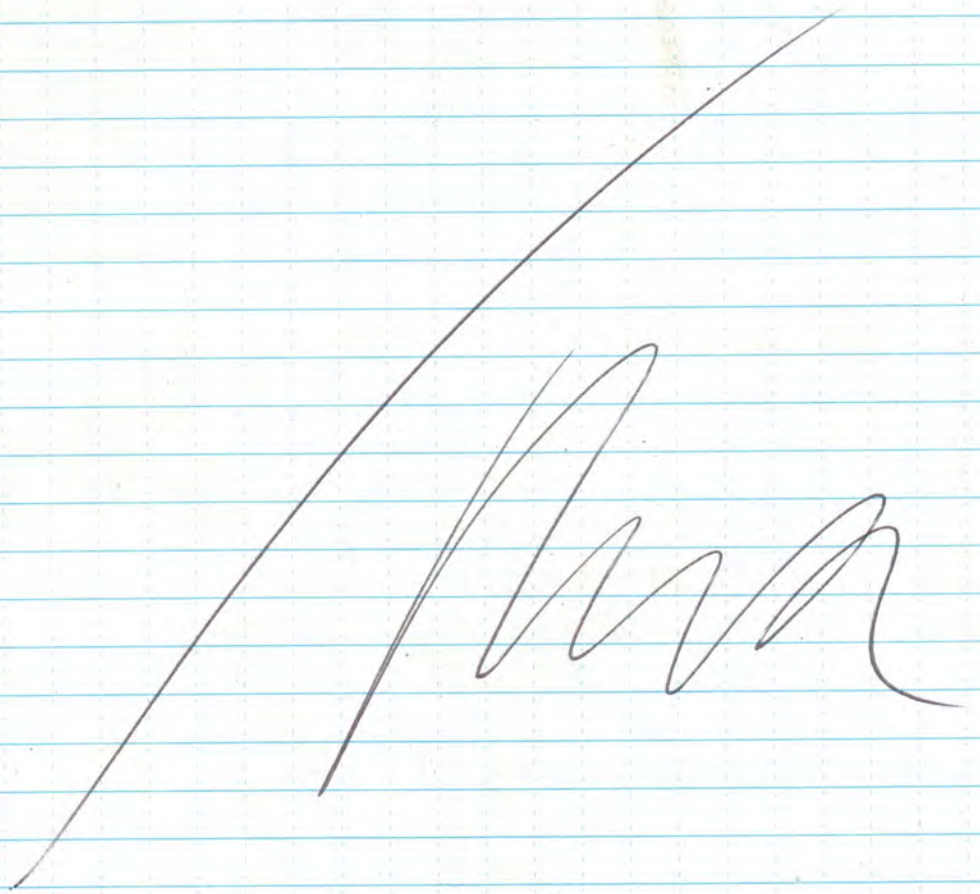
1535 Take ponar samples

1550 En route to SC21-SC33 Ponar

1600 Arrive @ SC33 spud down collect Ponar

1620 En route to 1020 Water Street. sample drop off

1640 Unload Samples into Fridge & check, continue assisting w/ core processing & Sample custody of coolers.



Scale: 1 square =

11/9/2024

CREW: EA — M. Renik
Affiliated — D. Gerke, A. Izzo, R. Sanderlin

Weather: 49°F Wind: 8mph SW Sunny

0745 Arrive @ 1020 water street
AR arrive + Prep boat for Ponar Sampling
EA Crew prep coolers + Labels for ponar collection
0845 check Reference point, en route to SC21-SCREF Ponar
0945 arrive @ SCREF Ponar
1025 en route to SC21-SC01 Ponar
1030 arrive a spud @ SC01 Ponar
1100 En route to SC21-SC05 Ponar
1125 arrive @ SC05 · off set slightly due to overhanging tree on location
1155 Spuds up @ SC05, en route TO SC21-SC11 Ponar
1205 arrive @ SC11 Ponar, spud down
1235 finish SC11, eat lunch.
1245 en route to SC21-SC14 ponar
1250 Arrive @ SC14 ponar
1315 en route to erie market for sample drop off
1320 arrive @ market for sample drop off
1330 en route to SC21-SC18 ponar
1340 arrive @ SC18 Ponar
1410 en route to SC21-SC21 Ponar
1415 arrive @ SC21 Ponar Spud move to opposite bank
1445 en route to SC21-SC27 Ponar
1500 arrive @ SC27 Ponar Spud
1515 en route to SC21-SC30 Ponar
1545 en route to 1020 water Street for Ponar sample Dropoff.
1600 arrive @ 1020 Water Street to unload Samples
1620 Ponar samples unloaded Continue with core processing

Scale: 1 square =

11/10/2021

CREW EA: M. Renik

Affiliated: D. Gerke, R. Sanderlin, A. Izzo

Weather: 41°F Calm wind 2 mph Slight Fog Sunny

0745 Arrive @ 1020 Water Street. Later start 0900 for affiliated so they can check out of Hotel. continue help w/ core processing until AR arrival

0900 affiliated arrive + prep boat for water sampling

1010 en route to SC21-CDF-WAT check reference Point didnt have extra gas for long ride. Needed to get to have extra so dont run out of fuel

1110 arrive @ CDF WAT. Lost GPS, had to re-configure.
N: 740812.146
E: 1713415.286 ~ 4.2 ft water

YSI:	Temp.	DO	Cond.	Sal	PH	ORP	NTU
Bot	13.9	9.91	414.8	0.26	7.82	177.6	38.72
Surf	15.7	9.63	413.4	0.26	7.73	182.0	34.32

1150 en route to SC21-MR-WAT

1230 arrive @ MR-WAT
N: 727935.165
E: 1693118.947 8.3ft Deep

YSI	Temp	DO	Cond	Sal	pH	ORP	NTU
Bottom	9.5	10.65	386.0	0.27	7.85	176.7	38.06
MID	9.5	10.57	385.6	0.27	7.79	180.7	30.36
Surface	9.5	10.56	385.6	0.27	7.77	183.4	30.75

1300 en route to 1020 water Street for water Drop off and supply pick up

1315 arrive @ Dock for supply pickup + Sample Drop off

1330 en route to SC21-SC-WAT

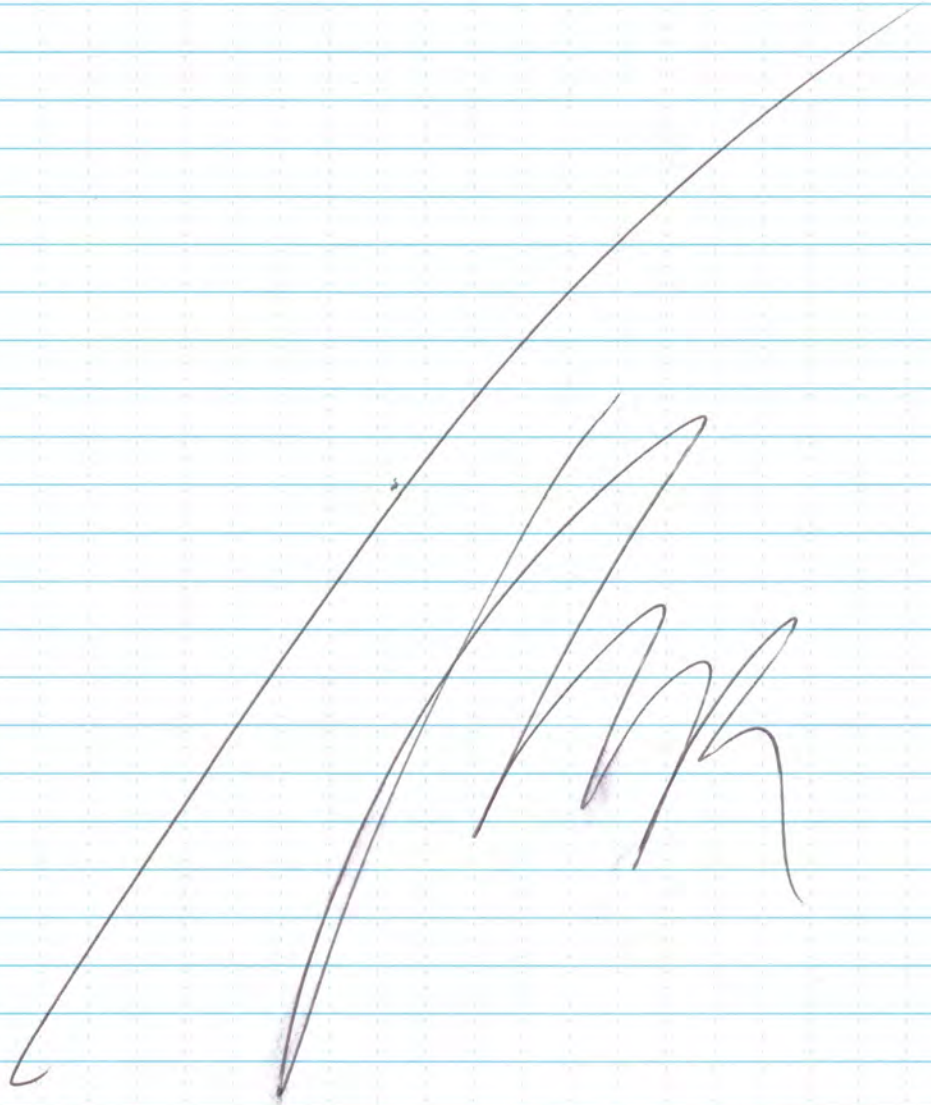
1355 arrive @ SC-WAT. Send. Drop pumps
N: 721171.043
E: 1680344.853 7.9ft Deep

YSI	Temp	DO	Cond	Sal	pH	ORP	NTU
Bottom	9.8	10.57	638	0.45	7.83	214.2	2.63
MID	9.8	10.43	638	0.45	7.80	215.5	2.48
Surface	9.8	10.40	639	0.45	7.79	216.7	2.67

Scale: 1 square = _____

11/10/2021

1430 en route to Zone 4 for ponar collection volume
1435 arrive @ location, take 3gal ponar sample
1445 En route to SC-05 ponar
1455 arrive @ SC-05 ponar. Meet Justin for bucket exchange. unload water.
1525 en route TO 1020 Water Street.
1600 arrive @ 1020 water Street. Unload rest of samples and equipment from AR Boat. Continue on with helping core processing / cooler QC, Pack & Shipping.



Sample Collection Field Logbook

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LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC02d	Sheet 1 of 2

1 Geologist Name/Signature K. Merandi	5 Project Number 1583406	CORE COLLECTION INFO 8 Start Date/Time: 11/5/2021 1215 — Stop Date/Time: 11/9/21 1410	
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 71909.193	9 Sed Surface Elevation: 571.79 ft	
		10 Coordinate System: H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1675482.762	11 Depth of Water, ft (start/end) 1.5	
		12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 6 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
5.7	4.2	74%

16 Location Notes
Color=Red

	Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1	0 - 1.0		V DK GREENISH GREY (10Y 3/1) SILT, SOME CLAY, TR VF SAND (3% SAND, 97% FINES), TR ROOT/TWIGS, SOFT, LOW PL, MUSTY ODOR, SHARP CONTACT	C010		OL
I2	1.0 - 1.2		OLIVE GREY (5Y 4/2) SAND, VF TO F, FEW SILT, (99% SAND, 1% FINES), MED DENSE, COHESIVE, NON-PL, TR MICA, NO DILATENCY, SHARP CONTACT	1020		SP
I3	1.2 - 1.8		(5Y 4/2) SAND, VF TO F, SOME SILT, LITTLE CLAY (55% SAND, 45% FINES), TR LEAVES/WOOD, MED DENSE, NO DILATENCY, COHESIVE, NON-PL, MUSTY ODOR, GRADATIONAL	1020		SM
I4	1.8 - 2.3		DK GREY (5Y 4/1) SAND, VF TO M, LITTLE SILT, TR CLAY (70% SAND, 30% FINES), TR MICA, TR ROOT, MED DENSE TO DENSE, RAPID DILATENCY, GRADATIONAL	1020 2040		SM
I5	2.3 - 2.8		BLUISH BLACK (10B 2.5/1) CLAY, SOME SILT, TR VF SAND (10% SAND, 99% FINES), FEW LEAVES, TWIGS, ROOT, SOFT, LOW-PL, FAINT MUSTY/PETROL. ODOR, BLOCKY STRUCTURE, SHARP CONTACT	2040		OL
I6	2.8 - 2.9		SAME AS I3, SHARP CONTACT	2040		SM
I7	2.9 - 3.0		V DK GREY (N 3/) CLAY, SOME SILT, TR SAND, VF TO M (1% SAND, 99% FINES, V SOFT, MED-PL MUSTY ODOR, SHARP CONTACT	2040		OL
I8	3.0 - 3.2		(5Y 4/2) SAND, VF TO VC, SUBANG TO SUBROUND, Qtz, Mafics, FEW SILT (95% SAND, 5% FINES), TR TWIGS, DENSE, TR MICA, NONCOHESIVE, GRADATIONAL	2040		SW

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC02d	Sheet 2 of 2

1 Geologist Name/Signature K. Merandi	5 Project Number 1583406	CORE COLLECTION INFO 8 Start Date/Time: 11/5/21 1215 — Stop Date/Time: 11/9/21 1410	
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 71909.193	9 Sed Surface Elevation 571.79 ft 10 Coordinate System H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1675482.762	11 Depth of Water, ft (start/end) 1.5	
		12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 6 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
5.7	4.2	74%

16 Location Notes

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I9 3.2 -3.8		VERY DK GREY (5Y 3/1) SAND, VF TO VC; SUBANG TO SUBROUND, QTZ, MAFICS, LITTLE SILT, FEW CLAY, FEW GRAVEL, SM (<9 mm), SUBANG TO SUBROUND (7% GRAVEL, 78% SAND, 15% FINES), TR SHELL, COHESIVE, NON-PL, GRADATIONAL	2040		SW
I10 3.8 -4.2		(5Y 3/1) GRAVEL, SM, (<1 cm), SUBANG TO SUBROUND, LITTLE SAND, TR SILT, LITTLE CLAY (55% GRAVEL, 35% SAND, 10% FINES), MED DENSE TO DENSE, NONCOHESIVE, MUSTY ODOR	2040		GW-GC
		END CORE			
		KM			

EA

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5 Swan Creek Sediment Assessment

Location/Boring Name: SC21-SC03e

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi	5 Project Number: 1583406
2 Drilling Subcontractor/Equipment Operator: Affiliated	6 Latitude/Northing/Grid: 719714.341
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid: 1675748.987

CORE COLLECTION INFO

8 Start Date/Time: 11/7/2021 1220	Stop Date/Time: 11/8/21 0850
9 Sed Surface Elevation: 570.96 ft	
10 Coordinate System: H V	
11 Depth of Water, ft (start/end): 2.2	
12 Weather (Temp, circle conditions, wind direction): (Sunny)/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [x] Core: 05 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: _____ -ft x _____ -ft x ___ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
5.0	4.6	92%

16 Location Notes: Color = green; odor

	Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1	0-0.7		BLACK (N2.5/) SILT, SOME CLAY, TR SAND, VF, (5% SAND, 95% FINES), TR WOOD/ROOT, SLIGHT MUSTY ODOR, V SOFT, LOW-PL (w > LL), GRADATIONAL	0010	0.0	OL
I2	0.7-1.2		V DK GREY (N3/) SILT, FEW CLAY, TR VF SAND, (2% SAND, 98% FINES), MED STIFF, COHESIVE, NON-PL, GRADATIONAL	0010 1020	0.0	OL
I3	1.2-2.2		BLUISH BLACK (10B 2.5/1) CLAY, LITTLE SILT (100% FINES), V SOFT, MED-PL, FAINT, PETROL. ODOR, TR ROOT, BLOCKY STRUCTURE, SHARP CONTACT	1020 2040	0.0	CH
I4	2.2-3.5		DK GREENISH GREY (10Y 4/1) CLAY, SOME SILT (100% FINES), MED STIFF TO STIFF, HI-PL, GRADATIONAL	2040		CH
I5	3.5-4.6		(10Y 4/1) SILT, SOME SAND, VF TO F, SOME CLAY, TR GRAVEL, SM TO LG (< 3.7 cm), SUBROUND, (2% GRAVEL, 25% SAND, 73% FINES), STIFF, MED-PL INT. OF VF-M SAND @ 3.7	2040		ML-CL
			END CORE			
			KM			

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC04	Sheet 1 of 2

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO 8 Start Date/Time	Stop Date/Time
K. Merandi	1583406	11/5/2021 1455	11/8/21 1010
2 Drilling Subcontractor/Equipment Operator	6 Latitude/Northing/Grid	9 Sed Surface Elevation	568.19 ft
Affiliated	719655.775	10 Coordinate System	H V
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid	11 Depth of Water, ft (start/end)	4.8
	1676450.928	12 Weather (Temp, circle conditions, wind direction)	Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: _____ -ft x _____ -ft x _____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
8.0	7.4	93%

16 Location Notes
color = green

	Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1	0-0.4		V DK GREY (N 3/) SAND, VF TOF, SOME SILT, FEW CLAY (75% SAND, 25% FINES), TR ROOT, TR SHELL, DENSE, NO DILATENCY, COHESIVE, NON-PL, GRADATIONAL	0010	0.0	SM
I2	0.4-0.7		DK GREENISH GREY (10Y 4/1) CLAY, FEW SILT (100% FINES), SOFT, HI-PL, GRADATIONAL	0010	0.0	CH
I3	0.7-1.3		(10Y 4/1) SAND, VF, SOME SILT, FEW CLAY (70% SAND, 30% FINES) DENSE, LOW-PL TO NON-PL, SHARP CONTACT	0010 1020	0.0	SM
I4	1.3-3.5		(10Y 4/1) SAND, VF, LITTLE SILT, TR CLAY (60% SAND, 40% FINES), MED STIFF TO STIFF, COHESIVE, NON-PL, GRADATIONAL	1020 2040	0.0	SM-ML
I5	3.5-4.0		(10Y 4/1) SILT, LITTLE CLAY, TR SAND, VF (5% SAND, 95% FINES), SOFT, LOW-MED-PL, TR WOOD/ROOT GRADATIONAL	2040	0.0	ML-CL
I6	4.0-4.2		SAME AS I4, GRADATIONAL	4060	0.0	SM-ML
I7	4.2-4.5		SAME AS I5, GRADATIONAL	4060	0.0	SM-ML
I8	4.5-6.3		SAME AS I4, GRADATIONAL	4060 6080	0.0	ML

EA

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name
EPA Region 5
Swan Creek Sediment Assessment

Location/Boring Name
SC21- SC04

Sheet
2 of 3

1 Geologist Name/Signature
K. Merandi

5 Project Number
1583406

2 Drilling Subcontractor/Equipment Operator
Affiliated

6 Latitude/Northing/Grid
719655.775

3 Operator Name *(License # If Required)*
-

7 Longitude/Easting/Grid
1676450.928

CORE COLLECTION INFO

8 Start Date/Time: 11/5/21 1455
Stop Date/Time: 11/8/21 1010

9 Sed Surface Elevation: 568.19 ft

10 Coordinate System: H V

11 Depth of Water, ft (start/end): 4.8

12 Weather (Temp, circle conditions, wind direction)
(Sunny)/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft): 8.0
14 Recovery (ft): 7.4
15 % Recovery: 93%

16 Location Notes

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
6.3 -7.4		DK GREENISH GREY (10Y 4/1) SILT, SOME CLAY, FRN SAND, VF TO M, TR GRAVEL, SM, (<1.5 cm), SUBANG, (1% GRAVEL, 7% SAND, 92% FINES) STIFF TO MED-STIFF, COHESIVE, LOW-PL W/ AREAS OF HIGHER CLAY/HI-PL, TR WOOD/ROOT	6080	0.0	SM-ML
		END CORE			
		KM			

I9

2 of 2

EA LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5 Swan Creek Sediment Assessment

Location/Boring Name: SC21-SC06C

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

CORE COLLECTION INFO

8 Start Date/Time: 11/7/2021 1130 | Stop Date/Time: 11/8/21 1150

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 719442.160

9 Sed Surface Elevation: 567.14 ft

10 Coordinate System: H V

11 Depth of Water, ft (start/end): 6.0

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1677548.216

12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 6 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
4.4	4.6	100%

16 Location Notes: color = Blue

	Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1	0.-1.2		GRAYISH BROWN (2.5Y 5/2) CLAY with areas of GRAY (7.5YR 5/1), OLIVE (5Y 5/6), WEAK RED (10R 5/3), TR SILT, TR GRAVEL, SM (<3 mm) SUBANG (1% GRAVEL, 99% FINES), MED STIFF TO SOFT, HI-PL, SHARP CONTACT	0010 1020	0.0	CH
I2	1.2 -2.6		GREY (5Y 5/1) CLAY, TR SILT, TR SAND, VF TO M, TR GRAVEL, SM, (<1cm) (1% GRAVEL, 3% SAND, 96% FINES), SOFT TO MED STIFF, HI-PL	1020 2040	0.0	CH
I3	2.6 -2.9		(5Y 5/1) CLAY, LITTLE SAND, VF TO C, LITTLE GRAVEL, SM TO LG (<4.6 cm), SUBANG TO SUBROUND, (10% GRAVEL, 10% SAND, 80% FINES), HI-PL	2040	0.0	CH
I4	2.9 - 4.6		SAME AS I2 EXCEPT NO SILT, TR MICA, STIFF TO V STIFF	2040	0.0	CH
			END CORE			
			KM			

EA

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5, Swan Creek Sediment Assessment

Location/Boring Name: SC21- SC07e

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 720131.489

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1678165.814

CORE COLLECTION INFO

8 Start Date/Time: 11/7/2021 1340 | Stop Date/Time: 11/10/21 0930

9 Sed Surface Elevation: 566.29 ft

10 Coordinate System: H V

11 Depth of Water, ft (start/end): 6.7

12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft): 6.0

14 Recovery (ft): 5.9

15 % Recovery: 98%

16 Location Notes: Color = Blue

	Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1	0 – 0.4		BLACK (N2.5/) CLAY, SOME SILT, FEW SAND, VF TO C, SUBANG TO SUBROUND (15% SAND, 85% FINES), TR ROOT/WOOD FRAGS, V SOFT, LOW-PL (W>LL), COBBLE @ BASE, SHARP CONTACT PETROL. ODOR	G010	0.0	OL
I2	0.4 – 4.9		OLIVE GREY (5Y5/2) CLAY, FEW SILT, TR VF TO M SAND (2% SAND, 98% FINES), SM SAND TO GRAVEL SIZED PIECES OF CLAY, SOFT, HI-PL, SAND UP TO VC @ BASE, SHARP CONTACT	0010 1020 20MO+FD 4060	0.0	CH
I3	4.9 – 5.2		(N2.5/) SAND, VF TO C, SUBANG TO SUBROUND, QTZ, SOME SILT, LITTLE CLAY, LOOSE, COHESIVE, NON-PL, MUSTY ODOR (55% SAND, 45% FINES), GRADATIONAL	4060	0.0	SM
I4	5.2 – 5.7		SAME AS I2	4060	0.0	CH
			END CORE			
			KM			

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21-SC08	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO
K. Merandi	1583406	8 Start Date/Time: 11/2/2021 1040 — Stop Date/Time: 10/3/21 1615
2 Drilling Subcontractor/Equipment Operator: Affiliated	6 Latitude/Northing/Grid: 720744.112	9 Sed Surface Elevation: 2.9 ft
		10 Coordinate System: H V
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid: 1678204.838	11 Depth of Water, ft (start/end): 6.7
		12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
2.0	1.7	85%

16 Location Notes: Color - Brown

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
0 - 1.7		DK GREY (2.5Y 4/1) CLAY, TR SILT, TR VC SAND, SUBROUND (1% SAND, 99% FINES), VERY STIFF, HI-PL, TR MICA,	0010	0.0	CH
		END CORE			

I2

IM

EA — LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5, Swan Creek Sediment Assessment

Location/Boring Name: SC21- SC09~~SMd~~

Sheet: 1 of 2

1 Geologist Name/Signature	K. Merandi
2 Drilling Subcontractor/Equipment Operator	Affiliated
3 Operator Name *(License # If Required)*	
5 Project Number	1583406
6 Latitude/Northing/Grid	721014.095 ~~721016.063~~
7 Longitude/Easting/Grid	1678072.253 ~~1678053.623~~

CORE COLLECTION INFO

8 Start Date/Time	11/8/2021 0955 ~~0933~~
Stop Date/Time	11/9/21 1610
9 Sed Surface Elevation	~~568.07~~ 568.69 ft
10 Coordinate System	H V
11 Depth of Water, ft (start/end)	~~4.4~~ 4.3
12 Weather (Temp, circle conditions, wind direction)	Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [x] Core: 6 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: _____ -ft x _____ -ft x _____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
~~6.0~~	~~4.4~~ 4.3	72%

16 Location Notes: Color: Brown

Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1 0.0 -0.6		V DK GREY (5Y 3/1) CLAY, SOME SILT, ~~FEW~~ SAND, VF (10% SAND, 90% FINES), V SOFT, LOW-PL (w)LL TR ROOT / LEAVES, MUSTY / SLIGHTLY PETROL. ODOR, GRADATIONAL,	0010	0.0	OL
I2 0.6 -2.1		DK GREY (5Y 4/1) CLAY, TR SILT (100% FINES), SILTIER INTERVAL @ 1.6 ft, V SOFT, MED TO HI-PL, PETROL. ODOR, GRADATIONAL	0010 1020 2040	0.0	OH
I3 2.1 -2.3		~~BLACK~~ (5Y 2.5/1) SILT, SOME CLAY (100% FINES), V SOFT, MED-PL PETROL. ODOR. SHARP CONTACT	2040	0.0	OL
I4 2.3 -2.4		OLIVE GREY (5Y 4/2) SAND, VF TO F, SOME SILT, LITTLE CLAY (60% SAND, 40% ~~FINES~~), LOOSE, COHESIVE, NON-PL (w > LL), GRADATIONAL	2040	0.0	SM
I5 2.4 -2.8		(5Y 4/2) SILT, SOME CLAY, TR SAND, VF TO F, (95% FINES, 5% SAND), V SOFT, MED-PL, BRICK FRAGS, WOOD FRAGS @ BASE, STRONG PETROL. ODOR, SHARP CONTACT	2040	0.0	OL
I6 2.8 -3.3		(5Y 2.5/1) SAND, VF TO VC, SUBANG TO SUBROUND, QTZ, Mafics, LITTLE GRAVEL, SM TO LG (<3cm), SUBANG TO SUBROUND, FEW SILT, FEW CLAY (~~20~~% GRAVEL, ~~70~~% SAND, ~~10~~% FINES), DENSE, NONCOHESIVE, SLIGHT PETROL. ODOR, GRADATION	2040	0.0	SW-SM
I7 3.3 -3.6		(5Y 4/2) CLAY, SOME SILT (100% FINES), MED STIFF, HI-PL, TR ROOT. MUSTY ODOR, SHARP CONTACT	2040	0.0	OH
I8 3.6 -4.0		(5Y 4/2) SAND, VF TO VC, SUBANG TO ROUND, SOME GRAVEL, LITTLE SILT, LITTLE CLAY (25% GRAVEL, 60% SAND, 15% FINES), DENSE, NONCOHESIVE GRAVEL = SM TO LG (<3.5 cm), MUSTY ODOR, SHARP CONTACT	2040	0.0	SW-SC

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21-SC09d	Sheet 1 of 1

1 Geologist Name/Signature K. Merandi	5 Project Number 1583406	CORE COLLECTION INFO 8 Start Date/Time: 11/8/21 0955 — Stop Date/Time: 11/9/21 1610	
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 721014.095	9 Sed Surface Elevation: 568.69 ft	
		10 Coordinate System: H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1678072.253	11 Depth of Water, ft (start/end) 4 3	
		12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- ☐ Rotosonic: ____ -ft barrel ____ -in diameter
- ☒ Core: 6 -ft barrel 3 -in diameter Manual Push/Vibracore
- ☐ Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- ☐ Other:
- ☐ Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
6.0	4.3	72%

16 Location Notes

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
4.0 -4.3		(5Y 4/2) SAND, VF TO VC, SUBANG TO SUBROUND, TR SILT, TR CLAY (95% SAND, 5% FINES), TR SHELL, DENSE, NONCOHESIVE		0.0	SW
		END CORE			
		KM			

I9

2 of 2

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name
EPA Region 5
Swan Creek Sediment Assessment

Location/Boring Name
SC21- SC10

Sheet
1 of 1

1 Geologist Name/Signature
K. Merandi

5 Project Number
1583406

CORE COLLECTION INFO

8 **Start Date/Time** 11/4/2021 0930
Stop Date/Time 11/5/21 1140

2 Drilling Subcontractor/Equipment Operator
Affiliated

6 Latitude/Northing/Grid
721427.997

9 Sed Surface Elevation 563.79 ft

10 Coordinate System H V

11 Depth of Water, ft (start/end)
7.3

3 Operator Name *(License # If Required)*

7 Longitude/Easting/Grid
1677885.164

12 Weather (Temp, circle conditions, wind direction)
Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ___ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
1.2	1.7	100%

16 Location Notes
Color: Brown
All clay

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1 0 – 1.7		DK GREY (5Y 4/1) CLAY, TR GRAVEL, SM (<2mm), SUBROUND, TR SAND, VF TOM, TR SILT (1% GRAVEL, 1% SAND), V STIFF, HI-PL, TR SHELL	0010	0.0	CH
		END CORE			
		KM			

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC11e	Sheet 1 of 1

1 Geologist Name/Signature K. Merandi	5 Project Number 1583406	CORE COLLECTION INFO 8 Start Date Time: 11/8/2021 1120	Stop Date/Time: 11/10/21 1045
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 721860.222	9 Sed Surface Elevation: 569.85 ft	
		10 Coordinate System: H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1677972.675	11 Depth of Water, ft (start/end) 3.3	
		12 Weather (Temp, circle conditions, wind direction) (Sunny)/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- Rotosonic: ____ -ft barrel ____ -in diameter
- x Core: 5 -ft barrel 3 -in diameter Manual Push/Vibracore
- Grab Sample: ____ -ft x ____ -ft x ___ -ft Box/Ponar/Van Veen/Other
- Other:
- Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
5.0	3.7	74%

16 Location Notes
Color = Brown

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1 0 – 0.8		V DK GREY (5Y 3/1) CLAY, SOME SILT, FEW SAND, VF TO FINE (10% SAND, 90% FINES), LEAVES/TWIGS ROOTS, V SOFT, LOW-PL (w > LL), SHARP CONTACT MUSTY ODOR	0010+FD	0.0	OL
I2 0.8 -0.9		BLACK (N2.5/) SAND, VF TO M, TR SILT, FEW CLAY (60% SAND, 40% FINES). LOOSE, COHESIVE, NON-PL, GRADATIONAL	0010+FD	0.0	SM
I3 0.9 -1.3		SAME AS I2, SHARP CONTACT	0010+FD 1020	0.0	OL
I4 1.3- 1.6		OLIVE GREY (5Y 4/2) SAND, VF TO C, SUBANG TO ROUND, Qtz. LOOSE, TR SILT (97% SAND, 3% FINES), COHESIVE, NON-PL, GRADATIONAL TR SHELL	1020	0.0	SW
I5 1.6 -2.0		BLACK (5Y 2.5/1) SAND, VF TO VC, SUBANG TO ROUND, Qtz, FEW GRAVEL, SM TO LG (<2.5 cm), SUBANG, TR SILT, TR CLAY (6% GRAVEL, 84% SAND, 10% FINES), MED DENSE, NONCOHESIVE, SHARP CONTACT	1020	0.0	SW
I6 2.0 -3.7		OLIVE GREY (5Y 4/2) SILT, SOME CLAY, TR VF SAND (2% SAND, 98% FINES), MED STIFF TO SOFT, TR SHELL, TR WOOD, INT. OF VF TO F SAND @ 2.4-3.0 ft, MUSTY ODOR	2040	0.0	ML
		END CORE			
		KM			

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC125	Sheet 1 of 1

1 Geologist Name/Signature K. Merandi	5 Project Number 1583406	CORE COLLECTION INFO 8 Start Date/Time: 11/8/2021 1155 — Stop Date/Time: 11/11/21 0800	
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 721816.966	9 Sed Surface Elevation: 565.25 ft 10 Coordinate System: H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1678225.387	11 Depth of Water, ft (start/end): 7.9 12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 6 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ___ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
4.0	3.4	85%

16 Location Notes

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
0 – 3.4		DK. GREY (5Y 4/1) CLAY, TR SILT, TR GRAVEL, SM, (<2.5cm), SUBANG (1% GRAVEL, 99% FINES), STIFF, HI-PL	0010 1020 2040 + MS/MSD	0.0	CH
		END CORE			
		KM			

I1

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC13f	Sheet 1 of 1

1 Geologist Name/Signature K. Merandi	5 Project Number 1583406	CORE COLLECTION INFO 8 Start Date/Time: 11/8/2021 1255 — Stop Date/Time: 11/9/21 1150	
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 721082.562	9 Sed Surface Elevation: 571.44 ft	
		10 Coordinate System: H V	
		11 Depth of Water, ft (start/end): 1.6	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1679177.171	12 Weather (Temp, circle conditions, wind direction) (Sunny)/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 6 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
6.0	3.9	65%

16 Location Notes

	Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1	0 - 0.5		OLIVE GREY (5Y 4/2) & GREENISH BLACK (10Y 2.5/1) SILT, SOME CLAY, FEW SAND, VF TO F (7% SAND, 93% FINES, VERY SOFT, NON-PL, MUSTY/SLIGHLY PETROL ODOR, LEAVES & TWIGS, GRADATIONAL	0010	0.0	ML -OL
I2	0.5 -0.7		DK OLIVE GREY (5Y 3/2) SAND, VF TO F SOME SILT, FEW CLAY, COHESIVE, NON-PL, MUSTY ODOR (60% SAND, 40% FINES) (w>LL). WOODY/ROOT INTERVAL @ BASE, SHARP CONTACT	0010	0.0	SM
I3	0.7 -1.6		(5Y 4/2) CLAY, FEW SILT, TR SAND, VF TO F, (1% SAND, 99% FINES), TR WOOD/LEAVES, V SOFT, LOW-MED-PL (w>LL), MUSTY ODOR, LAYER LEAVES @ BASE	0010 1020	0.0	OL
I4	1.6 -2.2		SAME AS I1, EXCEPT DK GREY (5Y 4/1), NO PETROL. ODOR, GRADATIONAL	1020 2040+MS/MSD	0.0	ML -OL
I5	2.2 - 3.0		DK GREY (5Y 4/1) CLAY, TR SILT (100% FINES), V SOFT, MED-PL, PETROL. ODOR, GRADATIONAL	2040+MS/MSD	0.0	OL -OH
I6	3.0 -3.9		SAME AS I6, EXCEPT V DK GREY (5Y 3/1), TR VF TO F SAND (FINING UPWARD (5% SAND, 95% SAND), TR ROOT, HI-PL	2040+MS/MSD	0.0	OH
			END CORE			
			KM			

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC15e	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO
K. Merandi	1583406	8 Start Date/Time: 11/6/2021 1610 — Stop Date/Time: 11/7/21 1140
2 Drilling Subcontractor/Equipment Operator: Affiliated	6 Latitude/Northing/Grid: 721145.649	9 Sed Surface Elevation: 569.71 ft
		10 Coordinate System: H V
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid: 1679268.861	11 Depth of Water, ft (start/end): 3.3
		12 Weather (Temp, circle conditions, wind direction): (Sunny)/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 6 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
6.0	4.2	70%

16 Location Notes: Color = maroon

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1 0-2.5		MIXTURE OF DK GREY (5Y 4/1) CLAY, SOME SILT, TR SAND, VF, (2% SAND, 98% FINES) AND V DARK GREY (N 3/) SILT, SOME CLAY, TR SAND, VF (1% SAND, 99% FINES), TOGETHER TR WOOD FRAGS, V SOFT, MED TO HI-PL, PETROL. ODOR, SHARP CONTACT, BLOCKY STRUCTURE	0010 1020 2040	0.0	OL-OH
I2 2.5-2.9		BLUISH BLACK (5PB 2.5/1) CLAY, LITTLE SILT, TR SAND, VF TO F (5% SAND, 95% FINES), WOOD FRAGS, V SOFT, MED-PL, PETROL. ODOR	2040	0.0	OL
I3 2.9-3.0		(5PB 2.5/1) SAND, VF TO M, SUBROUND TO ROUND, QTZ, FEW SILT, FEW CLAY, (80% SAND, 20% FINES), LOOSE, TR MICA, COHESIVE, NON-PL, SHARP CONTACT NO DILATENCY	2040	0.0	SP
I4 3.0-4.2		SAME AS I2	2040	0.0	OL
		END CORE			
		KM			

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC16C	Sheet 1 of 2

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO
K. Merandi	1583406	8 Start Date/Time: 11/5/2021 1635 — Stop Date/Time: 11/7/21 1345
2 Drilling Subcontractor/Equipment Operator: Affiliated	6 Latitude/Northing/Grid: 721002.859	9 Sed Surface Elevation: 564.33 ft
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid: 1680168.359	10 Coordinate System: H V 11 Depth of Water, ft (start/end): 8.7 12 Weather (Temp, circle conditions, wind direction): (Sunny)/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: _____ -ft x _____ -ft x _____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
8.0	6.4	84%

16 Location Notes: Color = Red

	Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1	0 – 0.7		V DK GREY (N 3/) CLAY, FEW SILT (100% FINES), TR ROOT/WOOD FRAGS, FAINT PETROL ODOR, VERY SOFT, MED-PL (w>LL), GRADATIONAL	0010	0.0	OL -OH
I2	0.7 -0.9		(N 3/) SILT, LITTLE CLAY, TR SAND, VF TO F TR GRAVEL, LG, (<2 cm), SUBANG (1% GRAVEL, 3% SAND, 96% FINES), SOFT, COHESIVE, NON-PL FAINT PETROL. ODOR, TR WOOD/ROOT, SHARP CONTACT	0010	0.0	OL
I3	0.9 -1.1		SAME AS I2 EXCEPT NO GRAVEL, FEW CLAY (3% SAND, 97% FINES, SHARP CONTACT	0010 1020	0.0	OL
I4	1.1 -1.4		SAME AS I1, SHARP CONTACT	1020	0.0	OL -OH
I5	1.4 -1.7		V DK GREY (5Y 3/1) SAND, VF TO VC, SUBANG TO ROUND, QTZ, MAFICS, TR SILT, TR CLAY (98% SAND, 2% FINES), MED DENSE, NONCOHESIVE, SHARP CONTACT NO DILATENCY	1020	0.0	SW
I6	1.7 -2.1		SAME AS I1, SHARP CONTACT	1020 2040	0.0	OL -OH
I7	2.1 -2.4		(5Y 3/1) SAND, VF TO F, SOME SILT, FEW CLAY (70% SAND, 30% FINES), DENSE, COHESIVE, NON-PL, NO DILATENCY, GRADATIONAL	2040	0.0	SM
I8	2.4 -2.7		(5Y 3/1) GRAVEL, SM TO LG, (<2.7 cm), SUBANG TO SUBROUND, SOME CLAY, LITTLE SAND, VF TO C, TR SILT (50% GRAVEL, 15% SAND, 35% FINES), LOOSE, NONCOHESIVE, GRADATIONAL	2040	0.0	GM

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21-SC16C	Sheet 2 of 2

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO	
K. Merandi	1583406	8 Start Date/Time 11/5/21 1635	Stop Date/Time 11/7/21 1345
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 721002.859	9 Sed Surface Elevation 564.33 ft	
		10 Coordinate System H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1680168.359	11 Depth of Water, ft (start/end) 8.7	
		12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
8.0	6.4	84%

16 Location Notes

	Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I9	2.7 -3.2		(5Y 3/1) SILT, SOME SAND, LITTLE CLAY (40% SAND, 60% FINES), SLOW DILATENCY, VF TOF, DENSE, COHESIVE, NON-PL, SHARP CONTACT, TR WOOD, TR SHELL	2040	0.0	ML
I10	3.2 -3.6		SAME AS I1, EXCEPT NO WOOD/ROOTS, HI-PL	2040	0.0	CH
I11	3.6 -3.9		SAME AS I9	2040	0.0	ML
I12	3.9 -5.0		SAME AS I10, INTERVAL (<0.1ft) of I9 @ 4.3	2040 4060	0.0	CH
I13	5.0 -5.2		SAME AS I9	4060	0.0	ML
I14	5.2 -6.4		SAME AS I10	4060	0.0	CH
			END CORE			
			KM			

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC17	Sheet 1 of 2

1 Geologist Name/Signature K. Merandi	5 Project Number 1583406	**CORE COLLECTION INFO** 8 Start Date/Time: 11/4/2021 1310	Stop Date/Time: 11/10/21 1320
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 721362.853	9 Sed Surface Elevation: 565.14 ft	
		10 Coordinate System: H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1680506.715	11 Depth of Water, ft (start/end) 7.8	
		12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 5 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
8.0	7.4	93%

16 Location Notes
Color = Red

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1 0 - 0.5		DK GREY (2.5Y 4/1) SILT, SOME CLAY, TR SAND, VF TO FINE (5% SAND, 95% FINES), V SOFT, LOW-PL (w>LL), ROOTS/TWIGS @ BASE, SHARP CONTACT, MUSTY/SLIGHTLY PETROL. ODOR	0010	0.0	OL
I2 0.5 - 0.6		DK GREY (N4/) SAND, VF TO M, SUBROUND TO ROUND LITTLE SILT, TR CLAY, (80% SAND, 20% FINES), LOOSE, COHESIVE, NON-PL, TR SHELL, NO DILATENCY, SHARP CONTACT, MUSTY ODOR	0010	0.0	SP-SM
I3 0.6 - 1.1		(N4/) CLAY, SOME SILT (100% FINES), V SOFT, MED-PL (w>LL), PETROL. ODOR, SHARP CONTACT	0010 1020	0.0	CL
I4 1.1 - 1.3		BLACK (N 2.5/) CLAY, FEW SILT, TR SAND, VF TO VC, TR SM GRAVEL/SLAG, (<2.5mm), ANG, V SOFT, NON-PL TO LOW-PL (w>LL), STRONG PETROL-ODOR, SHARP CONTACT	1020	0.0	OL
I5 1.3 - 1.5		BLACK (5Y 2.5/1) SAND, VF TO VC, SUBANG TO SUBROUND, TR SM GRAVEL (3% GRAVEL, 82% SAND, 15% FINES), MED DENSE, NONCOHESIVE, SHARP CONTACT.	1020	0.0	SW-SM
I6 1.5 - 1.8		BLUISH BLACK (10B 2.5/1) CLAY, LITTLE SILT, FEW VF SAND (3% SAND, 97% FINES), V SOFT, MED-PL PETROL. ODOR, SHARP CONTACT	1020	0.0	OL-OH
I7 1.8 - 2.4		(2.5Y 4/1) CLAY, SOME SILT, FEW VF TO F SAND (7% SAND, 93% FINES), V SOFT, MED TO HI-PL, FAINT MUSTY/PETROL ODOR. SANDIER INT.S @ 2.1, 2.3 ft, SHARP CONTACT	1020 2040+MS/MSD	0.0	OH
I8 2.4 - 2.5		SAME AS I2, SHARP CONTACT	2040+MS/MSD	0.0	SP-SM

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC17	Sheet 2 of 2

1 Geologist Name/Signature K. Merandi	5 Project Number 1583406	CORE COLLECTION INFO 8 Start Date/Time: 11/3/21 1310	Stop Date/Time: 11/10/21 1320
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 721362.853	9 Sed Surface Elevation 565.14 ft	
		10 Coordinate System H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1680506.715	11 Depth of Water, ft (start/end) 7.8	
		12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- Rotosonic: ____ -ft barrel ____ -in diameter
- x Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- Grab Sample: ____ -ft x ____ -ft x ___ -ft Box/Ponar/Van Veen/Other
- Other:
- Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
8.0	7.4	93%

16 Location Notes

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I9 2.5 -3.4		SAME AS I3, EXCEPT FEW SILT + DK GREY (5Y 4/1)	2040+MS/MSD	0.0	CL
I10 3.4 -3.6		DK GREY (5Y 4/1) SAND, VF TO VC, SUBANG TO ROUND, QTZ, TR GRAVEL, SM (<2.5 mm) (2% GRAV., 90% SAND, 7% FINES), TR SHELL, MED DENSE, NONCOHESIVE, SHARP CONTACT	2040+MS/MSD	0.0	SW
I11 3.6 -6.8		SAME AS I9, HI-PL, WITH SILTY INTERVALS @ 4.4, 5.0, 5.4 fts, GRADATIONAL	2040+MS/MSD 4060 6080	0.0	CH
I12 6.8 -7.4		(5Y 4/1) SAND, VF TO F, SOME SILT, LITTLE CLAY (55% SAND, 45% FINES), DENSE, COHESIVE, LOW-PL	6080	0.0	SP-SM
		END CORE			
		KM			

2 of 2

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC19	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO 8 Start Date/Time	Stop Date/Time
K. Merandi	1583406	11/4/2021 1035	11/5/21 1345
2 Drilling Subcontractor/Equipment Operator	6 Latitude/Northing/Grid	9 Sed Surface Elevation 563.77 ft	
Affiliated	721765.847	10 Coordinate System H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid	11 Depth of Water, ft (start/end) 9.2	
	1681254.504	12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
7.2	5.2	72%

16 Location Notes
Color = Red

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1 0 - 0.4		BLACK (N 2.5/) GRAVEL, SM TO LG, (< 3cm), ANG TO SUB ANG, LITTLE SAND, VF TO VC, SUB ANG TO SUB ROUND, FEW CLAY, TR SILT (60% GRAVEL, 15% SAND, 25% FINES), DENSE, NONCOHESIVE, MUSTY ODOR, GRADATIONAL, TR SHELL	0010	0.0	GC
I2 0.4 - 0.5		(N 2.5/) SAND, VF TO VC, SOME CLAY, TR SILT (~~75%~~ SAND, 25% FINES), LOOSE, NONCOHESIVE SHARP CONTACT, ~~BLIGHT~~ PETROL ODOR	0010	0.0	SW
I3 0.5 - 0.6		(N 2.5/) CLAY, TR SAND, VF TO FINE (95% FINES, 5% SAND), V SOFT, MED-PL (w>LL), PETROL, ODOR, SHARP CONTACT	0010	0.0	OL -OH
I4 0.6 - 1.7		DK GREY (N 4/) CLAY, TR SILT, TR SAND, VF TO F, V SOFT, MED-PL, FAINT MUSTY ODOR (2% SAND, 98% FINES), GRADATIONAL	0010 1020	0.0	CH
I5 1.7 - 3.7		SAME AS I4, EXCEPT ~~HIGHER~~ SILT (LITTLE) HIGHER SAND, W/ TR SHELL, TR ROOT/PLANT MATERIAL, SHARP CONTACT,	1020 2040	0.0	OH
I6 3.7 - 5.2		SAME AS I3	2040 4060	0.0	CH
		END CORE			
		KM			

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5 / Swan Creek Sediment Assessment

Location/Boring Name: SC21-SC206

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 721753.273

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1681590.077

CORE COLLECTION INFO

8 Start Date/Time: 11/4/2021 1220 | Stop Date/Time: 11/5/21 1030

9 Sed Surface Elevation: 554.45 ft

10 Coordinate System: H V

11 Depth of Water, ft (start/end): 18.5

12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft): 1.9

14 Recovery (ft): 2.1

15 % Recovery: ~100%

16 Location Notes: Color = Red mostly clay, gravel mixed in.

Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
0 – 2.1		DK GREY (5Y 4/1) CLAY, TR SILT, TR GRAVEL, SM, SUBROUND (<7mm), V STIFF, HI-PL	0010 1020	0.0	CH
		END CORE			
		KM			

I1

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- 21d	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO	
K. Merandi	1583406	8 Start Date/Time: 11/4/2021 1130	Stop Date/Time: 11/5/2 0845
2 Drilling Subcontractor/Equipment Operator: Affiliated	6 Latitude/Northing/Grid: 72.1555.622	9 Sed Surface Elevation: 568.01 ft	
		10 Coordinate System: H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid: 1681974.307	11 Depth of Water, ft (start/end): 5.0	
		12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: _____ -ft x _____ -ft x _____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
5.4	4.3	80%

16 Location Notes: Color = Red Noticable odor
additional core for MS/MSD

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1 0 - 0.2	TO SUBANG,	BLACK (N2.5/) GRAVEL, LG, (<5.5cm) TO SM, ANG SOME CLAY, FEW SAND, VF TO VC, FEW SILT (50% GRAVEL, 15% SAND, 35% FINES, LOOSE, COHESIVE, NON-GRAVEL PORTIONS=MED-PL, PETROL. ODOR SHARP CONTACT	0010	0.0	GM GC
I2 0.2 -1.3		GREENISH BLACK (10Y 2.5/1) CLAY, LITTLE SILT (100% FINES), V SOFT, MED-PL, PETROL. ODOR, SHARP CONTACT [illegible] NO VF TOF	0010 1020	0.0	OL -OH
I3 1.3 -1.5		(10Y 2.5/1) SAND, SOME SILT (55% SAND, 45% FINES), TR CLAY, MED DENSE, COHESIVE, NON-PL NO DILATENCY, TR MICA, SLIGHT MUSTY ODOR, SHARP CONTACT	1020	0.0	SP
I4 1.5 -2.2		SAME AS I2, EXCEPT WITH SILTIER INTERVAL @ 1.8, SHARP CONTACT	1020 2040+MS/MSD	0.0	OL -OH
I5 2.2 -2.9		BLUISH BLACK (10PB 2.5/1) CLAY, LITTLE SILT, FEW SAND, VF TOF (15% SAND, 85% FINES), SOFT, MI-PL, BLOCKY STRUCTURE, MUSTY ODOR SHARP CONTACT	2040+MS/MSD	0.0	OH
I6 2.9 -3.1		(10Y 2.5/1) SAND, VF TO C, SUBROUND TO ROUND, TR SILT, FEW CLAY (75% SAND, 25% FINES), DENSE, NONCOHESIVE, NO DILATENCY, SHARP CONTACT TR SHELL	2040+MS/MSD	0.0	SW
I7 3.1 -4.3		SAME AS I5, WITH SILTIER INTERVAL @ 3.3	2040+MS/MSD	0.0	OH
		END CORE KM			

EA — LITHOLOGIC LOG — *Sediment Collection Log* — *EA Engineering, Science, and Technology, Inc. PBC*

Client Name and Project Name: EPA Region 5 — Swan Creek Sediment Assessment

Location/Boring Name: SC21- SC22

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 721344.641

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1682480.599

CORE COLLECTION INFO

8 Start Date/Time: 11/3/2021 1615 — Stop Date/Time: 11/4/21 1035

9 Sed Surface Elevation: 563.00 ft

10 Coordinate System: H V

11 Depth of Water, ft (start/end): 10.0

12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft): 3.6 — 14 Recovery (ft): 2.9 — 15 % Recovery: 81%

16 Location Notes: Color = Red

	Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1	0 – 0.5		V DK GREY (N 3/) CLAY, TR SILT, TR F SAND (2% SAND, 98% FINES), FEW WOOD FRAGS, MED-PL (W>LL), FAINT MUSTY ODOR, SHARP CONTACT	0010	0.0	CH
I2	0.5 -0.9		DK GREY (5Y 4/1) CLAY, LITTLE SILT, TR VF SAND (1% SAND, 99% FINES), 1% GRAVEL - GRAVEL ANGULAR (<5mm), SOFT, HI-PL (W>LL), FAINT SWEET/MUSTY ODOR, SHARP CONTACT	0010	0.0	OH
I3	0.9 -1.1		SAME AS I2, EXCEPT FEW VF TO C SAND, SUB-ANG TO SUB ROUND, Qtz, FEW SM TO LG GRAV., ANG TO SUB ANG (< 2cm) (10% GRAVEL, 10% SAND, 80% FINES), TR BRICK FRAGS + WOODY DEBRIS, SHARP CONTACT	0010 1020	0.0	OH
I4	1.1 -1.3		V DK GREENISH GREY (10Y 3/1) SILT, FEW SAND, VF TO F, (15% SAND, 85% FINES), FINING UP., TR SHELL, COHESIVE, NON-PL NO DILATENCY, SHARP CONTACT	1020	0.0	ML
I5	1.3 -1.8		GREENISH GREY (10 Y 5/1) CLAY, TR SILT (100% FINES), MED STIFF, HI-PL, GRADATIONAL	1020	0.0	CH
I6	1.8 -2.2		V DK GREYISH BROWN (2.5Y 3/2) SILT, SOME SAND, VF TO F, TR CLAY (45% SAND, 55% FINES), TR WOOD FRAGS, TR SHELL, TR MICA, LOOSE/SOFT, COHESIVE, NON-PL	1020 2040	0.0	ML
I7	2.2 -2.9		DK GREY (2.5Y 4/1) SAND, VF TO VC, SUBROUND TO ROUND, SOME CLAY, TR SILT, FEW GRAVEL, SM, (<1.5 cm), SUB ANG TO SUBROUND, MED LOOSE, COHESIVE, NON-PL TO LOW-PL (15% GRAV, 55% SAND, 30% FINES)	2040	0.0	SC
			END CORE KM			

EA — LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5, Swan Creek Sediment Assessment

Location/Boring Name: SC21- ~~SC23~~ C

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 721739.817

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1683045.229

CORE COLLECTION INFO

8 Start Date/Time: 11/3/2021 1540 | Stop Date/Time: 11/5/21 1550

9 Sed Surface Elevation: 567.99 ft

10 Coordinate System: H V

11 Depth of Water, ft (start/end): 5-0

12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
4.7	3.7	79%

16 Location Notes: Color = Purple

	Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1	0-1.4		BLACK (N2.5/) CLAY, SOME SILT, TR SAND, VF TO F (3% SAND, 97% FINES), ~~FEW~~ WOOD/ROOT, V SOFT, MED-PL (w>LL), BLOCKY STRUCTURE FAINT SWEET/PETROL. ODOR, SHARP CONTACT	0010 1020	0.0	OL -OH
I2	1.4 -1.6		OLIVE GREY (5Y 5/2) CLAY, TR SILT (100% FINES), V SOFT, HI-PL, MUSTY ODOR, SHARP CONTACT	1020	0.0	CH
I3	1.6 -1.8		(N2.5/) SILT, SOME CLAY, TR SAND, VF TO F (7% SAND, 93% FINES), SOFT, LOW-PL, MUSTY/PETROL. ODOR, SHARP CONTACT	1020	0.0	OL
I4	1.8-2.0		DK OLIVE GREY (5Y 3/2) CLAY, SOME SILT (100% FINES) V SOFT, HI-PL, PETROL. ODOR, GRADATIONAL	1020	0.0	OH
I5	2.0 -3.7		MIXTURE OF I3 + I4	2040	0.0	OL -OH
	-3.7		END CORE			
			KM			

EA — LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5, Swan Creek Sediment Assessment

Location/Boring Name: SC21-SC24

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 722020.471

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1683213.156

CORE COLLECTION INFO

8 Start Date/Time: 11/3/2021 1355 — Stop Date/Time:

9 Sed Surface Elevation: 563.73 ft

10 Coordinate System: H V

11 Depth of Water, ft (start/end): 9.5

12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
6.5 ft	4.3	66%

16 Location Notes: Color = Purple; Petroleum odor

Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1 0-2.4		BLACK (N 2.5/) CLAY, TR SILT, TR SAND, VF TO F (1% SAND, 99% FINES), V SOFT, MED TO HI-PL, PETROL. ODOR, WOOD FRAGS, SHARP CONTACT	0010 1020 2040	0.0	OH
I2 2.4-2.5		SAME AS I1, EXCEPT FEW SAND, VF TO M, MED-PL, (W > LL), NO WOOD FRAGS, SHARP CONTACT	2040	0.0	OH-OL
I3 2.4-3.9		DK GREY (N 4/) CLAY, LITTLE SILT, TR SAND, VF TO C, (5% SAND, 95% FINES), TR WOOD, SOFT, HI-PL, STRONGER PETROL ODOR, SHARP CONTACT	2040	0.0	OH
I4 3.9-4.0		DK GREY (5Y 4/1) SAND, VF TO VC, SUBANG TO SUB-ROUND, LITTLE SILT, FEW CLAY (80% SAND, 20% FINES), LOOSE, COHESIVE, NON-PL, STRONG PETROL. ODOR, SHARP CONTACT	2040	0.0	SW
I5 4.0-4.3		SAME AS I3	2040	0.0	OH
		END CORE			
		KM			

EA — LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5, Swan Creek Sediment Assessment

Location/Boring Name: SC21-SC25

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 722289.678

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1683750.169

CORE COLLECTION INFO

8 Start Date/Time: 11/3/2021 1330 — Stop Date/Time: 11/4/21 0825

9 Sed Surface Elevation: 572.12 ft

10 Coordinate System: H V

11 Depth of Water, ft (start/end): 1.1

12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ___ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft): 8 ft — 14 Recovery (ft): 5.6 — 15 % Recovery: 70%

16 Location Notes: Color - Purple; Shallow water

Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1 0 – 3.6		V DK GREY (5Y 3/1) CLAY, TR SILT, FEW VF TO F SAND, (15% SAND, 85% FINES), FEW WOOD FRAGS, V SOFT, COHESIVE, LOW TO MED-PL (w > LL), MUSTY/PETROL ODOR, SHARP CONTACT	0010 1020 2040+FD	0.0	OH
I2 3.6 – 4.5		BLUISH BLACK (5 PB 2.5/1) SAND, VF TO M, SUBROUND TO ROUND, SOME SILT, TR CLAY (65% SAND, 35% FINES), RAPID DILATENCY, MED. DENSE, NON-PL, SHARP CONTACT PETROL. ODOR, TR SHELL FRAGS.	2040+FD 4060	0.0	SM
I3 4.5 – 5.1		BLACK (N 2.5/) CLAY, TR SILT (100% FINES), V SOFT, HI-PL, PETROL. ODOR, SHARP CONTACT	4060	0.0	OH
I4 5.1 – 5.6		SAME AS I1, EXCEPT (5 PB, 2.5/1)	4060	0.0	OH
		END CORE			
		KM			

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5, Swan Creek Sediment Assessment

Location/Boring Name: SC21-SC26

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

CORE COLLECTION INFO

8 Start Date/Time: 11/3/2021 1215

Stop Date/Time: 11/3/21 1510

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 722034.135

9 Sed Surface Elevation: 565.67 ft

10 Coordinate System: H V

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1684121.605

11 Depth of Water, ft (start/end): 7.6

12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: _____ -ft x _____ -ft x _____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft): 3.1

14 Recovery (ft): 2.7

15 % Recovery: 87%

16 Location Notes: Color = Purple

Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1 0 – 0.7		GREENISH BLACK (10GY 2.5/1) CLAY, TR SILT, (100% FINES) V SOFT, MED-PL, BLOCKY STRUCTURE, PETROL. ODOR, SHARP CONTACT	0010	0.0	OH
I2 0.7 – 1.5		GREY (2.5Y 5/1) CLAY, TR SILT, TR SAND, FIBRO, SUBANG TO SUBROUND, (5% SAND, 95% FINES), SOFT W/ STIFF INTERVALS, HI-PL, SHARP CONTACT	0010 1020	0.0	CH
I3 1.5 – 2.7		DARK GREENISH GREY (10Y 4/1) CLAY, FEW SILT, TR SAND, FIBROM (5% SAND, 95% FINES), GRAVEL-SIZED SLAG, V SOFT, LOW-PL (WOH), FAINT MUSTY ODOR	1020	0.0	CL
		END CORE			
		KM			

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5, Swan Creek Sediment Assessment

Location/Boring Name: SC21- SC28

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 722239.907

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1684609.379

CORE COLLECTION INFO

8 Start Date/Time: 11/5/2021 1130 — Stop Date/Time: 11/4/1415

9 Sed Surface Elevation: 566.82 ft

10 Coordinate System: H V

11 Depth of Water, ft (start/end): 6.4

12 Weather (Temp, circle conditions, wind direction): (Sunny)/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft): ~~5.5~~ — 14 Recovery (ft): 5.3 — 15 % Recovery: 96%

16 Location Notes: Color: Pink Tint; oil odor

	Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1	0 — 0.6		BLUISH BLACK (5PB 2.5/1) CLAY, FEW SILT, FEW SAND, VF TO M, (10% SAND, 90% FINES), SANDIER @ BASE (FINING UPWARD), PETROLIFEROUS ODOR, V. SOFT, HI-PL (w > LL), WOOD FRAGS, SHARP CONTACT	0010+FD	0.0	OH
I2	0.6 -1.5		V. DK GREY (N 3/) CLAY, TR SILT (100% FINES) SOFT, HI-PL, PETROL. ODOR, SHARP CONTACT	0010+FD 1020	0.0	CH
I3	1.5 -1.7		(5PB 2.5/1) CLAY, LITTLE SILT, FEW SAND, VF TO F, (7% SAND, 93% FINES), TR WOOD FRAGS, V SOFT, MED TO HI-PL, BLOCKY STRUCTURE	1020	0.0	OH
I4	1.7 -2.0		SAME AS I2	1020	0.0	CH
I5	2.0 -2.1		DARK GREY (5Y 4/1) CLAY, TR SILT, ~~FEW~~ SAND, VF TO VC, SUBANG TO SUBROUND, Qtz, FEW GRAVEL, SM to LG, (<2.1cm), SUBANG TO SUBROUND (10% GRAVEL, 15% SAND, 75% FINES), SOFT, NON-COHESIVE, SHARP CONTACT	2040+MS/MSD	0.0	ML
I6	2.1 -2.4		GREYISH BROWN (10YR 5/2) CLAY, TR SILT, TR VF TO F SAND, (3% SAND, 97% FINES), SOFT, HI-PL, SHARP CONTACT	2040+MS/MSD	0.0	CH
I7	2.4 -4.4		SAME AS I2, SHARP CONTACT	2040+MS/MSD 4060	0.0	CH
I8	4.4 -5.3		SAME AS I2, EXCEPT TR GRAVEL, LG, SUBANG, TR SAND, C TO M, (5% GRAVEL, 5% SAND, 90% FINES, PETROL/MUSTY ODOR	4060		CH

END CORE

EA

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name
EPA Region 5
Swan Creek Sediment Assessment

Location/Boring Name
SC21-SC29

Sheet
1 of 1

1 Geologist Name/Signature
K. Merandi

5 Project Number
1583406

CORE COLLECTION INFO

8 **Start Date/Time** 11/3/2021 0950
Stop Date/Time 11/3/21 1425

2 Drilling Subcontractor/Equipment Operator
Affiliated

6 Latitude/Northing/Grid
722508.769

9 Sed Surface Elevation 560.6 ft

10 Coordinate System H V

3 Operator Name *(License # If Required)*

7 Longitude/Easting/Grid
1684846.395

11 Depth of Water, ft (start/end)
12.6

12 Weather (Temp, circle conditions, wind direction)
Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: _____ -ft x _____ -ft x _____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft): 2.8
14 Recovery (ft): 1.7
15 % Recovery:

16 Location Notes
Color = Pink Tiger
Sheen on top, Odor

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1 0-0.6	GRAVELLY LEAN CLAY →	BLACK (N 2.5/) CLAY, LITTLE GRAVEL, SM TO LG, ANG TO SUBROUND, LITTLE SAND, VF TO MC, SUBROUND TO SUBANG, TR SILT (10% GRAV, 15% SAND, 70% FINES) LOOSE/SOFT, COHESIVE, NON-PL, TR ROOT, GLASS, NAIL, PETROLIE. ODOR, GRADATIONAL	0010	0.0	CL
I2 0.6-1.7		V DK GREY (N 3/) CLAY, TR SAND, VF TO C, TR SILT (2% SAND, 98% FINES), TR ROOT + WOOD FRAGS, SOFT, COHESIVE, MED TO HI-PL, (W>LL) PETROL/SWEET ODOR, SLAG @ BASE	0010	0.0	OH
		END CORE			
		KM			

EA

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name
EPA Region 5
Swan Creek Sediment Assessment

Location/Boring Name
SC21- SC 30 d

Sheet
1 of 1

1 Geologist Name/Signature
K. Merandi

5 Project Number
1583406

CORE COLLECTION INFO

8 Start Date/Time: 11/3/2021 0915
Stop Date/Time: 11/4/21 1200

2 Drilling Subcontractor/Equipment Operator
Affiliated

6 Latitude/Northing/Grid
722886.334

9 Sed Surface Elevation 562.92 ft

10 Coordinate System H V

11 Depth of Water, ft (start/end)
10.1

3 Operator Name *(License # If Required)*

7 Longitude/Easting/Grid
1685112.311

12 Weather (Temp, circle conditions, wind direction)
Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
4.1	3.4	83%

16 Location Notes
Color = Pink Tiger Odor Sheen
1 additional Core

Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1 0-0.5		BLUISH BLACK (10B 2.5/1) CLAY, TR SILT, TR SAND, VF TO F (1% SAND, 99% FINES), V SOFT, MED-PL, PETROL. ODOR, SHARP CONTACT, BLOCKY STRUCTURE	0010	0.0	OH
I2 0.5-3.4		SAME AS I1, EXCEPT BLACK (N 2.5/), NO SAND (100% CINES), TR WOOD FRAGS	0010 1020 2040	0.0	OH
		END CORE			
		KM			

EA — LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5, Swan Creek Sediment Assessment

Location/Boring Name: SC21-SC31

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

CORE COLLECTION INFO

8 Start Date/Time: 11/2/2021 1610 | Stop Date/Time: 11/3/21 0920

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 723305.641

9 Sed Surface Elevation: 564.56 ft

10 Coordinate System: H V

11 Depth of Water, ft (start/end): 7.9ft

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1685477.310

12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/(Rain) -> Snow

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
8.0ft	7.7	96%

16 Location Notes

	Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1	0-0.9		VDK GREENISH GREY (10Y 3/1) SILT, SOME CLAY, TR VF SAND, TR ROOT/PLANT MATERIAL, V SOFT, LOW-PL (w>LL), FAINT MUSTY ODOR, SHARP CONTACT (99% FINES, 1% SAND)	0010	0.0	ML
I2	0.9-3.8		VDK GREY (N3/) CLAY, TR SILT (100% FINES), SOFT, MED TO HI-PL., PETROLIFEROUS ODOR, SHARP CONTACT	0010 1020 2040	0.0	OH
I3	3.8-4.6		SAME AS I2, EXCEPT MED STIFF TO SOFT, BLACK (N2.5/), TR F-TO MED SAND (99% FINES, 1% SAND), GRADATIONAL	2040 4060	0.0	OH
I4	4.6-5.0		SAME AS I3, EXCEPT FEW SAND, F TO M, TR ROOT MATERIAL, SOME SILT (10% SAND, 90% FINES), STRONG PETROL. ODOR, SHARP CONTACT	4060	0.0	OL
I5	5.0-5.6		(10Y 3/1) SAND, VF TO F, SOME SILT, FEW CLAY, (60% SAND, 40% FINES), TR SHELL FRAGS, TR PLANT MATERIAL, MED DENSE, COHESIVE, LOW-PL, AREA HI CLAY @ 5.3, GRADATIONAL	4060	0.0	SM
I6	5.6-6.1		SAME AS I4	4060 6080	0.0	OL
I7	6.1-6.3		SAME AS I5	6080	0.0	SM
I8	6.3-7.9		SAME AS I3	6080	0.0	OH

END CORE

EA

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name
EPA Region 5
Swan Creek Sediment Assessment

Location/Boring Name
SC21-SC 32

Sheet
1 of 1

1 Geologist Name/Signature
K. Merandi

5 Project Number
1583406

CORE COLLECTION INFO

8 **Start Date/Time** 11/2/2021 1520 | **Stop Date/Time** 11/3/21 1150

2 Drilling Subcontractor/Equipment Operator
Affiliated

6 Latitude/Northing/Grid
723466.943

9 Sed Surface Elevation 569.28 ft

10 Coordinate System H V

11 Depth of Water, ft (start/end)
3.0 ft

3 Operator Name *(License # If Required)*

7 Longitude/Easting/Grid
1685837.295

12 Weather (Temp, circle conditions, wind direction)
Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ___ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
8.0	7.8	98%

16 Location Notes
Color = lint tiger

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1 0 – 4.4		DARK GREENISH GRAY (10 Y 4/1) CLAY, TR SILT, TR SHELL FRAGS (100% FINES), VERY SOFT, MED-HI-PL (w > LL), HIGHER-PL TOWARD BTM, SHARP CONTACT	0010 1020 2040 4060	0.0	CH
I2 4.4 -5.3		(10 Y 4/1) SILT, FEW CLAY, TR SAND, VF TO F (3% SAND, 97% FINES), COHESIVE, STIFF, LOW-PL, TR MICA, GRADATIONAL	4060	0.0	ML
I3 5.3 -6.6		SAME AS I1, EXCEPT LITTLE SILT, GRADATIONAL.	4060 6080	0.0	CH
I4 6.6 - 7.0		DK GREY (5Y 4/1) SAND, VF TO M, SUBANG TO SUBROUND, Qtz. + Micas, TR SILT, (99% SAND, 1% FINES), TR MICA, DENSE, COHESIVE, NON-PL, SHARP CONTACT	6080	0.0	SP-SW
I5 7.0 -7.8		SAME AS I3	6080	0.0	CH
		END CORE			
		KM			

EA — LITHOLOGIC LOG — *Sediment Collection Log* — *EA Engineering, Science, and Technology, Inc. PBC*

Client Name and Project Name: EPA Region 5, Swan Creek Sediment Assessment

Location/Boring Name: SC21- SC33d

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 723725.980

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1686004.478

CORE COLLECTION INFO

8 Start Date/Time: 11/3/2021 0850 — Stop Date/Time: 11/4/21 1620

9 Sed Surface Elevation: 562.53 ft

10 Coordinate System: H V

11 Depth of Water, ft (start/end): 10.5 ft

12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
4.2	3.3	79%

16 Location Notes: Color = Pink Tiger; 1 additional core

Interval (Depth)	Recovery (ft & %)	Description of Materials — Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1 0–0.7		V DK GREY (5Y 3/1) CLAY, TR SILT, TR SAND, F TOC, SUBROUND, Qtz., (5% SAND, 95% FINES) V SOFT, MED TO +11-PL (W > LL), MUSTY ODOR WOOD FRAGS., GRADATIONAL	0010	0.0	OH
I2 0.7–1.2		GREENISH BLACK (10Y 2.5/1) SILT, SOME GRAVEL, LG TO SM, (<6.5 cm), SUBANG, LITTLE SAND, VF TO VC, SUBANG TO SUBROUND, Qtz, FEW CLAY, (30% GRAVEL, 20% SAND, 50% FINES), LOOSE, COHESIVE, NON-PL, FAINT PETROL ODOR,	0010 1020	0.0	OL
I3 1.2–1.7		WOOD FRAGS, SHARP CONTACT ↑ BLACK (N 2.5/) CLAY, TR SILT, FEW GRAVEL, SM TO LG, (<4 cm) SUBANG TO SUBROUND, LITTLE SAND, VF TO VC, SUBANG TO ROUND (15% GRAV., 25% SAND, 60% FINES) FINING UP, SOFT, COHESIVE,	1020	0.0	OH
I4 1.7–3.3		LOW-PL, PETROL. ODOR, SHARP CONTACT ↑ SAME AS I3 EXCEPT HIGHER SILT & NOT FINING UPWARD - GRAVEL & SAND THROUGHOUT, VARIED SIZES, BLOCKY STRUCTURE	1020 2040	0.0	OH
		END CORE			
		KM			

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- MREF	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO
K. Merandi	1583406	8 Start Date/Time: 11/6/2021 1355 — Stop Date/Time: 11/9/21 0930
2 Drilling Subcontractor/Equipment Operator: Affiliated	6 Latitude/Northing/Grid: 719979.617	9 Sed Surface Elevation: 563.31 ft
		10 Coordinate System: H V
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid: 1685812.692	11 Depth of Water, ft (start/end): 10.0
		12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- ☐ Rotosonic: ____ -ft barrel ____ -in diameter
- ☒ Core: 5 -ft barrel 3 -in diameter Manual Push/Vibracore
- ☐ Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- ☐ Other:
- ☐ Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
8.0	7.1	89%

16 Location Notes: Color = Camo

	Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1	0 - 0.2		DK GREY (N 4/) GRAVEL, LG (15 cm), SUBROUND, SOME CLAY, TR SILT, TR SAND VF, (65% GRAVEL, 2% SAND, 33% FINES), SOFT/LOOSE, COHESIVE, MED-PL MATRIX (w>LL), MUSTY ODOR, SHARP CONTACT	0010	0.0	GC
I2	0.2 - 0.7		(N 4/) CLAY, SOME SILT, TR SAND, VF (1% SAND, 99% FINES), V SOFT, LOW TO MED-PL (w>LL), MUSTY ODOR, GRADATIONAL	0010	0.0	CL
I3	0.7 - 4.0		DK GREY (5Y 4/1) CLAY, TR SILT (100% FINES) MED TO HI-PL, MUSTY ODOR, V SOFT, GRADATIONAL	0010 1020 2040	0.0	CL - CH
I4	4.0 - 5.0		(5Y 4/1) CLAY, SOME SILT, TR SAND, VF TO F, (1% SAND, 99% FINES), TR WOOD, SOFT, HI-PL, MUSTY ODOR, SHARP CONTACT	4060	0.0	CH
I5	5.0 - 5.4		SAME AS I3, HI-PL, GRADATIONAL	4060	0.0	CH
I6	5.4 - 5.7		SAME AS I4, SHARP CONTACT	4060	0.0	CH
I7	5.7 - 6.0		(5Y 5/1) SILT, SOME CLAY, TR SAND, VF TO F, (1% SAND, 99% FINES), TR WOOD, SOFT, LOW-PL, MUSTY ODOR, GRADATIONAL	4060	0.0	ML
I8	6.0 - 7.1		SAME AS I3 EXCEPT HIGHER (LITTLE) SILT	6080	0.0	CL - CH

END CORE

EA

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name
EPA Region 5
Swan Creek Sediment Assessment

Location/Boring Name
SC21- MR01

Sheet
1 of 1

1 Geologist Name/Signature
K. Merandi

5 Project Number
1583406

CORE COLLECTION INFO

8 Start Date/Time: 11/6/2021 1425
Stop Date/Time: 11/7/21 0845

2 Drilling Subcontractor/Equipment Operator
Affiliated

6 Latitude/Northing/Grid
723285.663

9 Sed Surface Elevation 541.77 ft

10 Coordinate System H V

11 Depth of Water, ft (start/end)
31.5

3 Operator Name *(License # If Required)*

7 Longitude/Easting/Grid
1686413.550

12 Weather (Temp, circle conditions, wind direction)
Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ___ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
4.1	3.4	83%

16 Location Notes
Color = Camo

	Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1	0-1.3		DK GREY (2.5Y 4/1) CLAY, TR SILT, TR SAND, VF TO M (5% SAND, 95% FINES), V SOFT, MED-PL (W>LL) GRADATIONAL	0010 1020	0.0	CL -CH
I2	1.3 -2.5		(2.5Y 4/1) CLAY, FEW SILT, FEW SAND, VF TO M, SUBROUND, QTZ (10% SAND, 90% FINES), SOFT, HI-PL, SLIGHT MUSTY ODOR, SHARP CONTACT	1020 2040	0.0	CL -CH
I3	2.5 -3.4		DK GREY (10YR 4/1) CLAY (100% FINES), STIFF, HI-PL	2040	0.0	CH
			END CORE			
			KM			

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- MR02	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO
K. Merandi	1583406	8 Start Date/Time: 11/4/2021 1700 — Stop Date/Time: 11/7/21 0950
2 Drilling Subcontractor/Equipment Operator: Affiliated	6 Latitude/Northing/Grid: 723569.901	9 Sed Surface Elevation: 553.83 ft
		10 Coordinate System: H V
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid: 1686175.971	11 Depth of Water, ft (start/end): 19.6
		12 Weather (Temp, circle conditions, wind direction): Sunny/(Cloudy)/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
8.0	7.6	95%

16 Location Notes

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1 0-4.2		DK GREY (5Y 4/1) CLAY, FEW SILT, TR SAND, VF TO F (3% SAND, 97% FINES), SLIGHTY LESS SANDY W/ DEPTH, V SOFT, MED-PL, SLIGHTY MUSTY ODOR, SHARP CONTACT	0010 1020 2040 4060	0.0	CH
I2 4.2-4.3		VERY DK GREY (N 3/) SILT, SOME CLAY, FEW SAND, VF TO FINE (7% SAND, 93% FINES), TR ROOT/WOOD FRAGS, SOFT, MED-PL, SLIGHT MUSTY ODOR, SHARP CONTACT	4060	0.0	ML-CL
I3 4.5-7.6		SAME AS I1	4060 6088	0.0	CH
		END CORE			
		KM			

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5 Swan Creek Sediment Assessment

Location/Boring Name: SC21- MR-03

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 723930.956

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1686388.619

CORE COLLECTION INFO

8 Start Date/Time: 11/4/2021 1610 | Stop Date/Time: 11/8/21 1415

9 Sed Surface Elevation: 557.05 ft

10 Coordinate System: H V

11 Depth of Water, ft (start/end): 22.3

12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft): 7.5

14 Recovery (ft): 4.9

15 % Recovery: 65%

16 Location Notes: Color=Camo

	Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1	0-0.2		NO SEDIMENT BEFORE OPENING - WATER + AIR	KM		
I2	0.2-0.7		GREENISH BLACK (10Y 2.5/1) CLAY, TR SILT, TR SAND, VF TO F TR GRAVEL/SLAG, SM (<1.2cm), ANG., (2% GRAVEL, 3% SAND, 95% FINES), TR ROOT, V SOFT, HI-PL, PETROL. ODOR, SHARP CONTACT (w>LL)	0010-[illegible]	0.0	OH
I3	0.7-1.6		BLACK (N 2.5/) CLAY, LITTLE SILT, LITTLE SAND, VF TO M, (15% SAND, 85% FINES) SOFT, HI-PL, STRONG PETROL. ODOR, BLOCKY STRUCTURE, SHARP CONTACT	0010 1020+MS/MSD	0.0	OH
I4	1.6-1.7		DK GREY (5Y 4/1) CLAY, (100% FINES), V SOFT, HI-PL, SHARP CONTACT	1020+MS/MSD	0.0	CH
I5	1.7-2.3		SAME AS I3, GRADATIONAL	1020+MS/MSD 2040	0.0	OH
I6	2.3-3.3		(5Y 4/1) SAND, VF TO F, SOME SILT, FEW CLAY (60% SAND, 40% FINES), MED DENSE, COHESIVE, LOW-PL, NO DILATENCY, GRADATIONAL	2040	0.0	SM
I7	3.3-4.9		GREY (10YR 5/1) SAND, VF TO VC, ANGULAR TO SUBROUND, FEW GRAVEL, SM, (<1.6 cm), ANG TO SUBANG, (7% GRAVEL, 93% SAND), MED DENSE TO DENSE, NO DILATENCY	2040	0.0	SW
			END COR KM			

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5 Swan Creek Sediment Assessment

Location/Boring Name: SC21- MR03F

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 723912.856

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1686393.049

CORE COLLECTION INFO

8 Start Date/Time: 11/6/2021 1325 | Stop Date/Time: 11/8/21 1545

9 Sed Surface Elevation: 549.62 ft

10 Coordinate System: H V

11 Depth of Water, ft (start/end): 23.7

12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 6 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ___ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft): 6.0

14 Recovery (ft): 4.3

15 % Recovery: 72%

16 Location Notes: Color = camo

Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1 0 - 0.8		DK GREY (5Y 4/1) CLAY, FEW SILT, (100% FINES), V SOFT, HI-PL, WOOD FRAGS @ BASE, SHARP CONTACT	0010 -	0.0	CH
I2 0.8 - 2.1		SAME AS I1, EXCEPT W/ INTERVALS OF SAND, VF TO M @ 1 FT, SHARP CONTACT	0010 1020+FD 2040	0.0	CH
I3 2.1 - 2.6		(5Y 4/1) SILT, SOME SAND VF TO F, LITTLE CLAY, V SOFT, LOW-PL (w>LL), (40% SAND, 60% FINES), WOOD/ROOT FRAGS, GRADATIONAL	[illegible] FD 2040	0.0	SM-ML
I4 2.6 - 3.3		SAME AS I2, SHARP CONTACT	2040	0.0	CH
I5 3.3 - 4.3		GREY (5Y 5/1) SAND, VF TO VC, SUBANG TO R. QTZ, TR SM GRAVEL, SUBANG, TR SILT, TR CLAY (3% GRAVEL, 96% SAND, 2% FINES), DENSE, TR SHELL	2040	0.0	SW
		END CORE			
		KM			

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21-MR04	Sheet 1 of 1

1 Geologist Name/Signature K. Merandi	5 Project Number 1583406	CORE COLLECTION INFO 8 Start Date/Time: 11/6/2021 1500 — Stop Date/Time: 11/10/21 0820	
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 723931.088	9 Sed Surface Elevation 543.79 ft	
		10 Coordinate System H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1686821.049	11 Depth of Water, ft (start/end) 29.4	
		12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [x] Core: 5 -ft barrel 2 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: ____ -ft x ____ -ft x ____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
5.0	5.6	70%

16 Location Notes
Color: Camo

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1 0 – 3.0		DK GREEN/SH GREY (10Y 4/1) CLAY, FEW SILT (100% FINES), V SOFT, MED-PL (W>LL), MUSTY ODOR, SHARP CONTACT	0010 1020 2040	0.1	CL
I2 3.0 – 5.6		GREY (7.5YR, 5/1) CLAY, TR SILT (100% FINES), MED STIFF TO STIFF, HI-PL	2040 4060	0.2	CH
		END CORE			
		KM			

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- MR-05	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO 8 Start Date/Time	Stop Date/Time
K. Merandi	1583406	11/4/2021 1545	11/5/21 1645
2 Drilling Subcontractor/Equipment Operator	6 Latitude/Northing/Grid	9 Sed Surface Elevation 551.33 ft	
Affiliated	724302.038	10 Coordinate System H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid	11 Depth of Water, ft (start/end) 22.0	
	1686609.007	12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: _____ -ft x _____ -ft x _____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery
5.2	4.1 ~~4.0~~ KM	79%

16 Location Notes
color: Camo
faint odor, slight sheen on surface

Interval (Depth)	Recovery (ft & %)	Description of Materials Munsell Color; Moisture; Density; Consistency (Other Remarks)	Sample ID Sample Interval	PID (ppm)	USCS Code
I1 0 – 1.4		V DK GREENISH GREY (10Y 3/1) CLAY, SOME SILT, TR SAND, VF TO F, (5% SAND, 95% FINES), V SOFT, MED-PL (w > LL), HIGHLER SILT & SAND @ BTM (FINES UPWARD), FAINT	0010 1020	0.0	OH
I2 1.4 – 2.1	MIXTURE OF →	PETROL. ODOR. DK GREY (5Y 4/1) SILT, SOME CLAY, TR SAND, VF TO M (5% SAND, 95% FINES), & V DK GREY (N 3/) SILT, LITTLE CLAY, FEW SAND, VF TO F (10% SAND, 90% FINES)	1020 2040	0.0	OL
I3 2.1 – 2.4		(5Y 4/1) SAND, VF TO C, SUBROUND TO ROUND, Qtz, Mafics, FEW SILT (90% SAND, 10% FINES), MED DENSE, NONCOHESIVE, NO DILATENCY, TR SHELL, MUSTY ODOR, SHARP CONTACT	2040	0.0	SW
I4 2.4 – 3.9		OLIVE GREY (5Y 4/2) CLAY, TR SILT (100% FINES), SOFT, HI-PL, INETRVAL (< 0.05 ft) VF-M SAND @ 3.6 ft, SHARP CONTACT	2040	0.0	CH
I5 3.9 – 4.1		(5Y 4/2) SILT, SOME SAND, VF TO F, LITTLE CLAY (30% SAND, 90% FINES), LITTLE SHELL; STIFF, COHESIVE, NON-PL	2040	0.0	ML
I6 4.1 – 5.2		END CORE			
		KM			

LITHOLOGIC LOG
Sediment Collection Log
EA Engineering, Science, and Technology, Inc. PBC

Client Name and Project Name: EPA Region 5 Swan Creek Sediment Assessment

Location/Boring Name: SC21- MR-06

Sheet: 1 of 1

1 Geologist Name/Signature: K. Merandi

5 Project Number: 1583406

CORE COLLECTION INFO

8 Start Date/Time: 11/4/2021 1515

Stop Date/Time: 11/7/21 1535

2 Drilling Subcontractor/Equipment Operator: Affiliated

6 Latitude/Northing/Grid: 724830.775

9 Sed Surface Elevation: 553.05 ft

10 Coordinate System: H V

3 Operator Name *(License # If Required)*:

7 Longitude/Easting/Grid: 1686923.440

11 Depth of Water, ft (start/end): 20.2

12 Weather (Temp, circle conditions, wind direction): Sunny/(Cloudy)/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [x] Core: 8 -ft barrel 3 -in diameter Manual Push/Vibracore
- [ ] Grab Sample: _____ -ft x _____ -ft x _____ -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft): 2.2

14 Recovery (ft): 2.2

15 % Recovery: 100%

16 Location Notes: color = camo

odor

Interval (Depth)	Recovery (ft & %)	Description of Materials (Munsell Color; Moisture; Density; Consistency (Other Remarks))	Sample ID / Sample Interval	PID (ppm)	USCS Code
I1 0 - 1.7		V DK GREY (N 4/) CLAY, LITTLE SILT, ~~TR~~ SAND, VF TO F (5% SAND, 95% FINES), V SOFT, HI-PL, FAINT PETROL. ODOR, BLOCKY STRUCTURE, TR SHELL SHARP CONTACT	0010 1020	0.0	OH
I2 1.7 - 2.2		(N 4/) SAND, VF TO VC, SUBANG TO SUBROUND, SOME CLAY, TR SLT (60% SAND, 40% FINES) SOFT, COHESIVE, LOW-PL (w > LL)	1020	0.0	SC
		END CORE			
		KM			

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Ponar Collection Sheets

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LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- MR06	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO 8 Start Date/Time / Stop Date/Time
K. Merandi	1583406	11/8/2024 1445

2 Drilling Subcontractor/Equipment Operator	6 Latitude/Northing/Grid	9 Sed Surface Elevation 554.03 ft
Affiliated	724831.200	10 Coordinate System H V
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid	11 Depth of Water, ft (start/end) 19.0
	1686928.532	12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: ____ -ft barrel ____ -in diameter
- [ ] Core: ____ -ft barrel ____ -in diameter Manual Push/Vibracore
- [x] Grab Sample: -ft x ____ -ft x -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery

16 Location Notes

FD

Interval *(Depth)*	Description of Materials Major Sediment type, color, presence of SAV/rock/wood, odor/sheen, other inclusions	Sample ID	USCS *Code*
GrabSample (~0-0.5 ft)	Dark black clay. Some woody debris Slight sheen on surface water		

Other:

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- ~~AT~~ MRREF	Sheet 1 of

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO 8 Start Date/Time	Stop Date/Time
K. Merandi	1583406	11/8/2021 1535	

2 Drilling Subcontractor/Equipment Operator	6 Latitude/Northing/Grid	9 Sed Surface Elevation 565.62 ft
Affiliated	719970.270	10 Coordinate System H V
3 Operator Name *(License # If Required)*,	7 Longitude/Easting/Grid	11 Depth of Water, ft (start/end) 7.4
	1685802.531	12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [ ] Core: _____ -ft barrel _____ -in diameter Manual Push/Vibracore
- [X] Grab Sample: -ft x _____ -ft x -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery

16 Location Notes

Interval *(Depth)*	Description of Materials Major Sediment type, color, presence of SAV/rock/wood, odor/sheen, other inclusions	Sample ID	USCS *Code*
GrabSample (~0-0.5 ft)	Brown clay w/some silt. some leaves + woody debris mixed in No odor or sheen		

Other:

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21-SC33	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO
K. Merandi	1583406	8 Start Date/Time: 11/8/2021 1600 — Stop Date/Time:
2 Drilling Subcontractor/Equipment Operator	6 Latitude/Northing/Grid	9 Sed Surface Elevation: 565.07 ft
Affiliated	723730.722	10 Coordinate System: H V
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid	11 Depth of Water, ft (start/end): 8.0
	1686002.093	12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [ ] Core: _____ -ft barrel _____ -in diameter Manual Push/Vibracore
- [x] Grab Sample: -ft x _____ -ft x -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery

16 Location Notes

Interval *(Depth)*	Description of Materials Major Sediment type, color, presence of SAV/rock/wood, odor/sheen, other inclusions	Sample ID	USCS *Code*
GrabSample (~0-0.5 ft)	Brown silt w/clay, leaf litter + woody debris		

Other:

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SCREF	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO
K. Merandi	1583406	8 Start Date/Time: 11/9/2021 1000 — Stop Date/Time:
2 Drilling Subcontractor/Equipment Operator	6 Latitude/Northing/Grid	9 Sed Surface Elevation: 570.31 ft
Affiliated	718366.672	10 Coordinate System H V
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid	11 Depth of Water, ft (start/end): 3.0
	1672643.898	12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [ ] Core: _____ -ft barrel _____ -in diameter Manual Push/Vibracore
- [x] Grab Sample: -ft x _____ -ft x -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery

16 Location Notes

Interval *(Depth)*	Description of Materials Major Sediment type, color, presence of SAV/rock/wood, odor/sheen, other inclusions	Sample ID	USCS *Code*
GrabSample (~0-0.5 ft)	Mostly Sandy, with mixed in leaf litter & woody debris. Some larger rocks pulled up but not retained Clay mixed in also		

Other:

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21-SC01	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO
K. Merandi	1583406	8 Start Date/Time: 11/9/2021 1030 — Stop Date/Time:
2 Drilling Subcontractor/Equipment Operator	6 Latitude/Northing/Grid	9 Sed Surface Elevation: 571.35 ft
Affiliated	718945.106	10 Coordinate System: H V
		11 Depth of Water, ft (start/end): 2.0
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid	12 Weather (Temp, circle conditions, wind direction): Sunny/Cloudy/Rain
	1674617.555	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [ ] Core: _____ -ft barrel _____ -in diameter Manual Push/Vibracore
- [x] Grab Sample: -ft x _____ -ft x -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery

16 Location Notes

Interval *(Depth)*	Description of Materials Major Sediment type, color, presence of SAV/rock/wood, odor/sheen, other inclusions	Sample ID	USCS *Code*
GrabSample (~0-0.5 ft)	Darker brown small gravel, some mixed in clam shells (corbicula?), sm-med sized rocks. some sand mixed in.		

Other:

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC05	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO 8 Start Date/Time / Stop Date/Time
K. Merandi	1583406	11/8/2021 1130 /
2 Drilling Subcontractor/Equipment Operator	6 Latitude/Northing/Grid	9 Sed Surface Elevation ft
Affiliated	719598.518	10 Coordinate System H V
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid	11 Depth of Water, ft (start/end) 2.5
	1676681.199	12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [ ] Core: _____ -ft barrel _____ -in diameter Manual Push/Vibracore
- [X] Grab Sample: -ft x _____ -ft x -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery

16 Location Notes

Interval *(Depth)*	Description of Materials Major Sediment type, color, presence of SAV/rock/wood, odor/sheen, other inclusions	Sample ID	USCS *Code*
GrabSample (~0-0.5 ft)	Darker silty clay w/ leaf litter, woody debris shifted to other side of boat got more sandy sm gravel. Sheen noticed on top odor noticed.		

Other:

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC11	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO	
K. Merandi	1583406	8 **Start Date/Time** 11/9/2021 1220	**Stop Date/Time**
2 Drilling Subcontractor/Equipment Operator	6 Latitude/Northing/Grid	9 Sed Surface Elevation	ft
Affiliated	721860.859	10 Coordinate System H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid	11 Depth of Water, ft (start/end) 7.4	
	1677958.396	12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [ ] Core: _____ -ft barrel _____ -in diameter Manual Push/Vibracore
- [x] Grab Sample: -ft x _____ -ft x -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery

16 Location Notes
had to relocate to find soft location to take ponar.

Interval *(Depth)*	Description of Materials Major Sediment type, color, presence of SAV/rock/wood, odor/sheen, other inclusions	Sample ID	USCS *Code*
GrabSample (~0-0.5 ft)	Silty Sand mixed w/ leaf litter and woody debris. Sheen noticed on surface		

Other:

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC14	Sheet 1 of 1

1 Geologist Name/Signature	5 Project Number	CORE COLLECTION INFO 8 Start Date/Time	Stop Date/Time
K. Merandi	1583406	11/8/2021. 1300	

2 Drilling Subcontractor/Equipment Operator	6 Latitude/Northing/Grid	9 Sed Surface Elevation ft
Affiliated	721206.546	10 Coordinate System H V
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid	11 Depth of Water, ft (start/end) 3.2
	16°19495.640	12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [ ] Core: _____ -ft barrel _____ -in diameter Manual Push/Vibracore
- [X] Grab Sample: -ft x _____ -ft x -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery

16 Location Notes

Interval *(Depth)*	Description of Materials Major Sediment type, color, presence of SAV/rock/wood, odor/sheen, other inclusions	Sample ID	USCS *Code*
GrabSample (~0-0.5 ft)	Brown silty Clay.		

Other:

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21-SC18	Sheet 1 of 1

1 Geologist Name/Signature K. Merandi	5 Project Number 1583406	**CORE COLLECTION INFO** 8 **Start Date/Time**: 11/9/2021 1345	**Stop Date/Time**
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 721442.819	9 Sed Surface Elevation ft	
		10 Coordinate System H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1680711.711	11 Depth of Water, ft (start/end) 3.6	
		12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- ☐ Rotosonic: _____ -ft barrel _____ -in diameter
- ☐ Core: _____ -ft barrel _____ -in diameter Manual Push/Vibracore
- X Grab Sample: -ft x _____ -ft x -ft Box/Ponar/Van Veen/Other
- ☐ Other:
- ☐ Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery

16 Location Notes

Interval *(Depth)*	Description of Materials Major Sediment type, color, presence of SAV/rock/wood, odor/sheen, other inclusions	Sample ID	USCS *Code*
GrabSample (~0-0.5 ft)	Dark Black clay w/silt, some rocks & woody debris. Odor noticed Sheen on water. Some Brown clay mixed in		

Other:

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC21	Sheet 1 of 1

1 Geologist Name/Signature K. Merandi	5 Project Number 1583406	CORE COLLECTION INFO 8 Start Date/Time: 11/9/2021 1420	Stop Date/Time
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 721550.7971	9 Sed Surface Elevation ft	
		10 Coordinate System H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1681975.338	11 Depth of Water, ft (start/end) 4.9	
		12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- Rotosonic: _____ -ft barrel _____ -in diameter
- Core: _____ -ft barrel _____ -in diameter Manual Push/Vibracore
- X Grab Sample: -ft x _____ -ft x -ft Box/Ponar/Van Veen/Other
- Other:
- Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery

16 Location Notes
Moved to opposite bank due to rocky substrate

Interval *(Depth)*	Description of Materials Major Sediment type, color, presence of SAV/rock/wood, odor/sheen, other inclusions	Sample ID	USCS *Code*
GrabSample (~0-0.5 ft)	Brown Silt w/some clay mixed in leaf Litter & woody debris		

Other:

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC27	Sheet 1 of 1

1 Geologist Name/Signature K. Merandi	5 Project Number 1583406	CORE COLLECTION INFO 8 Start Date/Time: 11/9/2021 1500	Stop Date/Time:
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 721996.243	9 Sed Surface Elevation ft	
		10 Coordinate System H V	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1684420.732	11 Depth of Water, ft (start/end) 10.0	
		12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [ ] Core: _____ -ft barrel _____ -in diameter Manual Push/Vibracore
- [x] Grab Sample: -ft x _____ -ft x -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery

16 Location Notes
Shifted past bridge to find non-rocky bottom

Interval *(Depth)*	Description of Materials Major Sediment type, color, presence of SAV/rock/wood, odor/sheen, other inclusions	Sample ID	USCS *Code*
GrabSample (~0-0.5 ft)	Brown silt w/ clay, some woody debris		

Other:

LITHOLOGIC LOG *Sediment Collection Log* *EA Engineering, Science, and Technology, Inc. PBC*	Client Name and Project Name EPA Region 5 Swan Creek Sediment Assessment	Location/Boring Name SC21- SC30	Sheet 1 of 1

1 Geologist Name/Signature K. Merandi	5 Project Number 1583406	**CORE COLLECTION INFO** 8 **Start Date/Time**: 11/9/2021 1525	**Stop Date/Time**
2 Drilling Subcontractor/Equipment Operator Affiliated	6 Latitude/Northing/Grid 722966.066	9 Sed Surface Elevation ft 10 Coordinate System H V 11 Depth of Water, ft (start/end) 3.2	
3 Operator Name *(License # If Required)*	7 Longitude/Easting/Grid 1685104.136	12 Weather (Temp, circle conditions, wind direction) Sunny/Cloudy/Rain	

4 Sampling Equipment and Methodology (Check One)

- [ ] Rotosonic: _____ -ft barrel _____ -in diameter
- [ ] Core: _____ -ft barrel _____ -in diameter Manual Push/Vibracore
- [x] Grab Sample: -ft x _____ -ft x -ft Box/Ponar/Van Veen/Other
- [ ] Other:
- [ ] Sample Collection Method:

13 Boring Depth (ft)	14 Recovery (ft)	15 % Recovery

16 Location Notes
Rocky in center. shifted to bank o

Interval *(Depth)*	Description of Materials Major Sediment type, color, presence of SAV/rock/wood, odor/sheen, other inclusions	Sample ID	USCS *Code*
GrabSample (~0-0.5 ft)	Brown silty clay, Some Black Clay with odor, sheen on surface water		

Other:

Sediment Core Collection Sheets

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11/3/21 SWAN Creek

0830 arrive @ 1080 water St.

crew: M. Durbano
J. Dorian
K. Merandi
C. Simpson

0915 H+S Brief
0930 SC21-SC31 — opened
collected 0010
1070
2040
4060
6080 } collected

1150 SC21-SC32 opened
~~100~~ 0010
1080
2040
4060
6080. collected

1315 Break for lunch. Justin picking up cores and dropping supplies off @ Erie Market for boat crew.

1425 SC21-24 opened
0010 - collected

1510 SC21-26 opened
0010
1080 } collected

1615 SC21-08
0010. collected

1700 packing coolers

1800 Matt and Justin leave TO drop off cores @ UPS

1850 EH offsite

MRD

11/4/21 SWAN Creek

0800 Arrive @ 1080 Water SS
crew: M. Durbano, J. Dorian, K. Merandi,
0820 H+S Brief
0825 SC ~~24~~ 25 opened. 4 intervals collected, 0010, 1020, 2040, 4060 + 2040 FD (1)
1035 SC 22 opened. 2 intervals 0010, 1020.
1200 SC 30 opened. 3 intervals. 0010, 1020, 2040.
1300 Break for lunch
1350 meet matt @ Dock to unload cores
1415 SC21-SC28 opened. 4 intervals, 0010, 0010 FD, 1020, 2040, 2040 MS, 2040 MSA 4060.
1620 SC21 - SC33 opened. 0010, 1020, 2040.
1730 cooler packing, checking COCs.
1830 Justin and ~~Matt~~ Kyle secure to UPS for cooler drop off.
1915 off site

MRD

11/5/21 SWAN Creek

0745 Arrive @ 1080 water SJ.
Crew: M. Dalbano, J. Dorian, K. Merenel.
0800 H+S Brief.
0845 SC21 - SC21 opened. 0010, 1080, 2040, 2040 MS, 2040 MSA.
1030 SC21 - SC30 opened. 0010, 1080.
1140 SC21 - SC10 opened. 0010.
1230 Justin to get supplies and lunch.
1345 SC21 - SC19. 0010 - not enough volume for GS on 0010. 1080, 2040, 4060
1450 SC21 - SC24 opened. 0010, 1080, 2040
1550 SC21 - SC23 opened. 0010, 1080, 2040.
1645 SC21 - MR05 opened. 0010, 1080, 2040
1745 Boat returns to dock offload core Breakdown and clean up core processing area.
1820 offsite

JMRD

Scale: 1 square = _____

11/6/21 SUBN Creek
0915 arrive onsite @ 1080 water 80
crew: M. Durbano, S. Dorian

0945 Board down processing equipment.
move equipment outside.

1100 setup water sample coolers
1300 pick up cores from crew @ dock
1400 scribe training
1530 core inventory
1650 unload cores from dock
1715 finish packing Reefer Truck
1730 offsite

MRD

11/7/21 Sunn Creek

0800 Arrive onsite @ 1020 Water 50.
0830 Start setup of processing equipment outside

Crew: M. Darkow, R. Meranda, J. Dorian
0840 JHS Brief
0845 MR01 opened. 0010, 1020, 2040.
0950 SE MR03 opened 0010, 1020, 2040, 4060, 4080.
1140 SC21-SC15 opened. 0010, 1020, 2040.
1345 SC21-SC16 opened. 0010, 1020, 2040, 4060.
1535 MR06 opened. 0010, 1020.
1600 Checking samples in coolers
1630 off site

MRD

Scale: 1 square = _____

Scale: 1 square = _____

4/8/21 SWAN Creek

0800 Arrive onsite @ 610 Water St. crew: M. Darkenow, K. Meraudi, J. Korian.
0815 HTS Brief. Begin setting up outside for core processing.

0850 SC21-SC03 opened. 0010, 1010, 2040.
1010 SC21-SC04 opened. 0010, 1020, 2040 4060, 4060 FD.

1150 SC21-SC06 opened. 0010, 1020, 2040.
1415 SC21-MR03-A opened. 0010, 1020, 1020 MS 1020 MSD, 2040.
1545 SC21-MR03-B opened. 0010, 1020, 1020 FD, 2040.
1700 Packing coolers for shipping
1850 Offsite

MRD

11/9/21 SWAN Creek

0730 arrive @ 1080 Water St
0800 JHS Brief. setup processing in warehouse.

0930 MREF opened. 0010, 1080, 2040, 4060, 6080.
1150 SC01-SC13 opened. 0010, 1080, 2040, 2040 MS, 2040 MSD.
1215 packing and checking coolers
1315 Lunch
1410 SC01- SC02 opened. 0010, 1080, 2040.
1415 packing suit coolers
1610 SC01 - SC09 opened. 0010, 1080, 2040.
1635 checking COCs, packing coolers
1825 Justin and Matt drop off coolers at UPS.
1855 Off site

/MRD

11/10/21 SWAN Creek

~~0800~~ 0730 arrive @ 1020 water ST.

0800 WTS Arrive - start setup.

0820 MR04 opened. 0010, 1020, 2040, 4060.
crew: M. Barbano, J. Dorian, K. Merwell.

0930 SC21 - SC07 opened. 0010, 1020, 2040, ~~2040~~ 2040 FD, 4060.

1045 SC21 - SC11 opened. 0010, 0010 FD, 1020, 2040.

1130 pick up water samples from mast
login surface sed and water

1245 Lunch

1300 FDW-01 and FDW-02 collected

1320 SC21 - SC17 opened 0010, 1020, 2040, 2040 ms, 2040 msd, 4060, 6080.

1430 SC21-comp-06 collected, 1cd, 16b, 17, 17b, 20c, 22b cores included in composite.

1530 start prepping coolers for shipping.

1815 Justin and Kyle go to UPS to drop coolers.

1840 offsite

/MRD

11/19/21 SWAN Creek

0730 arrive @ 1020 water ST.
0800 HS Brief. Setup for day.
0800 SC21- SC12 opened. 0010, 1020, 1020 MS, 1020 MSD, 2040
0830 SC21- comp-04 cores included. 13, 09, 13b, 13d, 13c, 09c, 09d, 09e, 11b, ~~11~~. 11d, 11e, 11f, 18a, 18b.

0930 SC21- comp -05, FD, MS, MSD. cores included, 15c, 15d, 15F, 15g.

1045 SC21- comp-02. cores included, 03c, 03d, 03f, 03b, 04, 04b, 04c.

1115 SC21 - comp-08. cores included 29b, 29c, 30, 30b, 30c, 32b, 33, 33b, 33c.

1220 SC21- comp-03, cores included 06a, 06b, 06c, 06d, 07d, 07e, 07f, 07g, 07h.

1245 Wench Creek
~~1300~~ ~~1400~~ 1300 packing water coolers and cars

1415 SC21- comp-01. cores included 02, 02b, 02c, 02d, 02e, 02f.

1480 SC21- comp-06. cores included 16b, 16c, 16d, 17, 17b, 20c, 22b.
1500 SC21- comp-07. cores included 23d, 23b, 24b, 25b, 26b.

1600 clean up, checking coolers. waiting on delivery of coolers and cars

1750 start packing fridge truck with samples, buckets-

1815 off site

MD

11/12/21 SWAN Creek

0830 arrive @ 1020 water st
0845 unpack samples from fridge truck
crew: M.D urbano, K. meraner, S. Dorian, M. Renick
0900 – Justin and Matt head to fedex for coolers and bottles.
0945 start jarring remaining samples and packing coolers for delivery to UPS.

1145 loading coolers for UPS.
1300 packing cooling supplies breaking down processing area.
1400 closing up dorm and roll off.
1430

offsite

MRD

11/13/21 SWAN Creek

0600 Justin and Mike Durband leave Toledo for Hunt Valley.

1530 Arrive @ EA for lab. unload water and sediment. Scan documents. Sign coc.

1700 offsite

/ MAD

Scale: 1 square = _____

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APPENDIX B:

LITHOLOGIC CORE LOGS

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EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-MR01

NORTHING 723285.663 **EASTING** 1686413.55 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 541.77 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/6/2021 2:25:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/7/2021 8:45:00 AM **CORE RECOVERY** 3.4 ft / 83 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
1	541		CH	(0 to 1.3 ft) Dark Gray (2.5Y 4/1) CLAY, tr. SAND, vf to m., tr. SILT, very soft, medium to high plasticity (w>LL), gradational contact.	95	5	0	SC21-MR01-0010	541
2	540		CH	(1.3 to 2.5 ft) Dark Gray (2.5Y 4/1) CLAY, few SAND, vf to m., subrounded, Qtz., few SILT, soft, high plasticity, slight musty odor, sharp contact.	90	10	0	SC21-MR01-1020	540
3	539		CH	(2.5 to 3.4 ft) Dark Gray (10YR 4/1) CLAY, stiff, high plasticity.	100	0	0	SC21-MR01-2040	539
4	538			BOTTOM OF CORE= 3.4 ft below sediment surface; 538.37 ft NAVD88					538
5	537								537
6	536								536
7	535								535
8	534								534
9	533								533
	532								532

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

DRAFT

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-MR02

NORTHING 723569.901 **EASTING** 1686175.971 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 553.83 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/4/2021 5:00:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/7/2021 9:50:00 AM **CORE RECOVERY** 7.6 ft / 95 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
1	553		CL	(0 to 4.2 ft) Dark Gray (5Y 4/1) CLAY, few SILT, tr. SAND, vf to f., coarsening upward, very soft, medium plasticity, slight musty odor, sharp contact.	97	3	0	SC21-MR02-0010	553
2	552							SC21-MR02-1020	552
3	551							SC21-MR02-2040	551
4	550								550
			ML	(4.2 to 4.3 ft) Very Dark Gray (N 3) SILT, some CLAY, few SAND, vf to f., tr. root/wood fragments, soft, medium plasticity, slight musty odor, sharp contact.	93	7	0		
5	549							SC21-MR02-4060	549
6	548		CH	(4.3 to 7.6 ft) Dark Gray (5Y 4/1) CLAY, few SILT, tr. SAND, vf to f., coarsening upward, very soft, medium plasticity, slight musty odor.	97	3	0		548
7	547							SC21-MR02-6080	547
8	546			BOTTOM OF CORE= 7.6 ft below sediment surface; 546.23 ft NAVD88					546
9	545								545
	544								544

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

SEDIMENT BORING SC21-MR03-1

EA Engineering, Science, and Technology, Inc., PBC

NORTHING 723930.956 **EASTING** 1686388.619 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 554.02 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/4/2021 4:10:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/8/2021 2:15:00 PM **CORE RECOVERY** 4.9 ft / 65 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
		NR		(0 to 0.2 ft) No Recovery (Water)					
1	553		OH	(0.2 to 0.7 ft) Greenish Black (10Y 2.5/1) CLAY, tr. SAND, vf to f., tr. GRAVEL, sm. (<1.2 cm), angular, slag, tr. SILT, tr. root, very soft, high plasticity (w>LL), petroliferous odor, sharp contact.	95	3	2	SC21-MR03A-0010	553
			OH	(0.7 to 1.6 ft) Black (N 2.5/) CLAY, little SAND, vf to m., little SILT, soft, high plasticity, blocky structure, strong petroliferous odor, sharp contact.	85	15	0		
2	552		CH	(1.6 to 1.7 ft) Dark Gray (5Y 4/1) CLAY, very soft, high plasticity, sharp contact.	100	0	0	SC21-MR03A-1020 SC21-MR03A-1020MS SC21-MR03A-1020MSD	552
			OH	(1.7 to 2.3 ft) Black (N 2.5/) CLAY, little SAND, vf to m., little SILT, soft, high plasticity, blocky structure, strong petroliferous odor, gradational contact.	85	15	0		
3	551		SM	(2.3 to 3.3 ft) Dark Gray (5Y 4/1) SAND, vf to f., some SILT, few CLAY, medium dense, cohesive, low plasticity, no dilatency, gradational.	40	60	0		551
4	550		SW	(3.3 to 4.9 ft) Gray (10YR 5/1) SAND, vf to vc., angular to subrounded, few GRAVEL, sm. (<1.6 cm), angular to subangular, medium dense to dense, no dilatency.	0	93	7	SC21-MR03A-2040	550
5	549								549
6	548								548
7	547			BOTTOM OF CORE= 4.9 ft below sediment surface; 549.12 ft NAVD88					547
8	546								546
9	545								545

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-MR03-2

NORTHING 723912.856 **EASTING** 1686393.049 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 549.62 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/6/2021 1:25:00 PM **CORE REPLICATE LOGGED** F **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/8/2021 3:45:00 PM **CORE RECOVERY** 4.3 ft / 72 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	549		CH	(0 to 0.8 ft) Dark Gray (5Y 4/1) CLAY, few SILT, very soft, high plasticity, wood fragments @ -0.8 ft., sharp contact.	100	0	0	SC21-MR03F-0010	549
1	548		CH	(0.8 to 2.1 ft) Dark Gray (5Y 4/1) CLAY, few SILT, very soft, high plasticity, sandy interval @ -1.0 ft., sharp contact.	95	5	0	SC21-MR03F-1020 SC21-MR03F-1020FD	548
2	547		ML	(2.1 to 2.6 ft) Very Dark Gray (5Y 4/1) SILT, some SAND, vf to f., little CLAY, tr. wood/root fragments, very soft, low plasticity (w>LL), gradational contact.	60	40	0	SC21-MR03F-2040	547
3			CH	(2.6 to 3.3 ft) Dark Gray (5Y 4/1) CLAY, few SILT, very soft, high plasticity, sharp contact.	100	0	0		
4	546		SW	(3.3 to 4.3 ft) Gray (5Y 5/1) SAND, vf to vc., subangular to rounded, Qtz., tr. GRAVEL, sm., tr. SILT, tr. CLAY, tr. shell fragments, dense.	2	96	1		546
5	545			BOTTOM OF CORE= 4.3 ft below sediment surface; 545.32 ft NAVD88					545
6	544								544
7	543								543
8	542								542
9	541								541
	540								540

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-MR04

NORTHING 723931.088 **EASTING** 1686821.049 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 543.79 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/6/2021 3:00:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/10/2021 8:20:00 AM **CORE RECOVERY** 5.6 ft / 70 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
1	543		CL	(0 to 3 ft) Dark Greenish Gray (10Y 4/1) CLAY, few SILT, very soft, medium plasticity (w>LL), musty odor, sharp contact.	100	0	0	SC21-MR04-0010	543
2	542							SC21-MR04-1020	542
3	541							SC21-MR04-2040	541
4	540		CH	(3 to 5.6 ft) Gray (7.5YR 5/1) CLAY, tr. SILT, medium stiff to stiff, high plasticity.	100	0	0		540
5	539							SC21-MR04-4060	539
6	538								538
7	537								537
8	536			BOTTOM OF CORE= 5.6 ft below sediment surface; 538.19 ft NAVD88					536
9	535								535
	534								534

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-MR05

NORTHING 724302.038 **EASTING** 1686609.007 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 551.33 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/4/2021 3:45:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/5/2021 4:45:00 PM **CORE RECOVERY** 4.1 ft / 79 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	551		OH	(0 to 1.4 ft) Very Dark Greenish Gray (10Y 3/1) CLAY, some SILT, tr. SAND, vf to f., fining upward, very soft, medium plasticity (w>LL), faint petroliferous odor.	95	5	0	SC21-MR05-0010	551
1	550		OL	(1.4 to 2.1 ft) Mixture of Dark Gray (5Y 4/1) SILT, some CLAY, tr. SAND, vf to m. AND Dark Gray (N 3/) SILT, little CLAY, few SAND, vf to c., low to medium plasticity.	95	5	0	SC21-MR05-1020	550
2	549		SW	(2.1 to 2.4 ft) Dark Gray (5Y 4/1) SAND, vf to c., subrounded to rounded, Qtz., mafics, few SILT, tr. shell, medium dense, noncohesive, no dilatency, musty odor, sharp contact.	10	90	0	SC21-MR05-2040	549
3	548		CH	(2.4 to 3.9 ft) Olive Gray (5Y 4/2) CLAY, tr. SILT, soft, high plasticity, discrete interval of SAND, vf., @ - 3.5 ft, sharp contact.	95	5	0		548
4	547		ML	(3.9 to 4.1 ft) Olive Gray (5Y 4/2) SILT, some SAND, vf to f., little CLAY, few shell fragments, stiff, cohesive, nonplastic.	70	30	0		547
5	546			BOTTOM OF CORE= 4.1 ft below sediment surface; 547.23 ft NAVD88					546
6	545								545
7	544								544
8	543								543
9	542								542

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-MR06

NORTHING 724830.775 **EASTING** 1686923.44 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 553.05 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/4/2021 3:15:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/7/2021 3:35:00 PM **CORE RECOVERY** 2.2 ft / 100 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
1	552		OH	(0 to 1.7 ft) Very Dark Gray (N 4/) CLAY, little SILT, tr. SAND, vf to f., tr. shell fragments, very soft, high plasticity, blocky structure, faint petroliferous odor, sharp contact.	95	5	0	SC21-MR06-0010	552
2	551		SC	(1.7 to 2.2 ft) Very Dark Gray (N 4/) SAND, vf to vc., subangular to subrounded, some CLAY, tr. SILT, soft, cohesive, low plasticity (w>LL).	40	60	0	SC21-MR06-1020	551
3	550			BOTTOM OF CORE= 2.2 ft below sediment surface; 550.85 ft NAVD88					550
4	549								549
5	548								548
6	547								547
7	546								546
8	545								545
9	544								544

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-MRREF

NORTHING 719979.617 **EASTING** 1685812.692 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 563.31 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/6/2021 1:55:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/9/2021 9:30:00 AM **CORE RECOVERY** 7.1 ft / 89 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	563		GC	(0 to 0.2 ft) Dark Gray (N 4/) GRAVEL, lg. (<5 cm), subrounded, some CLAY, tr. SAND, vf., tr. SILT, soft/loose, cohesive, medium plasticity in clayey portions (w>LL), musty odor, sharp contact.	33	2	65		563
			CL	(0.2 to 0.7 ft) Dark Gray (N 4/) CLAY, some SILT, tr. SAND, vf., very soft, low to medium plasticity (w>LL), musty odor, gradational.	99	1	0	SC21-MRREF-0010	
1	562							SC21-MRREF-1020	562
2	561		CH	(0.7 to 4 ft) Dark Gray (5Y 4/1) CLAY, tr. SILT, very soft, medium to high plasticity, musty odor, gradational contact.	100	0	0		561
3	560							SC21-MRREF-2040	560
4	559		CH	(4 to 5 ft) Dark Gray (5Y 4/1) CLAY, some SILT, tr. SAND, vf to f., tr. wood fragments, soft, high plasticity, musty odor, sharp contact.	99	1	0		559
5	558		CH	(5 to 5.4 ft) Dark Gray (5Y 4/1) CLAY, tr. SILT, very soft, high plasticity, musty odor, gradational contact.	100	0	0	SC21-MRREF-4060	558
			CH	(5.4 to 5.7 ft) Dark Gray (5Y 4/1) CLAY, some SILT, tr. SAND, vf to f., tr. wood fragments, soft, high plasticity, musty odor, sharp contact.	99	1	0		
6	557		ML	(5.7 to 6 ft) Gray (5Y 5/1) SILT, some CLAY, tr. SAND, vf to f., tr. wood fragments, soft, low plasticity, musty odor, gradational contact.	99	1	0		557
			CH	(6 to 7.1 ft) Dark Gray (5Y 4/1) CLAY, little SILT, very soft, medium to high plasticity, musty odor.	100	0	0	SC21-MRREF-6080	
7	556								556
8	555			BOTTOM OF CORE= 7.1 ft below sediment surface; 556.21 ft NAVD88					555
9	554								554

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC02

NORTHING 71909.193 **EASTING** 1675482.762 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 571.79 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/5/2021 12:15:00 PM **CORE REPLICATE LOGGED** D **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/9/2021 2:10:00 PM **CORE RECOVERY** 4.2 ft / 74 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	571		OL	(0 to 1 ft) Very Dark Greenish Gray (10Y 3/1) SILT, some CLAY, tr. SAND, vf., tr. root/twigs, soft, low plasticity, musty odor, sharp contact.	97	3	0	SC21-SC02-0010	571
1			SP	(1 to 1.2 ft) Olive Gray (5Y 4/2) SAND, vf to f., few SILT, tr. mica, medium dense, cohesive, nonplastic, no dilatency, sharp contact.	1	99	0		
			SM	(1.2 to 1.8 ft) Olive Gray (5Y 4/2) SAND, vf to f., some SILT, little CLAY, tr. leaves, tr. wood fragments, medium dense, cohesive, nonplastic, no dilatency, musty odor, gradational contact.	45	55	0	SC21-SC02-1020	
2	570		SM	(1.8 to 2.3 ft) Dark Gray (5Y 4/1) SAND, vf to m., little SILT, tr. CLAY, tr. mica, tr. root, medium dense to dense, rapid dilatency, gradational contact.	90	70	0		570
			OL	(2.3 to 2.8 ft) Bluish Black (10B 2.5/1) CLAY, some SILT, tr. SAND, vf., few leaves, few twigs, few root, soft, low plasticity, blocky structure, slight musty/petroliferous odor, sharp contact.	90	10	0		
3	569		SM	(2.8 to 2.9 ft) Olive Gray (5Y 4/2) SAND, vf to f., some SILT, little CLAY, tr. leaves, tr. wood fragments, medium dense, cohesive, nonplastic, no dilatency, musty odor, sharp contact.	45	55	0	SC21-SC02-2040	569
			OL		99	1	0		
			SW		5	95	0		
			SW	(2.9 to 3 ft) Very Dark Gray (N 3/) CLAY, some SILT, tr. SAND, vf to m., very soft, medium plasticity, musty odor, sharp contact.	15	78	7		
4	568		GW GC	(3 to 3.2 ft) Olive Gray (5Y 4/2) SAND, vf to vc., subangular to subrounded, Qtz., mafics, few SILT, tr. mica, tr. twigs, dense, noncohesive, gradational contact.	10	35	55		568
5	567			(3.2 to 3.8 ft) Very Dark Gray (5Y 3/1) SAND, vf to vc., subangular to subrounded, Qtz., mafics, little SILT, few GRAVEL, sm. (<9 mm), subangular to subrounded, few CLAY, tr. shell fragments, cohesive, nonplastic, gradational contact.					567
6	566			(3.8 to 4.2 ft) Very Dark Gray (5Y 3/1) GRAVEL, sm. (<1 cm), subangular to subrounded, some SAND, little CLAY, tr. SILT, medium dense to dense, noncohesive, musty odor.					566
7	565			BOTTOM OF CORE= 4.2 ft below sediment surface; 567.59 ft NAVD88					565
8	564								564
9	563								563
	562								562

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC03

NORTHING 719714.341 **EASTING** 1675748.987 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 570.96 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/7/2021 12:20:00 PM **CORE REPLICATE LOGGED** E **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/8/2021 8:50:00 AM **CORE RECOVERY** 4.6 ft / 92 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	570		OL	(0 to 0.7 ft) Black (N 2.5/) SILT, some CLAY, tr. SAND, vf., tr. root/wood fragments, very soft, low plasticity (w>LL), slight musty odor, gradational contact.	95	5	0	SC21-SC03-0010	570
1			OL	(0.7 to 1.2 ft) Very Dark Gray (N 3/) SILT, few CLAY, tr. SAND, vf., medium stiff, cohesive, nonplastic, gradational contact.	98	2	0		
2	569		OL	(1.2 to 2.2 ft) Bluish Black (10B 2.5/1) CLAY, little SILT, tr. root, very soft, medium plasticity, blocky structure, slight petrolfierous odor, sharp contact.	100	0	0	SC21-SC03-1020	569
3	568		CH	(2.2 to 3.5 ft) Dark Greenish Gray (10Y 4/1) CLAY, some SILT, medium stiff to stiff, high plasticity, gradational contact.	100	0	0	SC21-SC03-2040	568
4	567		CL	(3.5 to 4.6 ft) Dark Greenish Gray (10Y 4/1) SILT, some SAND, vf to f., some CLAY, tr. GRAVEL, sm to lg. (<3.7 cm), subrounded, stiff, medium plasticity, interval of coarser sand @ -3.7 ft.	73	25	2		567
5	566			BOTTOM OF CORE= 4.6 ft below sediment surface; 566.36 ft NAVD88					566
6	565								565
7	564								564
8	563								563
9	562								562

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC04

NORTHING 719655.775 **EASTING** 1676450.928 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 568.19 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/6/2021 9:55:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/8/2021 10:10:00 AM **CORE RECOVERY** 7.4 ft / 93 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	568		SM	(0 to 0.4 ft) Very Dark Gray (N 3/) SAND, vf to f., some SILT, few CLAY, tr. root, tr. shell fragments, dense, cohesive, nonplastic, no dilatency, gradational.	25	75	0	SC21-SC04-0010	568
			CH	(0.4 to 0.7 ft) Dark Greenish Gray (10Y 4/1) CLAY, few SILT, soft, high plasticity, gradational contact.	100	0	0		
1	567		SM	(0.7 to 1.3 ft) Dark Greenish Gray (10Y 4/1) SAND, vf., some SILT, few CLAY, dense, low plasticity, sharp contact.	20	70	0	SC21-SC04-1020	567
2	566		SM	(1.3 to 3.5 ft) Dark Greenish Gray (10Y 4/1) SAND, vf., little SILT, tr. CLAY, medium dense to dense, cohesive, nonplastic, gradational contact.	40	60	0	SC21-SC04-2040	566
3	565								565
4	564		ML	(3.5 to 4 ft) Dark Greenish Gray (10Y 4/1) SILT, little CLAY, tr. SAND, vf., tr. root/wood fragments, soft, low to medium plasticity, gradational contact.	95	5	0		564
			SM	(4 to 4.2 ft) Dark Greenish Gray (10Y 4/1) SAND, vf., little SILT, tr. CLAY, medium dense to dense, cohesive, nonplastic, gradational contact.	40	60	0	SC21-SC04-4060	
			ML	(4.2 to 4.5 ft) Dark Greenish Gray (10Y 4/1) SILT, little CLAY, tr. SAND, vf., tr. root/wood fragments, soft, low to medium plasticity, gradational contact.	95	5	0		
5	563		SM	(4.5 to 6.3 ft) Dark Greenish Gray (10Y 4/1) SAND, vf., little SILT, tr. CLAY, medium dense to dense, cohesive, nonplastic, gradational contact.	40	60	0		563
6	562								562
7	561		ML	(6.3 to 7.4 ft) Dark Greenish Gray (10Y 4/1) SILT, some CLAY, few SAND, vf to m., tr. GRAVEL, sm (<1.5 cm), subangular, tr. root/wood fragments, medium stiff to stiff, low plasticity with areas of higher clay/high plasticity.	92	7	1	SC21-SC04-6080	561
8	560			BOTTOM OF CORE= 7.4 ft below sediment surface; 560.79 ft NAVD88					560
9	559								559

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC06

NORTHING 719442.16 **EASTING** 1677548.216 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 567.14 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/7/2021 11:30:00 AM **CORE REPLICATE LOGGED** C **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/8/2021 11:50:00 AM **CORE RECOVERY** 4.6 ft / 105 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	567		CH	(0 to 1.2 ft) Grayish Brown (2.5YR 5/2) with areas of Gray (7.5YR 5/1), Olive (5Y 5/6), and Weak Red (10R 5/3), CLAY, tr. GRAVEL, sm. (<3 mm), subangular, tr. SILT, soft to medium stiff, high plasticity, sharp contact.	99	0	1	SC21-SC06-0010	567
1	566		CH	(1.2 to 2.6 ft) Gray (5Y 5/1) CLAY, tr. SAND, vf to m., tr. GRAVEL, sm. (<1 cm), tr. SILT, soft to medium stiff, high plasticity.	95	4	1	SC21-SC06-1020	566
2	565								565
3	564		CH	(2.6 to 2.9 ft) Gray (5Y 5/1) CLAY, little GRAVEL, sm to lg. (<4.6 cm), subangular to subrounded, little SAND, vf to c., subangular to subrounded, high plasticity.	80	10	10	SC21-SC06-2040	564
4	563		CH	(2.9 to 4.6 ft) Gray (5Y 5/1) CLAY, tr. SAND, vf to m., tr. GRAVEL, sm. (<1 cm), tr. mica, stiff to very stiff, high plasticity.	95	4	1		563
5	562			BOTTOM OF CORE= 4.6 ft below sediment surface; 562.54 ft NAVD88					562
6	561								561
7	560								560
8	559								559
9	558								558

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC07

NORTHING 720131.489 **EASTING** 1678165.814 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 566.29 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/7/2021 1:40:00 PM **CORE REPLICATE LOGGED** E **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/10/2021 9:30:00 AM **CORE RECOVERY** 5.9 ft / 98 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	566		OL	(0 to 0.4 ft) Black (N 2.5/) CLAY, some SILT, few SAND, vf to c., subangular to subrounded, tr. root/wood fragments, very soft, low plasticity, petroliferous odor, cobble @ -4.9 ft, sharp contact.	85	14	1	SC21-SC07-0010	566
1	565							SC21-SC07-1020	565
2	564		CH	(0.4 to 4.9 ft) Olive Gray (5Y 5/2) CLAY, few SILT, tr. SAND, vf to m., soft, high plasticity, sand fining upwards, very stiff gravel-sized clay pieces througout, sharp contact.	98	2	0	SC21-SC07-2040 SC21-SC07-2040FD	564
3	563								563
4	562								562
5	561		SM	(4.9 to 5.2 ft) Black (N 2.5/) SAND, vf to c., subangular to subrounded, Qtz., some SILT, little CLAY, loose, cohesive, nonplastic, musty odor, gradational contact.	45	55	0	SC21-SC07-4060	561
			CH	(5.2 to 5.7 ft) Olive Gray (5Y 5/2) CLAY, few SILT, tr. SAND, vf to m., soft, high plasticity, sand fining upwards, very stiff gravel-sized clay pieces througout.	98	2	0		
6	560			BOTTOM OF CORE= 5.9 ft below sediment surface; 560.39 ft NAVD88					560
7	559								559
8	558								558
9	557								557

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC08

NORTHING 720744.112 **EASTING** 1678204.838 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 2.9 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/2/2021 10:40:00 AM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/3/2021 4:15:00 PM **CORE RECOVERY** 1.7 ft / 85 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
1	2		CH	(0 to 1.7 ft) Dark Gray (2.5Y 4/1) CLAY, tr. SAND, vc., subrounded, tr. SILT, tr. mica, very stiff, high plasticity.	99	1	0	SC21-SC08-0010	2
2	1			BOTTOM OF CORE= 1.7 ft below sediment surface; 1.2 ft NAVD88					1
3	0								0
4	-1								-1
5	-2								-2
6	-3								-3
7	-4								-4
8	-5								-5
9	-6								-6
	-7								-7

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

SEDIMENT BORING SC21-SC09

EA Engineering, Science, and Technology, Inc., PBC

NORTHING 721014.095 **EASTING** 1678072.253 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 568.69 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/8/2021 9:55:00 AM **CORE REPLICATE LOGGED** D **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/9/2021 4:10:00 PM **CORE RECOVERY** 4.3 ft / 72 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	USCS CLASS	MATERIAL DESCRIPTION (Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor)	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS
0	568	OL	(0 to 0.6 ft) Very Dark Gray (5Y 3/1) CLAY, some SILT, few SAND, vf., tr. root, tr. leaves, very soft, low plasticity (w>LL), musty/slightly petroliferous odor, gradational contact.	90	10	0	SC21-SC09-0010
1	567	OH	(0.6 to 2.1 ft) Dark Gray (5Y 4/1) CLAY, tr. SILT, very soft, medium to high plasticity, petroliferous odor, siltier interval @ -1.6 ft., gradational contact	100	0	0	SC21-SC09-1020
2	566	OL	(2.1 to 2.3 ft) Black (5Y 2.5/1) SILT, some CLAY, very soft, medium plasticity, petroliferous odor sharp contact.	100	0	0	SC21-SC09-2040
		SM		40	60	0	
		OL	(2.3 to 2.4 ft) Olive Gray (5Y 4/2) SAND, vf to f., some SILT, little CLAY, loose, cohesive, nonplastic (w>LL), gradational contact.	95	5	0	
3	565	SW SM	(2.4 to 2.8 ft) Olive Gray (5Y 4/2) SILT, some CLAY, tr. SAND, vf to f., tr. brick fragments, wood fragments @ -2.8 ft., very soft, medium plasticity, strong petroliferous odor, sharp contact.	10	70	20	
		OH		100	0	0	
		SW SC	(2.8 to 3.3 ft) Black (5Y 2.5/1) SAND, vf to vc., subangular to subrounded, Qtz., mafics, little GRAVEL, sm to lg. (<3 cm), subangular to subrounded, few SILT, few CLAY, dense, noncohesive, slight petroliferous odor, gradational contact.	15	60	25	
4	564	SW	(3.3 to 3.6 ft) Olive Gray (5Y 4/2) CLAY, some SILT, tr. root, medium stiff, high plasticity, musty odor, sharp contact.	5	95	0	
5	563		(3.6 to 4 ft) Olive Gray (5Y 4/2) SAND, vf to vc., subangular to rounded, some GRAVEL, sm to lg. (<3.5 cm), little SILT, little CLAY, dense, noncohesive, musty odor, sharp contact.				
6	562		(4 to 4.3 ft) Olive Gray (5Y 4/2) SAND, vf to vc., subangular to subrounded, tr. SILT, tr. CLAY, tr. shell fragments, dense, noncohesive.				
7	561		BOTTOM OF CORE= 4.3 ft below sediment surface; 564.39 ft NAVD88				
8	560						
9	559						

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC10

NORTHING 721427.997 **EASTING** 1677885.164 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 563.79 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/4/2021 9:30:00 AM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/5/2021 11:40:00 AM **CORE RECOVERY** 1.7 ft / 142 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
1	563		CH	(0 to 1.7 ft) Dark Gray (5Y 4/1) CLAY, tr. GRAVEL, sm. (<2 mm), subrounded, tr. SAND, vf to m., tr. SILT, tr. shell fragments, very stiff, high plasticity.	98	1	1	SC21-SC10-0010	563
2	562			BOTTOM OF CORE= 1.7 ft below sediment surface; 562.09 ft NAVD88					562
3	561								561
4	560								560
5	559								559
6	558								558
7	557								557
8	556								556
9	555								555
	554								554

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC11

NORTHING 721860.222 **EASTING** 1677972.675 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 569.85 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/8/2021 11:20:00 AM **CORE REPLICATE LOGGED** E **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/10/2021 10:45:00 AM **CORE RECOVERY** 3.7 ft / 74 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	569		OL	(0 to 0.8 ft) Very Dark Gray (5Y 3/1) CLAY, some SILT, few SAND, vf to f., few leaves/twigs, tr. root, very soft, low plasticity (w>LL), musty odor, sharp contact.	90	10	0	SC21-SC11-0010 SC21-SC11-0010FD	569
1			SM	(0.8 to 0.9 ft) Black (N 2.5/) SAND, vf to m., few CLAY, tr. SILT, loose, cohesive, nonplastic, gradational contact.	40	60	0		
			OL	(0.9 to 1.3 ft) Very Dark Gray (5Y 3/1) CLAY, some SILT, few SAND, vf to f., few leaves/twigs, tr. root, very soft, low plasticity (w>LL), musty odor, sharp contact.	90	10	0	SC21-SC11-1020	
	568		SW	(1.3 to 1.6 ft) Olive Gray (5Y 4/2) SAND, vf to c., subangular to rounded, Qtz., tr. SILT, tr. shell fragments, loose, cohesive, nonplastic, gradational contact.	3	97	0		
2			SW	(1.6 to 2 ft) Black (5Y 2.5/1) SAND, vf to vc., subangular to rounded, Qtz., few GRAVEL, sm to lg. (<2.5 cm), aubangular, tr. SILT, tr. CLAY, medium dense, noncohesive, sharp contact.	10	84	6		568
	567		ML	(2 to 3.7 ft) Olive Gray (5Y 4/2) SILT, some CLAY, tr. SAND, vf., tr. wood fragments, tr. shell fragments, soft to medium stiff, musty odor, intervals of vf to f. sand @ -2.4, -3.0 ft.	98	2	0	SC21-SC11-2040	567
3									
4	566			BOTTOM OF CORE= 3.7 ft below sediment surface; 566.15 ft NAVD88					566
5	565								565
6	564								564
7	563								563
8	562								562
9	561								561
	560								560

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC12

NORTHING 721816.966 **EASTING** 1678225.387 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 565.25 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/8/2021 11:55:00 AM **CORE REPLICATE LOGGED** B **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/11/2021 8:00:00 AM **CORE RECOVERY** 3.4 ft / 85 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	565		CH	(0 to 3.4 ft) Dark Gray (5Y 4/1) CLAY, tr. GRAVEL, sm. (<2.5 cm), subangular, tr. SILT, stiff, high plasticity.	99	0	1	SC21-SC12-0010	565
1	564							SC21-SC12-1020	564
2	563							SC21-SC12-2040 SC21-SC12-2040MS SC21-SC12-2040-MSD	563
3	562								562
4	561			BOTTOM OF CORE= 3.4 ft below sediment surface; 561.85 ft NAVD88					561
5	560								560
6	559								559
7	558								558
8	557								557
9	556								556

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC13

NORTHING 721082.562 **EASTING** 1679177.171 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 571.44 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/8/2021 12:55:00 PM **CORE REPLICATE LOGGED** F **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/9/2021 11:50:00 AM **CORE RECOVERY** 3.9 ft / 65 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	571		OL	(0 to 0.5 ft) Olive Gray (5Y 4/2) and Greenish Black (10Y 2.5/1) SILT, some CLAY, few SAND, vf to f., few leaves/twigs, very soft, nonplastic, slight musty/petroliferous odor, gradational contact.	93	7	0	SC21-SC13-0010	571
			SM	(0.5 to 0.7 ft) Dark Olive Gray (5Y 3/2) SAND, vf to f., some SILT, few CLAY, cohesive, nonplastic (w>LL), musty odor, woody interval @ -0.7 ft., sharp contact.	40	60	0		
1	570		OL	(0.7 to 1.6 ft) Olive Gray (5Y 4/2) CLAY, few SILT, tr. SAND, vf to f., tr. wood fragments, tr. leaves, very soft, low to medium plasticity (w>LL), musty odor, interval of leaves @ -2.2 ft.	99	1	0	SC21-SC13-1020	570
2	569		OL	(1.6 to 2.2 ft) Dark Gray (5Y 4/1) and Greenish Black (10Y 2.5/1) SILT, some CLAY, few SAND, vf to f., few leaves/twigs, very soft, nonplastic, gradational contact.	93	7	0		569
			OH	(2.2 to 3 ft) Dark Gray (5Y 4/1) CLAY, tr. SILT, very soft, medium to high plasticity, petroliferous odor, gradational contact.	100	0	0		
3	568		OH	(3 to 3.9 ft) Very Dark Gray (5Y 3/1) CLAY, tr. SAND, vf to f., tr. SILT, tr. root, very soft, high plasticity, petroliferous odor.	95	5	0	SC21-SC13-2040 SC21-SC13-2040MS SC21-SC13-2040MSD	568
4	567								567
5	566								566
6	565			BOTTOM OF CORE= 3.9 ft below sediment surface; 567.54 ft NAVD88					565
7	564								564
8	563								563
9	562								562

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC15

NORTHING 721145.649 **EASTING** 1679268.861 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 569.71 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/6/2021 4:10:00 PM **CORE REPLICATE LOGGED** E **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/7/2021 11:40:00 AM **CORE RECOVERY** 4.2 ft / 70 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	569		OH	(0 to 2.5 ft) Mixture of Dark Gray (5Y 4/1) CLAY, some SILT, tr. SAND, vf., AND Very Dark Gray (N 3/) SILT, some CLAY, tr. SAND, vf. (1% SAND, 99% FINES), tr. wood fragments, very soft, medium to high plasticity, blocky structure, petroliferous odor, sharp contact.	98	2	0	SC21-SC15-0010	569
1								SC21-SC15-1020	
2	568								568
3	567		OL	(2.5 to 2.9 ft) Bluish Black (5PB 2.5/1) CLAY, little SILT, tr. SAND, wood fragments, very soft, medium plasticity, petroliferous odor.	95	5	0	SC21-SC15-2040	567
			SM	(2.9 to 3 ft) Bluish Black (5PB 2.5/1) SAND, vf to m., subrounded to rounded, Qtz., few SILT, few CLAY, tr. mica, cohesive, nonplastic, no dilatency, sharp contact.	20	80	0		
4	566		OL	(3 to 4.2 ft) Bluish Black (5PB 2.5/1) CLAY, little SILT, tr. SAND, wood fragments, very soft, medium plasticity, petroliferous odor.	95	5	0		566
5	565			BOTTOM OF CORE= 4.2 ft below sediment surface; 565.51 ft NAVD88					565
6	564								564
7	563								563
8	562								562
9	561								561
	560								560

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

SEDIMENT BORING SC21-SC16

EA Engineering, Science, and Technology, Inc., PBC

NORTHING 721001.859 **EASTING** 1680168.359 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 564.33 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/5/2021 4:35:00 PM **CORE REPLICATE LOGGED** C **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/7/2021 1:45:00 PM **CORE RECOVERY** 6.4 ft / 80 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	564		OH	(0 to 0.7 ft) Very Dark Gray (N 3/) CLAY, few SILT, tr. root/wood fragments, very soft, medium plasticity (w>LL), slight petroliferous odor, gradational contact.	100	0	0	SC21-SC16-0010	564
0.7	563.6		OL	(0.7 to 0.9 ft) Very Dark Gray (N 3/) SILT, little CLAY, tr. GRAVEL, lg., (<2 cm), subangular, tr. SAND, vf to f., tr. root/wood fragments, soft, cohesive, nonplastic, slight petroliferous odor, sharp contact.	96	3	1		
0.9	563.4		OL		97	3	0		
1	563		OH		100	0	0		563
1.1	562.9		SW	(0.9 to 1.1 ft) Very Dark Gray (N 3/) SILT, few CLAY, tr. SAND, vf to f. , tr. root/wood fragments, soft, cohesive, nonplastic, slight petroliferous odor, sharp contact.	2	98	0	SC21-SC16-1020	
1.4	562.6		OH	(1.1 to 1.4 ft) Very Dark Gray (N 3/) CLAY, few SILT, tr. root/wood fragments, very soft, medium plasticity (w>LL), slight petroliferous odor, gradational contact.	100	0	0		
2	562		SM	(1.4 to 1.7 ft) Very Dark Gray (5Y 3/1) SAND, vf to vc., subangular to rounded, Qtz., mafics, tr. SILT, tr. CLAY, medium dense, noncohesive, no dilatency, sharp contact.	30	70	0		562
2.1	561.9		GM		35	15	50		
2.4	561.6		ML	(1.7 to 2.1 ft) Very Dark Gray (N 3/) CLAY, few SILT, tr. root/wood fragments, very soft, medium plasticity (w>LL), slight petroliferous odor, gradational contact.	60	40	0	SC21-SC16-2040	
3	561		CH	(2.1 to 2.4 ft) Very Dark Gray (5Y 3/1) SAND, vf to f., some SILT, few CLAY, dense, cohesive, nonplastic, no dilatency, gradational contact.	100	0	0		561
3.1	560.9		ML	(2.4 to 2.7 ft) Very Dark Gray (5Y 3/1) GRAVEL, sm to lg. (<2.7 cm), subangular to subrounded, some CLAY, little SAND, vf to c., tr. SILT, loose, noncohesive, gradational.	60	40	0		
3.4	560.6		CH	(2.7 to 3.2 ft) Very Dark Gray (5Y 3/1) SILT, some SAND, vf to f., tr. wood fragments, tr. shell fragments, dense, cohesive, nonplastic, slow dilatency, sharp contact.	100	0	0		
4	560								560
4.1	559.9		ML	(3.2 to 3.6 ft) Very Dark Gray (N 3/) CLAY, few SILT, very soft, high plasticity, slight petroliferous odor, gradational contact.	60	40	0	SC21-SC16-4060	
4.4	559.6		CH	(3.6 to 3.9 ft) Very Dark Gray (5Y 3/1) SILT, some SAND, vf to f., tr. wood fragments, tr. shell fragments, dense, cohesive, non-plastic, slow dilatency, sharp contact.	100	0	0		559
5	559								
5.9	558.1			(3.9 to 5 ft) Very Dark Gray (N 3/) CLAY, few SILT , very soft, high plasticity, slight petroliferous odor, siltier interval @ -4.3 ft., gradational contact.					
6	558								558
6.2	557.8			(5 to 5.2 ft) Very Dark Gray (5Y 3/1) SILT, some SAND, vf to f., tr. wood fragments, tr. shell fragments, dense, cohesive, non-plastic, slow dilatency, sharp contact.					
6.4	557.6			(5.2 to 6.4 ft) Very Dark Gray (N 3/) CLAY, few SILT, very soft, high plasticity, slight petroliferous odor, gradational contact.					
7	557								557
8	556			BOTTOM OF CORE= 6.4 ft below sediment surface; 557.93 ft NAVD88					556
9	555								555

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC17

NORTHING 721362.853 **EASTING** 1680506.715 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 565.14 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/4/2021 1:10:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/10/2021 1:20:00 PM **CORE RECOVERY** 7.4 ft / 93 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	USCS CLASS	MATERIAL DESCRIPTION (Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor)	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS
0	565	OL	(0 to 0.5 ft) Dark Gray (2.5Y 4/1) SILT, some CLAY, tr. SAND, vf to f., very soft, low plasticity (w>LL), slight musty/petroliferous odor, twigs and leaves @ -0.5 ft., sharp contact.	95	5	0	SC21-SC17-0010
		SM	(0.5 to 0.6 ft) Dark Gray (N 4/) SAND, vf to m., subrounded to rounded, little SILT, tr. CLAY, tr. shell fragments, loose, cohesive, non-plastic, no dilatency, musty odor, sharp contact.	20	80	0	
1		CL		100	0	0	
	564	OL	(0.6 to 1.1 ft) Dark Gray (N 4/) CLAY, some SILT, very soft, medium plasticity (w>LL), petroliferous odor, sharp contact.	96	2	2	SC21-SC17-1020
		SW		15	82	3	
		SM	(1.1 to 1.3 ft) Black (N 2.5/) CLAY, few SILT, tr. GRAVEL, sm. (<2.5 mm), angular, slag, tr. SAND, vf to vc., very soft, low plasticity (w>LL), strong petroliferous odor, sharp contact.	93	7	0	
2		CL					
	563	OH	(1.3 to 1.5 ft) Black (5Y 2.5/1) SAND, vf to vc., subangular to subrounded, tr. GRAVEL, sm., few SILT, medium dense, noncohesive, sharp contact.	93	7	0	SC21-SC17-2040 SC21-SC17-2040MS SC21-SC17-2040MSD
		SP		20	80	0	
		SM	(1.5 to 1.8 ft) Bluish Black (10B 2.5/1) CLAY, little SILT, few SAND, vf., very soft, medium plasticity, petroliferous odor, sharp contact.				
3		CL		100	0	0	
	562	SW	(1.8 to 2.4 ft) Dark Gray (2.5Y 4/1) CLAY, some SILT, few SAND, vf to f., very soft, medium to high plasticity, slight musty/petroliferous odor, sandier intervals @ -2.1, -2.3 ft., sharp contact.	8	90	2	
			(2.4 to 2.5 ft) Dark Gray (N 4/) SAND, vf to m., subrounded to rounded, little SILT, tr. CLAY, tr. shell fragments, loose, cohesive, nonplastic, no dilatency, musty odor, sharp contact.				
4			(2.5 to 3.4 ft) Dark Gray (5Y 4/1) CLAY, few SILT, very soft, medium plasticity (w>LL), petroliferous odor, sharp contact.				
	561						
5	560	CH	(3.4 to 3.6 ft) Dark Gray (5Y 4/1) SAND, vf to vc., subangular to rounded, Qtz., tr. GRAVEL, sm. (<2.5 mm), few SILT, tr. shell fragments, medium dense, noncohesive, sharp contact.	100	0	0	SC21-SC17-4060
			(3.6 to 6.8 ft) Dark Gray (5Y 4/1) CLAY, few SILT, very soft, high plasticity, petroliferous odor, siltier intervals @ -4.4, -5.0, -5.4 ft., sharp contact.				
6	559						
7	558	SP SM	(6.8 to 7.4 ft) Dark Gray (5Y 4/1) SAND, vf to f., some SILT, little CLAY, dense, cohesive, low plasticity.	45	55	0	SC21-SC17-6080
8	557		BOTTOM OF CORE= 7.4 ft below sediment surface; 557.74 ft NAVD88				
9	556						

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC19

NORTHING 721765.847 **EASTING** 1681254.504 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 563.77 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/4/2021 10:35:00 AM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/5/2021 1:45:00 PM **CORE RECOVERY** 5.2 ft / 72 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	563		GC	(0 to 0.4 ft) Black (N 2.5/) GRAVEL, sm to lg. (<3 cm), angular to subangular, little SAND, vf to vc., subangular to subrounded, few CLAY, tr. SILT, tr. shell fragments, dense, noncohesive, musty odor, gradational contact.	25	15	60	SC21-SC19-0010	563
			SM		25	75	0		
			OH	(0.4 to 0.5 ft) Black (N 2.5/) SAND, vf to vc., some SILT tr. CLAY, loose, noncohesive, slight petroliferous odor, sharp contact.	95	5	0		
1			CL	(0.5 to 0.6 ft) Black (N 2.5/) CLAY, tr. SAND, vf to f., very soft, medium to high plasticity (w>LL), petroliferous odor, sharp contact.	98	2	0	SC21-SC19-1020	
	562			(0.6 to 1.7 ft) Dark Gray (N 4/) CLAY, tr. SAND, vf to f., tr. SILT, very soft, medium plasticity, faint musty odor, gradational contact.					562
2			OH	(1.7 to 3.7 ft) Dark Gray (N 4/) CLAY, tr. SAND, vf to f., little SILT, tr. shell fragments, tr. root/plant material, very soft, medium to high plasticity, faint musty odor, sharp contact.	98	2	0	SC21-SC19-2040	
3	561								561
4	560		CH	(3.7 to 5.2 ft) Black (N 2.5/) CLAY, tr. SAND, vf to f., very soft, medium to high plasticity, petroliferous odor.	95	5	0	SC21-SC19-4060	560
5	559								559
6	558			BOTTOM OF CORE= 5.2 ft below sediment surface; 558.57 ft NAVD88					558
7	557								557
8	556								556
9	555								555
	554								554

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC20

NORTHING 721753.273 **EASTING** 1681590.077 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 554.45 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/4/2021 12:20:00 PM **CORE REPLICATE LOGGED** B **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/5/2021 10:30:00 AM **CORE RECOVERY** 2.1 ft / 111 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	554		CH	(0 to 2.1 ft) Dark Gray (5Y 4/1) CLAY, tr. GRAVEL, sm. (<7 mm), subrounded, tr. SILT, very stiff, high plasticity.	99	0	1	SC21-SC20-0010	554
1	553							SC21-SC20-1020	553
2	552			BOTTOM OF CORE= 2.1 ft below sediment surface; 552.35 ft NAVD88					552
3	551								551
4	550								550
5	549								549
6	548								548
7	547								547
8	546								546
9	545								545

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

SEDIMENT BORING SC21-SC21

EA Engineering, Science, and Technology, Inc., PBC

NORTHING 721555.622 **EASTING** 1681974.307 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 568.01 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/4/2021 11:30:00 AM **CORE REPLICATE LOGGED** D **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/5/2021 8:45:00 AM **CORE RECOVERY** 4.3 ft / 80 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	568		GC	(0 to 0.2 ft) Black (N 2.5/) GRAVEL, sm to lg., (<5.5 cm), angular, some CLAY, few SAND, few SILT, loose, cohesive, medium plasticity in intervals with less gravel, petroliferous odor, sharp contact.	35	15	50	SC21-SC21-0010	568
			OH	(0.2 to 1.3 ft) Greenish Black (10Y 2.5/1) CLAY, little SILT, very soft, medium plasticity, petroliferous odor, sharp contact.	100	0	0		
1	567		SM	(1.3 to 1.5 ft) Greenish Black (10Y 2.5/1) SAND, vf to f., some SILT, tr. CLAY, tr. mica, medium dense, cohesive, nonplastic, no dilatency, slight musty odor, sharp contact.	45	55	0	SC21-SC21-1020	567
			OH	(1.5 to 2.2 ft) Greenish Black (10Y 2.5/1) CLAY, little SILT, very soft, medium plasticity, petroliferous odor, siltier interval @ -1.8 ft., sharp contact.	100	0	0		
2	566		OH	(2.2 to 2.9 ft) Bluish Black (10PB 2.5/1) CLAY, little SILT, few SAND, vf to f., soft, high plasticity, blocky structure, musty odor, sharp contact.	85	15	0		566
3	565		SM	(2.9 to 3.1 ft) Greenish Black (10Y 2.5/1) SAND, vf to c., subrounded to rounded, few CLAY, tr. SILT, tr. shell, dense, noncohesive, no dilatency, sharp contact.	25	75	0	SC21-SC21-2040 SC21-SC21-2040MS SC21-SC21-2040MSD	565
			OH	(3.1 to 4.3 ft) Bluish Black (10PB 2.5/1) CLAY, little SILT, few SAND, vf to f., soft, high plasticity, blocky structure, musty odor, siltier interval @ -3.3 ft.	85	15	0		
4	564								564
5	563			BOTTOM OF CORE= 4.3 ft below sediment surface; 563.71 ft NAVD88					563
6	562								562
7	561								561
8	560								560
9	559								559

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC22

NORTHING 721344.641 **EASTING** 1682480.599 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 563 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/3/2021 4:15:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/4/2021 10:35:00 AM **CORE RECOVERY** 2.9 ft / 81 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
			OL	(0 to 0.5 ft) Very Dark Gray (N 3/) CLAY, tr. SAND, f., tr. SILT, few wood fragments, medium plasticity, faint musty odor, sharp contact.	98	2	0	SC21-SC22-0010	
			CH	(0.5 to 0.9 ft) Dark Gray (5Y 4/1) CLAY, little SILT, tr. GRAVEL, sm. (<5 mm), angular, tr. SAND, vf., soft, high plasticity (w>LL), faint sweet/musty odor, sharp contact.	98	1	1		
1	562		CH		80	10	10		562
			ML	(0.9 to 1.1 ft) Dark Gray (5Y 4/1) CLAY, little SILT, few GRAVEL, sm to lg. (<2 cm), angular to subangular, few SAND, vf to vc., subangular to subrounded, brick fragments, wood fragments, soft, high plasticity (w>LL), faint sweet/musty odor, sharp contact.	85	15	0	SC21-SC22-1020	
			CH		100	0	0		
2	561		ML	(1.1 to 1.3 ft) Very Dark Greenish Gray (10Y 3/1) SILT, few SAND, vf to f., fining upward, tr. shell fragments, cohesive, nonplastic, no dilatency, sharp contact.	55	45	0		561
			SC	(1.3 to 1.8 ft) Greenish Gray (10Y 5/1), CLAY, tr. SILT, medium stiff, high plasticity, gradational contact.	30	55	15		
3	560			(1.8 to 2.2 ft) Very Dark Grayish Brown (2.5Y 3/2) SILT, some SAND, vf to f., tr. CLAY, tr. mica, tr. wood fragments, tr. shell, loose/soft, cohesive, nonplastic.				SC21-SC22-2040	560
				(2.2 to 2.9 ft) Dark Gray (2.5Y 4/1) SAND, vf to vc., subrounded to rounded, some CLAY, few GRAVEL, sm. (<1.5 cm), subangular to subrounded, tr. SILT, medium loose, cohesive, nonplastic to low plasticity.					
4	559			BOTTOM OF CORE= 2.9 ft below sediment surface; 560.1 ft NAVD88					559
5	558								558
6	557								557
7	556								556
8	555								555
9	554								554

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

SEDIMENT BORING SC21-SC23

EA Engineering, Science, and Technology, Inc., PBC

NORTHING 721739.817 **EASTING** 1683045.229 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 567.99 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/3/2021 3:40:00 PM **CORE REPLICATE LOGGED** C **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/5/2021 3:50:00 PM **CORE RECOVERY** 3.7 ft / 79 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
1	567		OL OH	(0 to 1.4 ft) Black (N 2.5/) CLAY, some SILT, tr. SAND, vf to f., few root/wood fragments, very soft, medium plasticity (w>LL), blocky structure, slight sweet/petroliferous odor, sharp contact.	97	3	0	SC21-SC23-0010	567
			CH	(1.4 to 1.6 ft) Olive Gray (5Y 5/2) CLAY, tr. SILT, very soft, high plasticity, musty odor, sharp contact.	100	0	0	SC21-SC23-1020	
			OL		93	7	0		
2	566		OH	(1.6 to 1.8 ft) Black (N 2.5/) SILT, some CLAY, few SAND, vf to f., soft, low plasticity, musty/petroliferous odor, sharp contact.	100	0	0		566
				(1.8 to 2 ft) Dark Olive Gray (5Y 3/2) CLAY, some SILT, very soft, high plasticity, petroliferous odor, gradational contact.					
3	565		OL OH	(2 to 3.7 ft) Mixture of Black (N 2.5/) SILT, some CLAY, few SAND, vf to f., soft, low plasticity AND Dark Olive Gray (5Y 3/2) CLAY, some SILT, very soft, high plasticity, petroliferous odor.	97	3	0	SC21-SC23-2040	565
4	564								564
5	563			BOTTOM OF CORE= 3.7 ft below sediment surface; 564.29 ft NAVD88					563
6	562								562
7	561								561
8	560								560
9	559								559

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

SEDIMENT BORING SC21-SC24

EA Engineering, Science, and Technology, Inc., PBC

NORTHING 722020.471 **EASTING** 1683213.156 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 563.73 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/3/2021 1:55:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/5/2021 2:50:00 PM **CORE RECOVERY** 4.3 ft / 66 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	563		OH	(0 to 2.4 ft) Black (N 2.5/) CLAY, tr. SAND, vf to f., tr. SILT, few wood fragments, very soft, medium to high plasticity, petroliferous odor, sharp contact.	99	1	0	SC21-SC24-0010	563
1								SC21-SC24-1020	
2	562								562
3	561		OH	(2.4 to 2.5 ft) Black (N 2.5/) CLAY, few SAND, vf to m., tr. SILT, very soft, medium to high plasticity (w>LL), petroliferous odor, sharp contact.	99	1	0	SC21-SC24-2040	561
			OH	(2.5 to 3.9 ft) Dark Gray (N 4/) CLAY, little SILT, tr. SAND, vf to c., tr. wood fragments, soft, high plasticity, strong petroliferous odor, sharp contact.	95	5	0		
4	560		SM	(3.9 to 4 ft) Dark Gray (5Y 4/1) SAND, vf to vc., subangular to subrounded, little SILT, few CLAY, loost, cohesive, nonplastic, strong petroliferous odor, sharp contact.	20	80	0		560
			OH	(4 to 4.3 ft) Dark Gray (N 4/) CLAY, little SILT, tr. SAND, vf to c., tr. wood fragments, soft, high plasticity, strong petroliferous odor.	95	5	0		
5	559								559
6	558								558
7	557			BOTTOM OF CORE= 4.3 ft below sediment surface; 559.43 ft NAVD88					557
8	556								556
9	555								555
	554								554

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC25

NORTHING 722289.678 **EASTING** 1683750.169 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 572.12 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/3/2021 1:30:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/4/2021 8:25:00 AM **CORE RECOVERY** 5.6 ft / 70 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	572		CL	(0 to 3.6 ft) Very Dark Gray (5Y 3/1) CLAY, few SAND, vf to f., tr. SILT, few wood fragments, very soft, cohesive, low to medium plasticity (w>LL), musty/petroliferous odor, sharp contact.	85	15	0	SC21-SC25-0010	572
1	571							SC21-SC25-1020	571
2	570								570
3	569							SC21-SC25-2040 SC21-SC25-2040FD	569
4	568		SM	(3.6 to 4.5 ft) Bluish Black (5PB 2.5/1) SAND, vf to m., subrounded to rounded, some SILT, tr. CLAY, tr. shell fragments, medium dense, nonplastic, rapid dilatency, petroliferous odor, sharp contact.	35	65	0		568
5	567		CH	(4.5 to 5.1 ft) Black (N 2.5/) CLAY, tr. SILT, very soft, high plasticity, petroliferous odor, sharp contact.	100	0	0	SC21-SC25-4060	567
			OH	(5.1 to 5.6 ft) Bluish Black (5PB 2.5/1) CLAY, few SAND, vf to f., tr. SILT, few wood fragments, very soft, cohesive, low to medium plasticity (w>LL), musty/petroliferous odor, sharp contact.	85	15	0		
6	566								566
7	565								565
8	564			BOTTOM OF CORE= 5.6 ft below sediment surface; 566.52 ft NAVD88					564
9	563								563

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC26

NORTHING 722034.135 **EASTING** 1684181.605 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 565.67 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/3/2021 12:15:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/3/2021 3:10:00 PM **CORE RECOVERY** 2.7 ft / 87 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	565		OL	(0 to 0.7 ft) Greenish Black (10GY 2.5/1) CLAY, tr. SILT, very soft, medium plasticity, blocky structure, petroliferous odor, sharp contact.	100		0	SC21-SC26-0010	565
1			CH	(0.7 to 1.5 ft) Gray (2.5Y 5/1) CLAY, tr. SAND, f to c., subangular to subrounded, tr. SILT, soft with stiff intervals, high plasticity, sharp contact.	95	5	0		
2	564		CL	(1.5 to 2.7 ft) Dark Greenish Gray (10Y 4/1) CLAY, few SILT, tr. SAND, f to c., tr. gravel-sized slag, very soft, low plasticity (w>LL), faint musty odor.	94	5	1	SC21-SC26-1020	564
3	563			BOTTOM OF CORE= 2.7 ft below sediment surface; 562.97 ft NAVD88					563
4	562								562
5	561								561
6	560								560
7	559								559
8	558								558
9	557								557
	556								556

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SEDIMENT BORING SC21-SC28

EA Engineering, Science, and Technology, Inc., PBC

NORTHING 722239.907 **EASTING** 1684609.379 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 566.82 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/3/2021 11:50:00 AM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/4/2021 2:15:00 PM **CORE RECOVERY** 5.3 ft / 96 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	566		OH	(0 to 0.6 ft) Bluish Black (5PB 2.5/1) CLAY, few SAND, vf to m., few SILT, fining upward, tr. wood fragments, very soft, high plasticity (w>LL), petroliferous odor, sharp contact.	90	10	0	SC21-SC28-0010 SC21-SC28-0010FD	566
1			CH	(0.6 to 1.5 ft) Very Dark Gray (N 3/) CLAY, tr. SILT, soft, high plasticity, petroliferous odor, sharp contact.	100	0	0	SC21-SC28-1020	
2	565		OH	(1.5 to 1.7 ft) Bluish Black (5PB 2.5/1) CLAY, little SILT, few SAND, vf to f., tr. wood fragments, very soft, medium to high plasticity (w>LL), blocky structure.	100	0	0		565
			CH		100	0	0		
			CL	(1.7 to 2 ft) Very Dark Gray (N 3/) CLAY, tr. SILT, soft, high plasticity, petroliferous odor, sharp contact.	75	15	10		
			CH		97	3	0		
3	564		CH	(2 to 2.1 ft) Dark Gray (5Y 4/1) CLAY, few SAND vf to vc., subangular to subrounded, Qtz., few GRAVEL, sm to lg. (<2.1 cm), subangular to subrounded, tr. SILT, soft, noncohesive, sharp contact. (2.1 to 2.4 ft) Grayish Brown (10YR 5/2) CLAY, tr. SAND, vf to f., tr. SILT, soft, high plasticity, sharp contact. (2.4 to 4.4 ft) Very Dark Gray (N 3/) CLAY, tr. SILT, soft, high plasticity, petroliferous odor, sharp contact.	100	0	0	SC21-SC28-2040 SC21-SC28-2040MS SC21-SC28-2040MSD	564
4	563								563
5	562		CH	(4.4 to 5.3 ft) Very Dark Gray (N 3/) CLAY, tr. GRAVEL, lg., subangular, tr. SAND, m to c., tr. SILT, soft, high plasticity, petroliferous/musty odor.	90	5	5	SC21-SC28-4060	562
6	561			BOTTOM OF CORE= 5.3 ft below sediment surface; 561.52 ft NAVD88					561
7	560								560
8	559								559
9	558								558
	557								557

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC29

NORTHING 722508.769 **EASTING** 1684846.395 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 560.6 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/3/2021 9:50:00 AM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/3/2021 2:25:00 PM **CORE RECOVERY** 1.7 ft / 61 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	560		CL	(0 to 0.6 ft) Black (N 2.5/) CLAY, little GRAVEL, sm to lg., angular to subrounded, little SAND, vf to vc., subangular to subrounded, tr. SILT, tr. root, tr. glass, nail, loose/soft, cohesive, nonplastic, petroliferous odor, gradational contact.	70	15	15	SC21-SC29-0010	560
1			OH	(0.6 to 1.7 ft) Very Dark Gray (N 3/) CLAY, tr. SAND, vf to c., tr. SILT, tr. root/wood fragments, soft, cohesive, medium to high plasticity (w>LL), petroliferous, slightly sweet odor.	98	2	0		
2	559								559
3	558			BOTTOM OF CORE= 1.7 ft below sediment surface; 558.9 ft NAVD88					558
4	557								557
5	556								556
6	555								555
7	554								554
8	553								553
9	552								552
	551								551

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC30

NORTHING 722886.334 **EASTING** 1685112.311 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 562.92 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/3/2021 9:15:00 AM **CORE REPLICATE LOGGED** D **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/4/2021 12:00:00 PM **CORE RECOVERY** 3.4 ft / 83 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0			OH	(0 to 0.5 ft) Bluish Black (10B 2.5/1) CLAY, tr. SAND, vf to f., tr. SILT, very soft, medium to high plasticity, blocky structure, petroliferous odor, sharp contact.	99	1	0	SC21-SC30-0010	
1	562		OH	(0.5 to 3.4 ft) Black (N 2.5/) CLAY, tr. SILT, tr. wood fragments, very soft, medium to high plasticity, blocky structure, petroliferous odor.	100	0	0	SC21-SC30-1020	562
2	561								561
3	560							SC21-SC30-2040	560
4	559			BOTTOM OF CORE= 3.4 ft below sediment surface; 559.52 ft NAVD88					559
5	558								558
6	557								557
7	556								556
8	555								555
9	554								554
	553								553

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

SEDIMENT BORING SC21-SC31

EA Engineering, Science, and Technology, Inc., PBC

NORTHING 723305.641 **EASTING** 1685477.31 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 564.56 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/2/2021 4:10:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/3/2021 9:20:00 AM **CORE RECOVERY** 7.7 ft / 96 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	564		ML	(0 to 0.9 ft) Very Dark Greenish Gray (10Y 3/1) SILT, some CLAY, tr. SAND, vf., tr. root/plant material, very soft, low plasticity (w>LL), faint musty odor, sharp contact.	99	1	0	SC21-SC31-0010	564
1	563		OH	(0.9 to 3.8 ft) Very Dark Gray (N 3/) CLAY, tr. SILT, soft, medium to high plasticity, petroliferous odor, sharp contact.	100	0	0	SC21-SC31-1020	563
2	562							SC21-SC31-2040	562
3	561								561
4	560		OH	(3.8 to 4.6 ft) Black (N 2.5/) CLAY, tr. SAND, f to m., tr. SILT, soft to medium stiff, medium to high plasticity, petroliferous odor, gradational contact.	99	1	0	SC21-SC31-4060	560
5	559		OL	(4.6 to 5 ft) Black (N 2.5/) CLAY, few SAND, f to m., some SILT, tr. root, soft to medium stiff, medium plasticity, strong petroliferous odor, sharp contact.	90	10	0		559
			SM	(5 to 5.6 ft) Very Dark Greenish Gray (10Y 3/1) SAND, vf to f., some SILT, few CLAY, tr. shell fragments, tr. plant material, medium dense, cohesive, low plasticity, interval of high clay content @ -5.3 ft., gradational contact.	40	60	0		
6	558		OL	(5.6 to 6.1 ft) Black (N 2.5/) CLAY, few SAND, f to m., some SILT, tr. root, soft to medium stiff, medium plasticity, strong petroliferous odor, sharp contact.	90	10	0		558
			SM	(6.1 to 6.3 ft) Very Dark Greenish Gray (10Y 3/1) SAND, vf to f., some SILT, few CLAY, tr. shell fragments, tr. plant material, medium dense, cohesive, low plasticity, gradational contact.	40	60	0	SC21-SC31-6080	
7	557		OH	(6.3 to 7.7 ft) Black (N 2.5/) CLAY, tr. SAND, f to m., tr. SILT, soft to medium stiff, medium to high plasticity, petroliferous odor, gradational contact.	99	1	0		557
8	556			BOTTOM OF CORE= 7.7 ft below sediment surface; 556.86 ft NAVD88					556
9	555								555

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC32

NORTHING 723466.943 **EASTING** 1685837.295 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 569.28 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/2/2021 3:30:00 PM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/3/2021 11:50:00 AM **CORE RECOVERY** 7.8 ft / 98 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	569		CH	(0 to 4.4 ft) Dark Greenish Gray (10Y 4/1) CLAY, tr. SILT, tr. shell fragments, very soft, medium to high plasticity (w>LL), sharp contact.	100	0	0	SC21-SC32-0010	569
1	568							SC21-SC32-1020	568
2	567							SC21-SC32-2040	567
3	566								566
4	565								565
5	564		ML	(4.4 to 5.3 ft) Dark Greenish Gray (10Y 4/1) SILT, few CLAY, tr. SAND, vf to f., tr. mica, stiff, low plasticity, gradational contact.	97	3	0	SC21-SC32-4060	564
6	563		CH	(5.3 to 6.6 ft) Dark Greenish Gray (10Y 4/1) CLAY, little SILT, tr. shell fragments, very soft, medium to high plasticity (w>LL), gradational contact.	100	0	0		563
7	562		SP	(6.6 to 7 ft) Dark Gray (5Y 4/1) SAND, vf to m., subangular to subrounded, Qtz., mafics, tr. SILT, tr. mica, dense, cohesive, nonplastic, sharp contact.	1	99	0	SC21-SC32-6080	
			CH	(7 to 7.8 ft) Dark Greenish Gray (10Y 4/1) CLAY, little SILT, tr. shell fragments, very soft, medium to high plasticity (w>LL).	100	0	0		562
8	561			BOTTOM OF CORE= 7.8 ft below sediment surface; 561.48 ft NAVD88					561
9	560								560

NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

SWAN CREEK SC21.GPJ NNC.GPJ 29/12/21 REV.

EA Engineering, Science, and Technology, Inc., PBC

SEDIMENT BORING SC21-SC33

NORTHING 723725.98 **EASTING** 1686004.478 **SPC OH N USFT (NAD83)**

SEDIMENT SURFACE ELEVATION 562.53 ft MLLW

PROJECT NAME AND NUMBER Swan Creek Sediment Assessment (1571806)

SAMPLING METHOD Vibracore **DRILLING SUBCONTRACTOR** Affiliated Researchers, LLC

DATE/TIME COLLECTED 11/3/2021 8:50:00 AM **CORE REPLICATE LOGGED** A **GEOLOGIST** K. Merandi

DATE/TIME PROCESSED 11/4/2021 4:20:00 PM **CORE RECOVERY** 3.3 ft / 79 % **TARGET RECOVERY** 70%

DEPTH BELOW SEDIMENT SURFACE (ft)	ELEVATION (ft MLLW)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION Depth Interval, Color (Munsell), Moisture, Principal Components, Minor Components, Density/Consistency, Grading, Stratification/Contacts, Odor	PERCENT FINES	PERCENT SAND	PERCENT GRAVEL	SAMPLE SUBMITTED FOR ANALYSIS	ELEVATION (ft MLLW)
0	562		OH	(0 to 0.7 ft) Very Dark Gray (5Y 3/1) CLAY, tr. SAND, f to c., subrounded, Qtz., tr. SILT, tr. wood fragments, very soft, medium to high plasticity (w>LL), musty odor, gradational contact.	95	5	0	SC21-SC33-0010	562
1			OL	(0.7 to 1.2 ft) Greenish Black (10Y 2.5/1) SILT, some GRAVEL, sm to lg. (<6.5 cm), subangular, little SAND, vf to vc., subangular to subrounded, Qtz., few CLAY, tr. wood fragments, loose, cohesive, nonplastic, faint petroliferous odor, sharp contact.	50	20	30		
	561		OL	(1.2 to 1.7 ft) Black (N 2.5/) CLAY, little SAND, vf to vc., subangular to rounded, few GRAVEL, sm to lg. (<4 cm), subangular to subrounded, tr. SILT, fining upward, soft, cohesive, low plasticity, petroliferous odor, sharp contact.	60	25	15	SC21-SC33-1020	561
2			OH	(1.7 to 3.3 ft) Black (N 2.5/) CLAY, little SAND, vf to vc., subangular to rounded, few GRAVEL, sm to lg. (<4 cm), subangular to subrounded, few SILT, soft, cohesive, low plasticity, blocky structure, petroliferous odor.	60	25	15	SC21-SC33-2040	
3	560								560
	559			BOTTOM OF CORE= 3.3 ft below sediment surface; 559.23 ft NAVD88					559
4									
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NOTES:

- W>LL: Water content greater than the Liquid Limit inhibited field determination of plasticity.

Table B-1. Core Sample Coordinates and Depth of Refusal, Swan Creek Assessment of Contaminated Sediments, Maumee River Area of Concern, Toledo, Ohio

Location ID	Date Collected	Time Collected (local)	Target Coordinates		Actual Coordinates		Depth of Refusal (ft)	Field Notes
			Y	X	Y	X		
			NAD 1983 StatePlane Ohio North FIPS 3401 Feet		NAD83 State Plane Ohio North (US Feet)			
SC21-SC02a	11/5/2021	1110	719869.35	1675433.89	719866.00	1675442.26	1.9	2 attempts on target position. Sampling crew probed around area until soft material was found. Center of the river is rocky substrate. Position was adjusted several times to find soft sediment.
SC21-SC02b	11/5/2021	1130	719869.35	1675433.89	719876.97	1675456.71	1	
SC21-SC02c	11/5/2021	1200	719869.35	1675433.89	719809.19	1675482.76	5.1	
SC21-SC02d*	11/5/2021	1215	719869.35	1675433.89	719809.19	1675482.76	5.7	
SC21-SC02e	11/5/2021	1225	719869.35	1675433.89	719809.19	1675482.76	5.4	
SC21-SC02f	11/5/2021	1245	719869.35	1675433.89	719809.19	1675482.76	5.7	
SC21-SC03a	11/5/2021	1340	719582.72	1675906.11	719589.65	1675920.69	1	Probing revealed hard or gravel substrate. 2 attempts made on location. Location offset to find soft sediments and avoid rocky/gravely sediments.
SC21-SC03b	11/5/2021	1410	719582.72	1675906.11	719583.84	1675853.80	6	
SC21-SC03c	11/5/2021	1425	719582.72	1675906.11	719583.84	1675853.80	5.4	
SC21-SC03d	11/7/2021	1220	719582.72	1675906.11	719714.34	1675748.99	5	
SC21-SC03e*	11/7/2021	1225	719582.72	1675906.11	719714.34	1675748.99	5	
SC21-SC04a*	11/5/2021	1455	719647.71	1676448.08	719655.78	1676450.93	8	--
SC21-SC04b	11/5/2021	1510	719647.71	1676448.08	719655.78	1676450.93	5.3	
SC21-SC04c	11/5/2021	1520	719647.71	1676448.08	719655.78	1676450.93	6	
SC21-SC06a	11/7/2021	1105	719444.29	1677549.25	719442.16	1677548.22	4.2	3 cores collected onsite plus 1 core for MS/MSD
SC21-SC06b	11/7/2021	1120	719444.29	1677549.25	719442.16	1677548.22	3.9	
SC21-SC06c*	11/7/2021	1130	719444.29	1677549.25	719442.16	1677548.22	4.4	
SC21-SC06d	11/7/2021	1140	719444.29	1677549.25	719442.16	1677548.22	4.8	
SC21-SC07a	11/7/2021	1315	720008.97	1678125.09	720011.13	1678131.68	6.9	Hard substrate, rocky in center of channel with strong currents. Location offset greater than 10 ft radius to find soft sediments.
SC21-SC07b	11/7/2021	1320	720008.97	1678125.09	720011.13	1678131.68	6	
SC21-SC07c	11/7/2021	1345	720008.97	1678125.09	720011.13	1678131.68	6	
SC21-SC07d	11/7/2021	1350	720008.97	1678125.09	720027.15	1678117.25	3.9	
SC21-SC07e*	11/7/2021	1405	720008.97	1678125.09	720131.49	1678165.81	6	
SC21-SC08a	11/2/2021	1040	720753.05	1678204.00	720744.11	1678204.84	2	--
SC21-SC09a	11/2/2021	1150	721083.01	1678037.61	721075.35	1678058.08	1.3	Several attempts made at this location. Leaf debris stuck in core catcher. Location was offset more than 10 ft from target location to find recoverable material.
SC21-SC09b	11/8/2021	930	721083.01	1678037.61	721078.76	1678053.62	2.3	
SC21-SC09c	11/8/2021	955	721083.01	1678037.61	721093.34	1678078.33	6	
SC21-SC09d*	11/8/2021	1000	721083.01	1678037.61	721014.10	1678072.25	6	
SC21-SC10a	11/4/2021	930	721424.63	1677871.02	721428.00	1677885.16	1.2	Rocky and gravel substrate on target location with a strong current.

Table B-1. Core Sample Coordinates and Depth of Refusal, Swan Creek Assessment of Contaminated Sediments, Maumee River Area of Concern, Toledo, Ohio

Location ID	Date Collected	Time Collected (local)	Target Coordinates		Actual Coordinates		Depth of Refusal (ft)	Field Notes
			Y	X	Y	X		
			NAD 1983 StatePlane Ohio North FIPS 3401 Feet		NAD83 State Plane Ohio North (US Feet)			
SC21-SC11a	11/8/2021	1030	721731.56	1677804.10	721737.55	1677820.67	1.9	Target location is gravel and rocky substrate. Gravel caught in core catcher on 1st and 2nd attempt. Location offset more than 10 ft to find soft sediments
SC21-SC11b	11/8/2021	1040	721731.56	1677804.10	721737.55	1677820.67	3.4	
SC21-SC11c	11/8/2021	1100	721731.56	1677804.10	721860.22	1677972.68	5	
SC21-SC11d*	11/8/2021	1120	721731.56	1677804.10	721860.22	1677972.68	6	
SC21-SC12a	11/8/2021	1150	721815.12	1678212.38	721816.97	1678225.39	2.1	--
SC21-SC12b*	11/8/2021	1155	721815.12	1678212.38	721816.97	1678225.39	4	
SC21-SC12c	11/8/2021	1410	721815.12	1678212.38	721816.97	1678225.39	4	
SC21-SC13a	11/2/2021	1245	721024.67	1679086.33	721021.63	1679093.79	3.8	3 attempts were made to collect cores with <70% recovery on the target location. Soft sediment probed on the left descending bank, location offset more than 10 ft.
SC21-SC13b	11/2/2021	1255	721024.67	1679086.33	721021.63	1679093.79	8	
SC21-SC13c	11/2/2021	1310	721024.67	1679086.33	721021.63	1679093.79	2.8	
SC21-SC13d	11/6/2021	1645	721024.67	1679086.33	721018.47	1679090.48	2.5	
SC21-SC13e	11/8/2021	1245	721024.67	1679086.33	721082.56	1679177.17	8	
SC21-SC13f*	11/8/2021	1255	721024.67	1679086.33	721082.56	1679177.17	6	
SC21-SC15a	11/6/2021	1050	721207.51	1679641.39	721144.87	1679701.04	5.5	1st and 2nd attempts 0 recovery. Gravel and rocks stuck in core catcher. Probed entire sampling unit looking for soft sediment. Location offset more than 10 ft.
SC21-SC15b	11/6/2021	1555	721207.51	1679641.39	721145.65	1679268.86	2.7	
SC21-SC15c*	11/6/2021	1610	721207.51	1679641.39	721145.65	1679268.86	6	
SC21-SC15d	11/6/2021	1615	721207.51	1679641.39	721145.65	1679268.86	6	
SC21-SC15e	11/6/2021	1625	721207.51	1679641.39	721145.65	1679268.86	3.1	
SC21-SC16a	11/5/2021	1615	720975.82	1680167.30	720983.19	1680169.05	8	Hard gravel layer on surface at target location. Location offset more than 10 ft.
SC21-SC16b	11/5/2021	1635	720975.82	1680167.30	720989.49	1680177.84	8	
SC21-SC16c*	11/5/2021	1650	720975.82	1680167.30	721002.86	1680168.36	8	
SC21-SC17a*	11/4/2021	1310	721362.95	1680504.24	721362.85	1680506.72	8	--
SC21-SC17b	11/4/2021	1325	721362.95	1680504.24	721362.85	1680506.72	8	
SC21-SC19a	11/4/2021	1035	721767.25	1681255.06	721765.85	1681254.50	7.2	--
SC21-SC20a	11/4/2021	1220	721760.85	1681555.92	721753.27	1681590.08	1.9	Low hanging tree directly over target location cannot setup frame under the tree. Location Offset downstream as close to original location as possible. Location offset more than 10 ft.
SC21-SC20b*	11/4/2021	1230	721760.85	1681555.92	721753.27	1681590.08	1.9	
SC21-SC21a	11/4/2021	1055	721592.75	1681985.66	721591.11	1681993.47	2.9	Second attempt lost rocks and gravel in core catcher. Location offset more than 10 ft to find soft sediment.
SC21-SC21c	11/4/2021	1120	721592.75	1681985.66	721555.62	1681974.31	2.3	
SC21-SC21d*	11/4/2021	1130	721592.75	1681985.66	721555.62	1681974.31	5.4	
SC21-SC22a*	11/3/2021	1615	721356.59	1682479.88	721344.64	1682480.60	3.6	--
SC21-SC22b	11/3/2021	1625	721356.59	1682479.88	721344.64	1682480.60	1.7	
SC21-SC23a	11/3/2021	1515	721739.55	1683004.59	721720.52	1683003.51	1.7	Sticks and rocks in core catcher. Probed area for soft sediment. Location offset more than 10 ft.
SC21-SC23c*	11/3/2021	1540	721739.55	1683004.59	721739.82	1683045.23	4.7	
SC21-SC23d	11/3/2021	1550	721739.55	1683004.59	721739.82	1683045.23	5.1	

Table B-1. Core Sample Coordinates and Depth of Refusal, Swan Creek Assessment of Contaminated Sediments, Maumee River Area of Concern, Toledo, Ohio

Location ID	Date Collected	Time Collected (local)	Target Coordinates		Actual Coordinates		Depth of Refusal (ft)	Field Notes
			Y	X	Y	X		
			NAD 1983 StatePlane Ohio North FIPS 3401 Feet		NAD83 State Plane Ohio North (US Feet)			
SC21-SC24a*	11/3/2021	1355	722026.23	1683201.04	722020.47	1683213.16	6.5	--
SC21-SC24b	11/3/2021	1410	722026.23	1683201.04	722020.47	1683213.16	6.6	
SC21-SC24c	11/3/2021	1425	722026.23	1683201.04	722020.47	1683213.16	6.1	
SC21-SC25a*	11/3/2021	1330	722298.29	1683736.86	722289.68	1683750.17	8	Site in very shallow water.
SC21-SC25b	11/3/2021	1335	722298.29	1683736.86	722289.68	1683750.17	8	
SC21-SC26a*	11/2/2021	1215	722072.17	1684155.06	722034.14	1684181.61	3.1	Probed rock and gravel on target location. Location offset more than 10 ft to find soft sediment.
SC21-SC26b	11/2/2021	1235	722072.17	1684155.06	722034.14	1684181.61	3.5	
SC21-SC28a*	11/3/2021	1130	722132.66	1684580.03	722239.91	1684609.38	5.5	Probed gravel and rocks on target location. Location offset more than 10 ft to find soft sediment.
SC21-SC28b	11/3/2021	1140	722132.66	1684580.03	722239.91	1684609.38	8	
SC21-SC29a*	11/3/2021	950	722523.45	1684835.49	722508.77	1684846.40	2.8	Location offset more than 10 ft from target location to find soft sediment.
SC21-SC29b	11/3/2021	1000	722523.45	1684835.49	722508.77	1684846.40	2.8	
SC21-SC29c	11/3/2021	1010	722523.45	1684835.49	722508.77	1684846.40	2.8	
SC21-SC30a	11/2/2021	1640	722903.39	1685098.23	722887.80	1685107.93	3.3	Noticeable odor and sheen when SC30d was collected. Location offset more than 10 ft from target location to find soft sediment.
SC21-SC30b	11/2/2021	1650	722903.39	1685098.23	722887.80	1685107.93	3.2	
SC21-SC30c	11/2/2021	1700	722903.39	1685098.23	722887.80	1685107.93	2.9	
SC21-SC30d*	11/3/2021	915	722903.39	1685098.23	722886.33	1685112.31	4.1	
SC21-SC31a	11/2/2021	1610	723309.00	1685479.46	723305.64	1685477.31	8	--
SC21-SC32a*	11/2/2021	1530	723472.93	1685838.52	723466.94	1685837.30	8	--
SC21-SC32b	11/2/2021	1545	723472.93	1685838.52	723466.94	1685837.30	8	
SC21-SC33a	11/2/2021	1430	723725.49	1685989.72	723722.11	1685993.99	4.7	Location offset more than 10 ft from target location to find soft sediment.
SC21-SC33b	11/2/2021	1445	723725.49	1685989.72	723722.11	1685993.99	4.5	
SC21-SC33c	11/2/2021	1505	723725.49	1685989.72	723722.11	1685993.99	4.5	
SC21-SC33d*	11/3/2021	850	723725.49	1685989.72	723725.98	1686004.48	4.2	
SC21-MRREFa	11/6/2021	1355	719981.58	1685800.46	719979.62	1685812.69	8	--
SC21-MR01a	11/6/2021	1425	723283.48	1686408.97	723285.66	1686413.55	4.1	--
SC21-MR02a	11/4/2021	1700	723575.22	1686172.42	723569.90	1686175.97	8	--
SC21-MR03Aa*	11/4/2021	1610	723941.78	1686384.05	723930.96	1686388.62	7.5	Location offset more than 10 ft from target location to find soft sediment.
SC21-MR03Ab	11/4/2021	1625	723941.78	1686384.05	723930.96	1686388.62	7.5	
SC21-MR03Ac	11/4/2021	1640	723941.78	1686384.05	723938.30	1686388.43	3.5	
SC21-MR03Bd	11/6/2021	1255	723941.78	1686384.05	723931.69	1686386.63	8	Location offset more than 10 ft from target location to find soft sediment.
SC21-MR03Be	11/6/2021	1310	723941.78	1686384.05	723948.00	1686388.54	4	
SC21-MR03Bf*	11/6/2021	1325	723941.78	1686384.05	723912.86	1686393.05	6	
SC21-MR04	11/6/2021	1500	723941.78	1686807.32	723931.09	1686821.05	8	
SC21-MR05a	11/4/2021	1545	724308.34	1686595.69	724302.04	1686609.01	5.2	
SC21-MR06a	11/4/2021	1515	724834.55	1686916.25	724830.78	1686923.44	2.2	

* = core used for discrete interval sampling
ft = feet
NAD83 = North American Datum of 1983

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APPENDIX C:

PHOTOGRAPHIC RECORD

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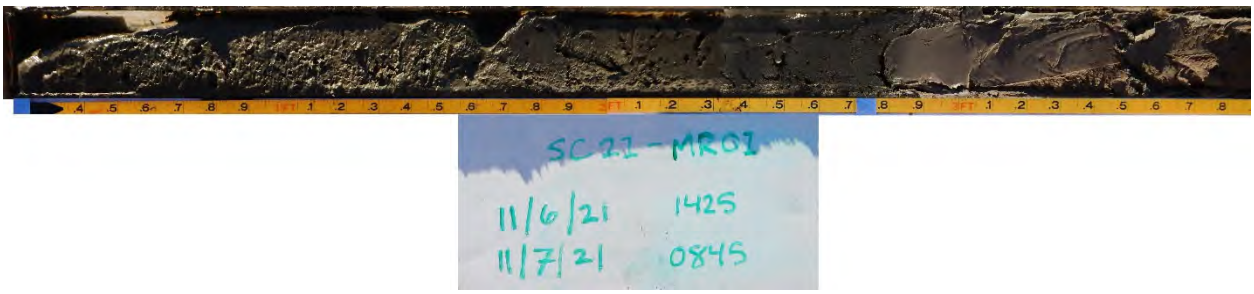
Photographic Record

Sampling Location: SC21-MR01

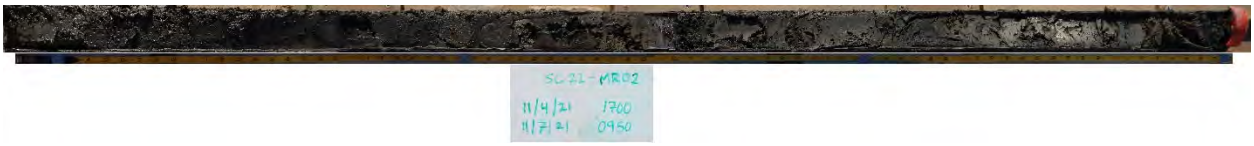
SC21-MR01



Photographic Record

Sampling Location: SC21-MR02

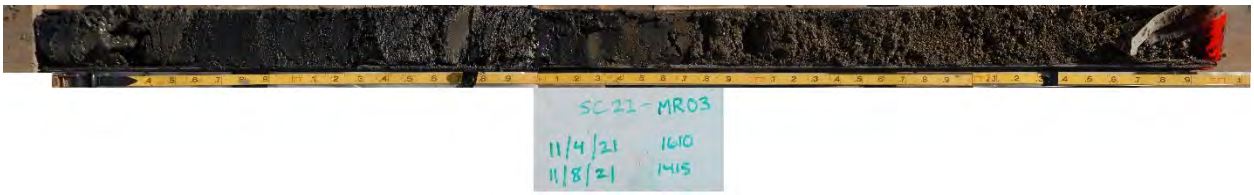
SC21-MR02



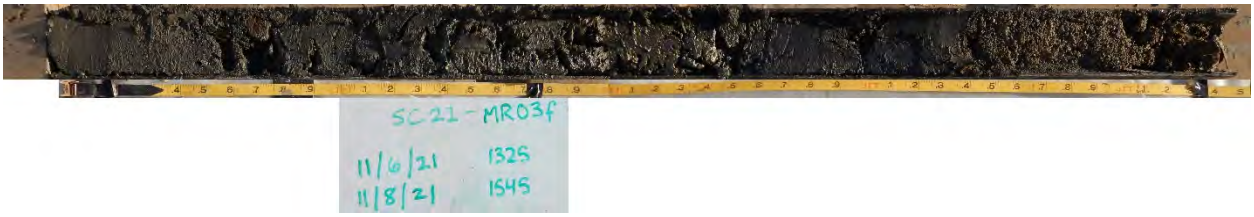
Photographic Record

Sampling Location: SC21-MR03

SC21-MR03



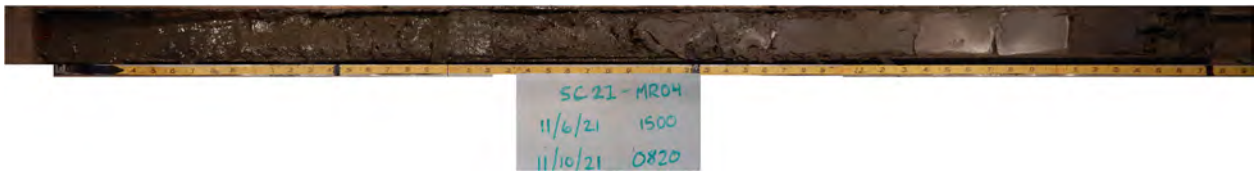
SC21-MR03f



Photographic Record

Sampling Location: SC21-MR04

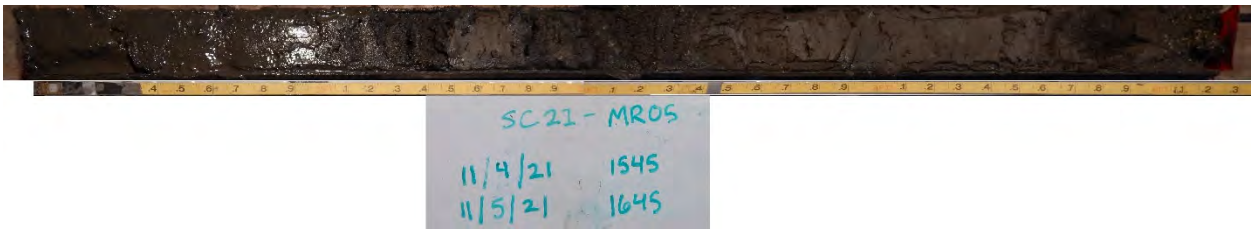
SC21-MR04



Photographic Record

Sampling Location: SC21-MR05

SC21-MR05

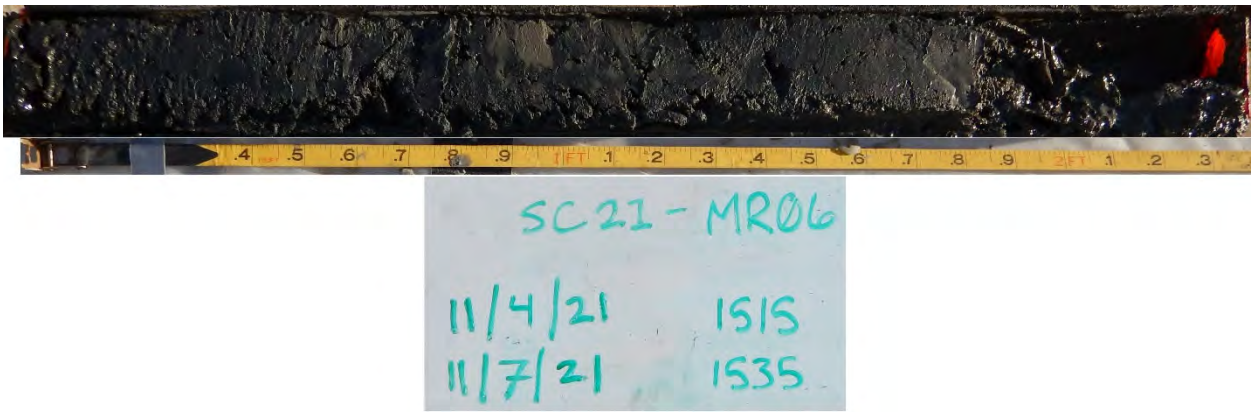


Photographic Record

Sampling Location: SC21-MR06

SC21-MR06-SURF

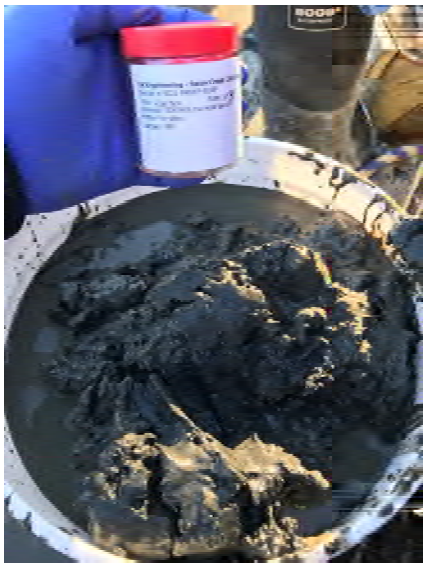
SC21-MR06



Photographic Record

Sampling Location: SC21-MRREF

SC21-MRREF-SURF



SC21-MRREF

Photographic Record

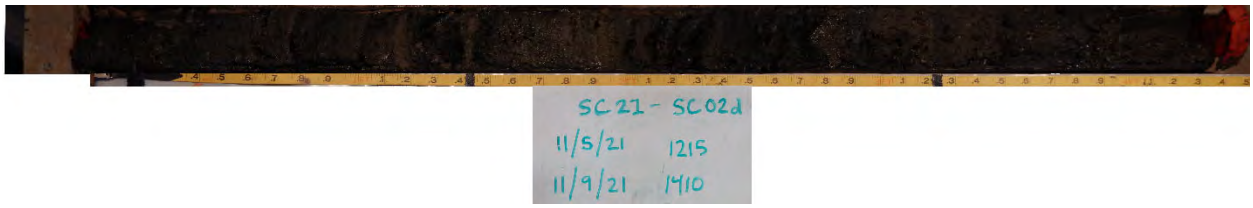
Sampling Location: SC21-SC01

SC21-SC01-SURF

Photographic Record

Sampling Location: SC21-SC02

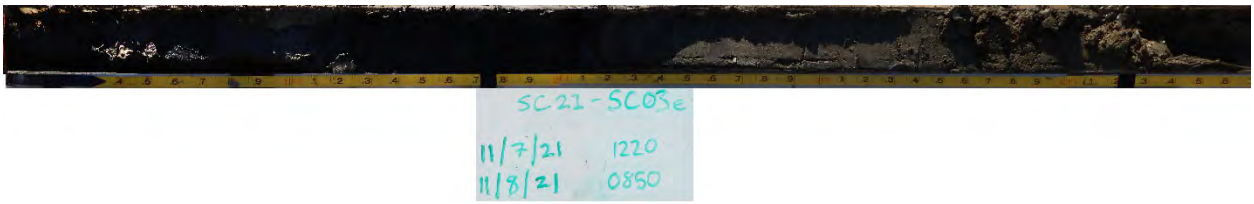
SC21-SC02d



Photographic Record

Sampling Location: SC21-SC03

SC21-SC03e



Photographic Record

Sampling Location: SC21-SC04

SC21-SC04

Photographic Record

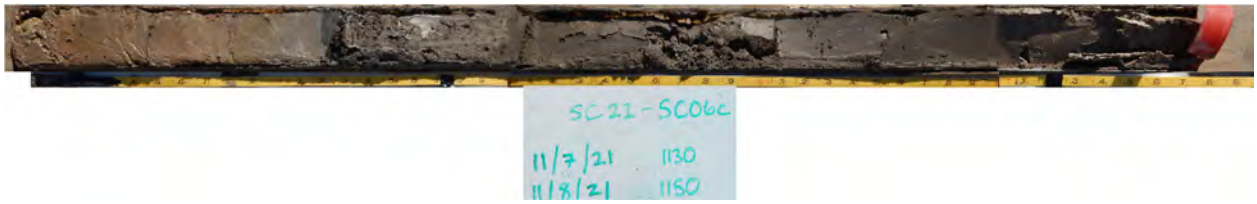
Sampling Location: SC21-SC05

SC21-SC05-SURF

Photographic Record

Sampling Location: SC21-SC06

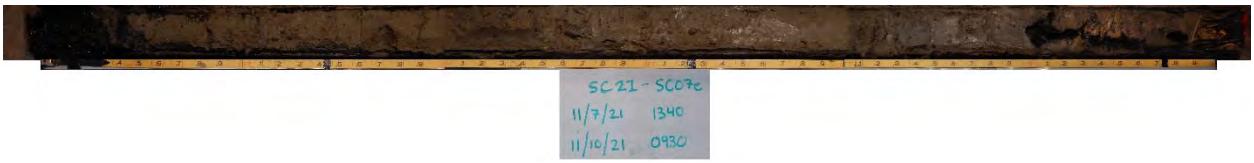
SC21-SC06c



Photographic Record

Sampling Location: SC21-SC07

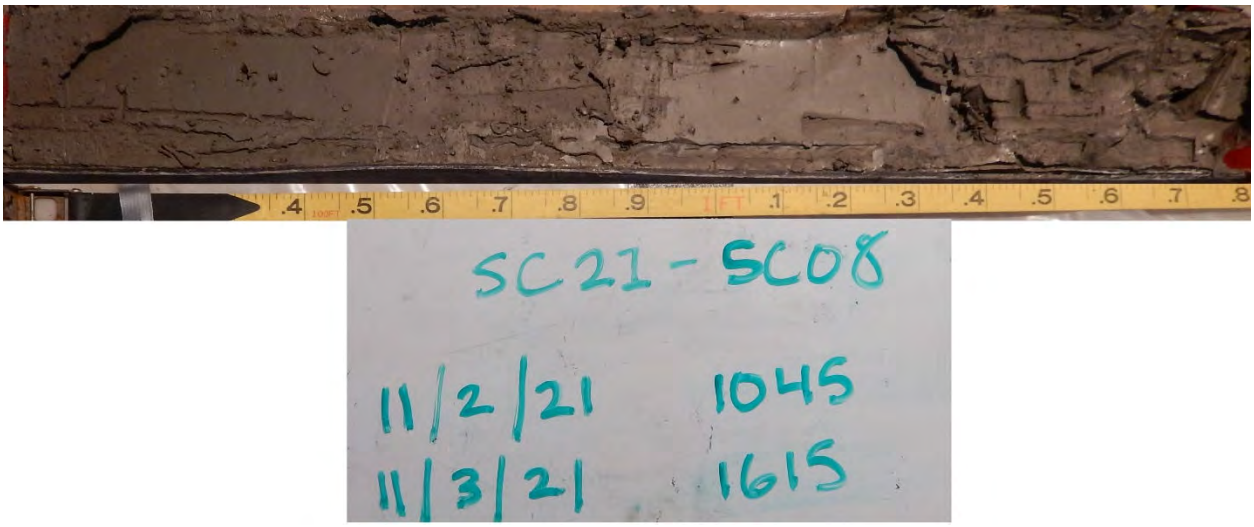
SC21-SC07e



Photographic Record

Sampling Location: SC21-SC08

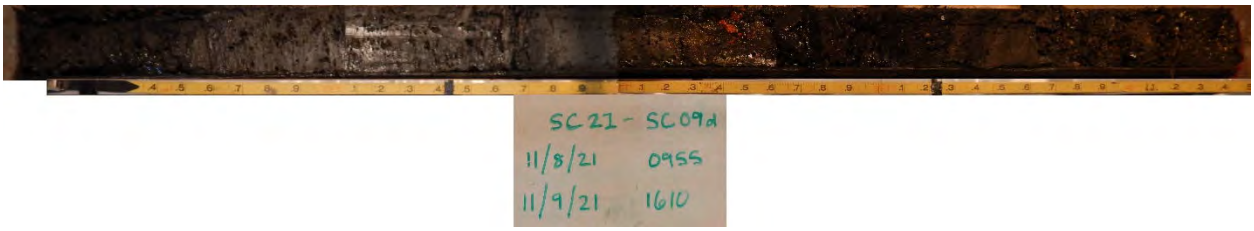
SC21-SC08



Photographic Record

Sampling Location: SC21-SC09

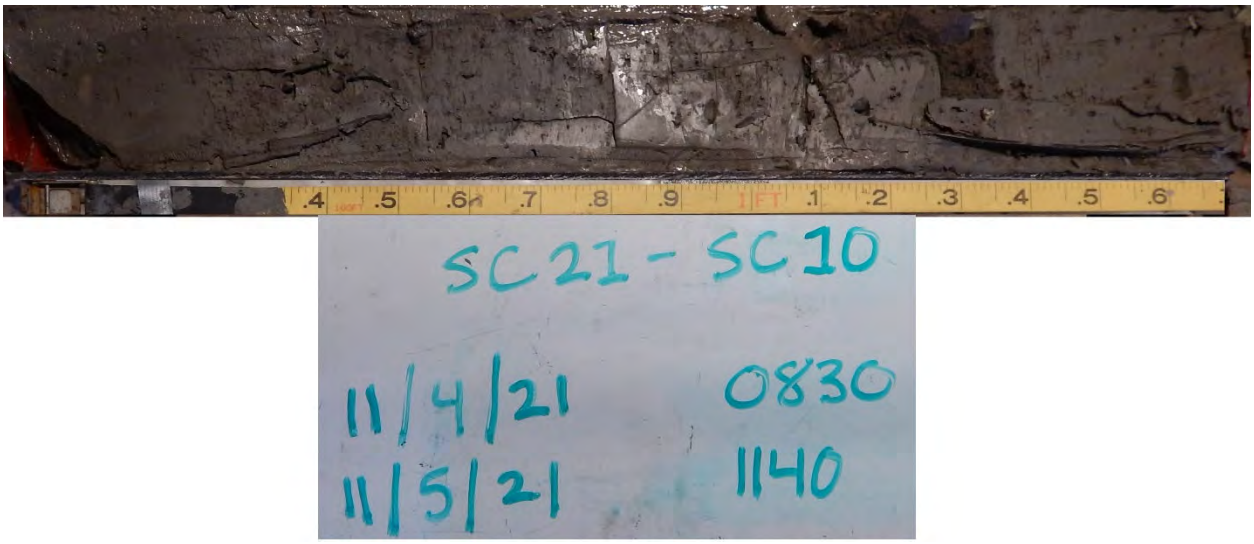
SC21-SC09d



Photographic Record

Sampling Location: SC21-SC10

SC21-SC10



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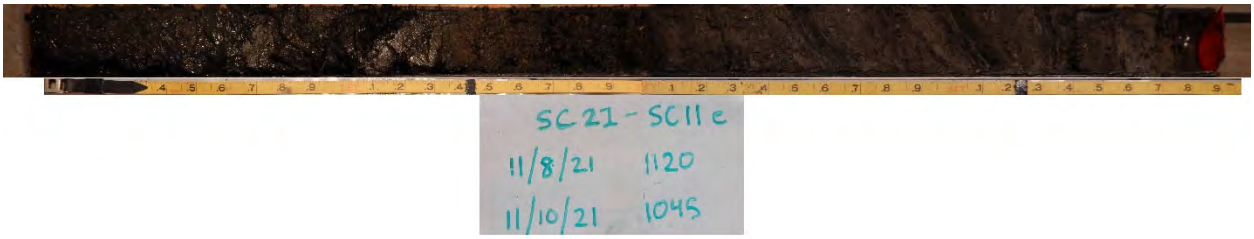

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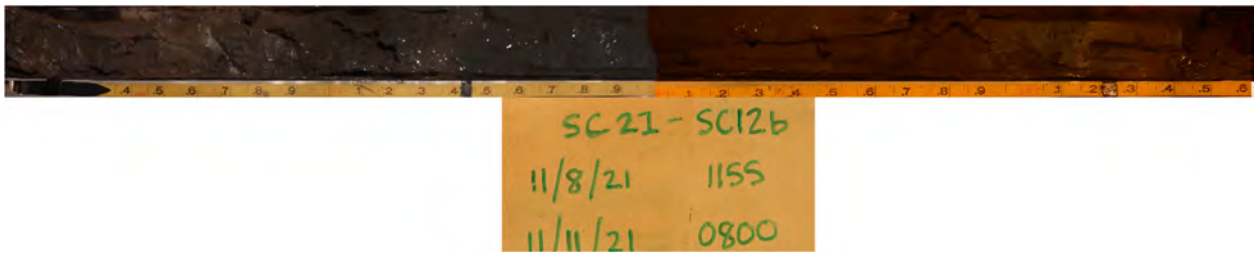

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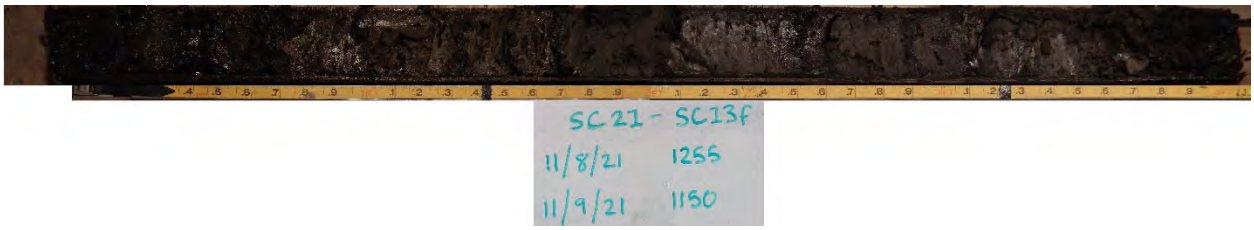

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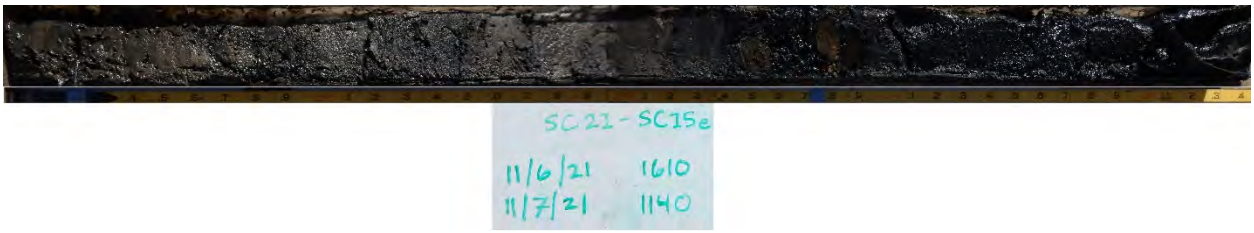

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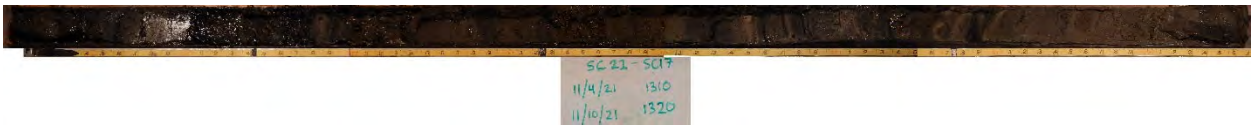
SC21-SC17



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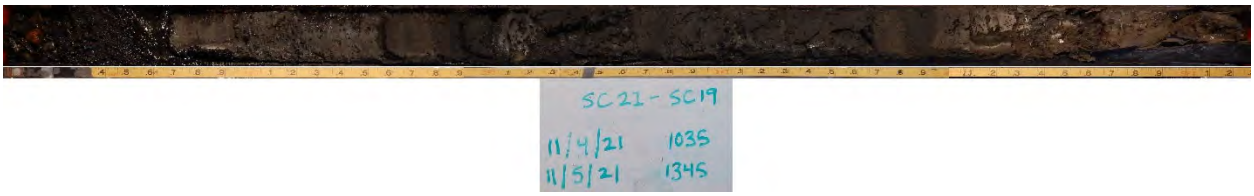
SC21-SC19



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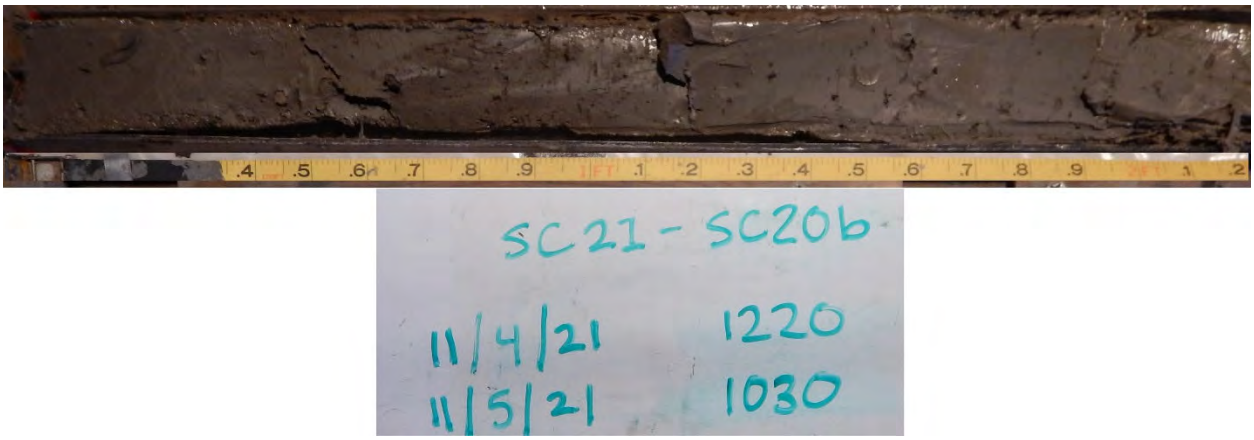

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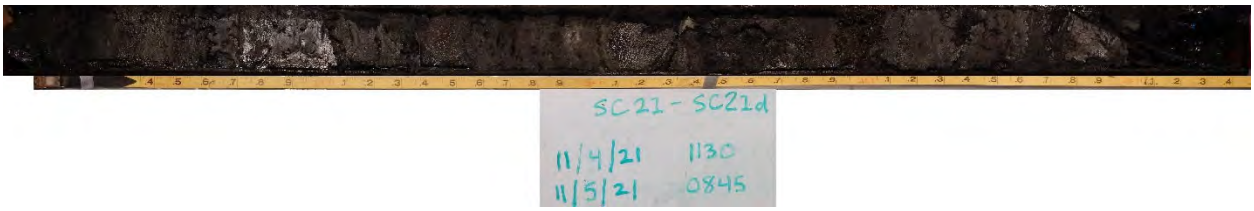

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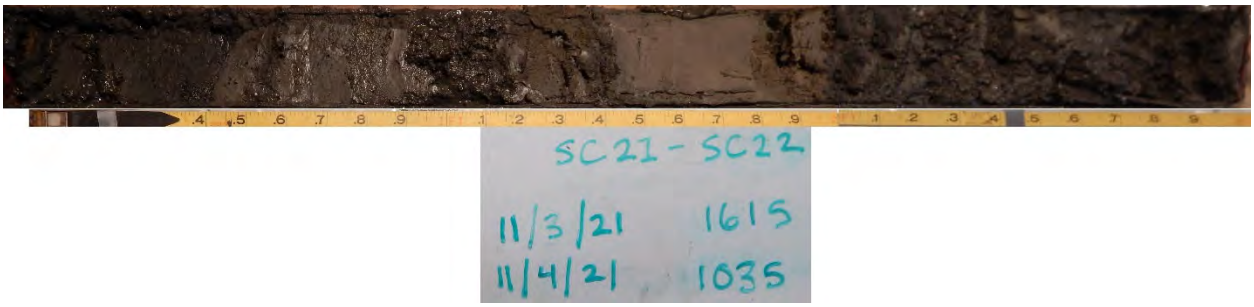
SC21-SC22



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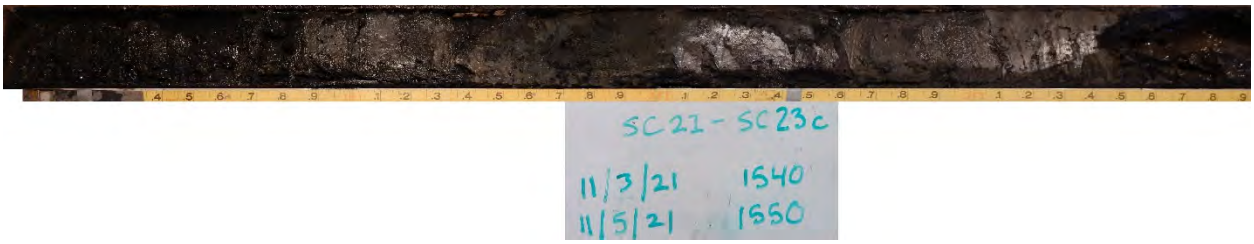

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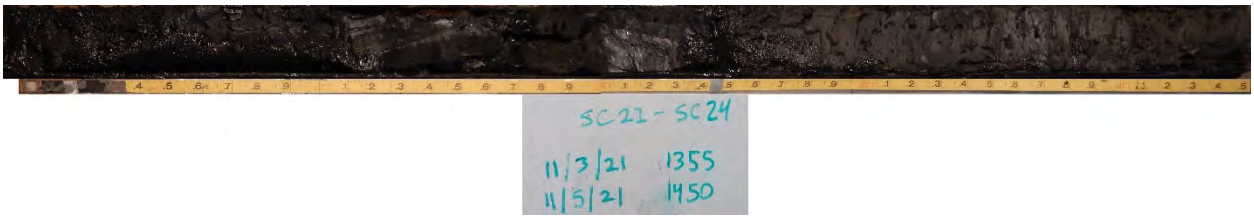

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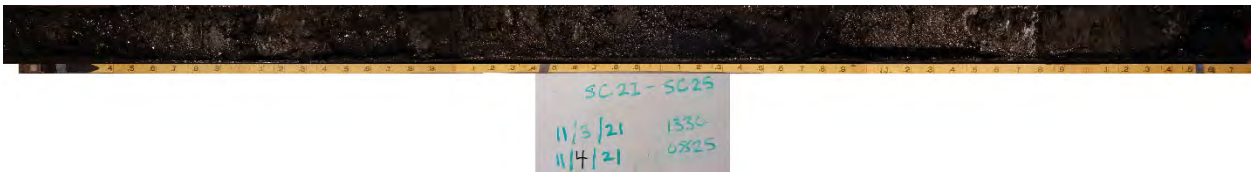

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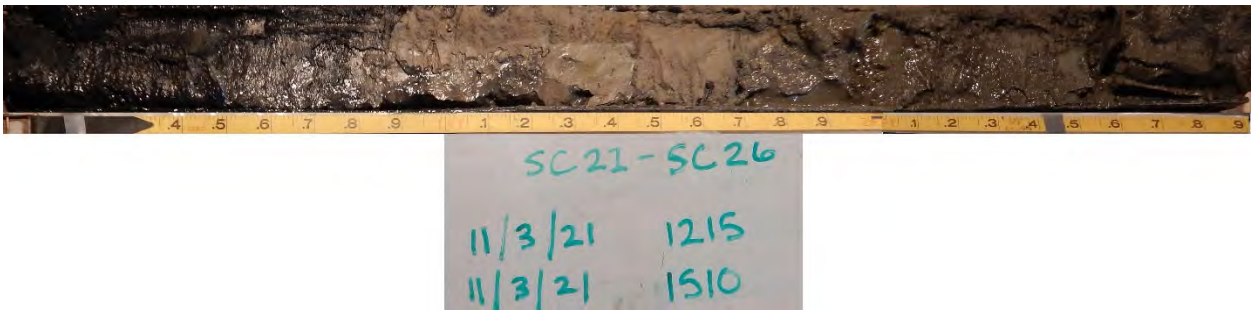

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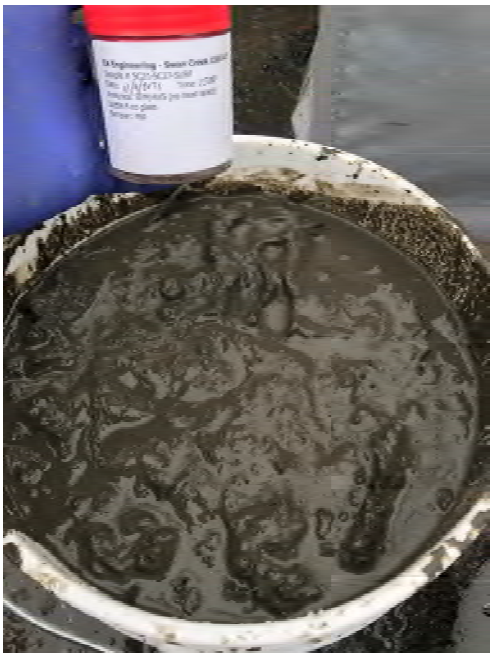

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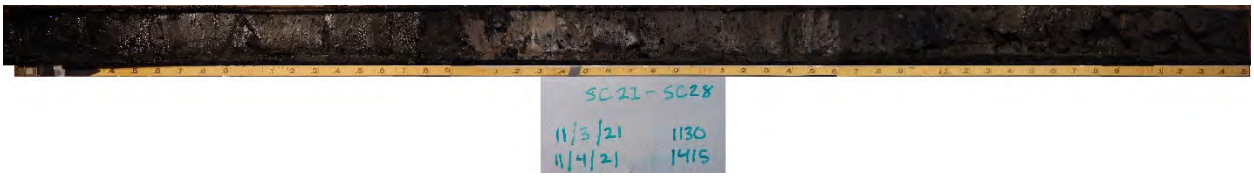

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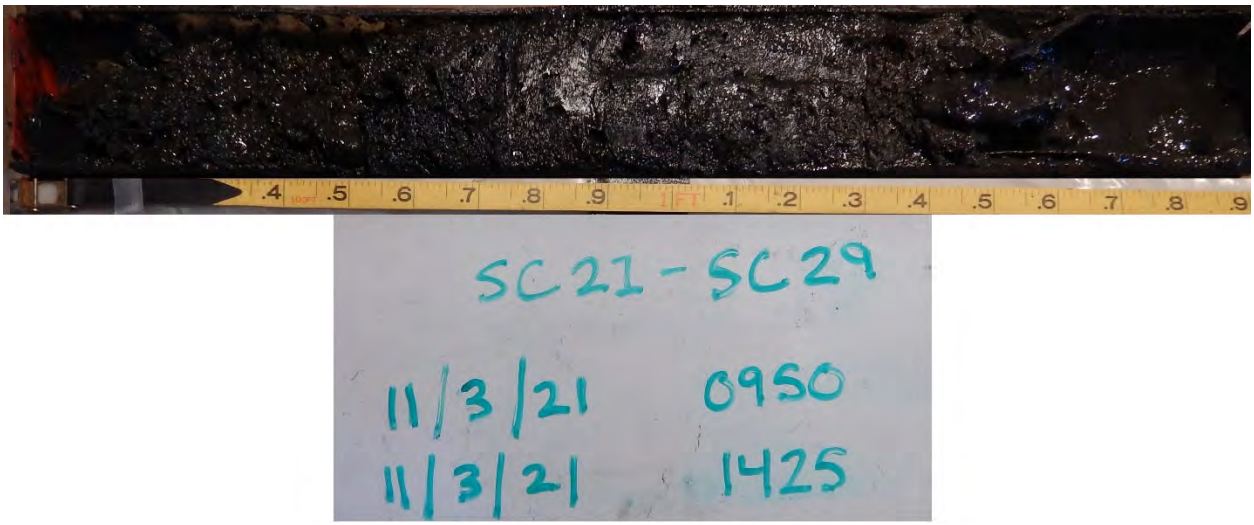
SC21-SC29



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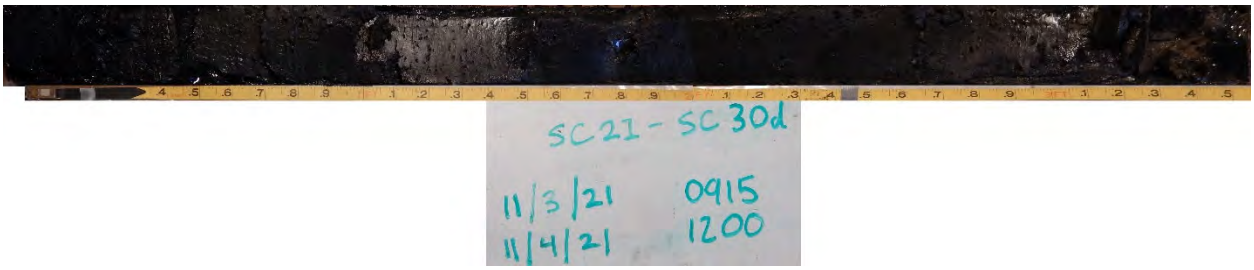
SC21-SC30d



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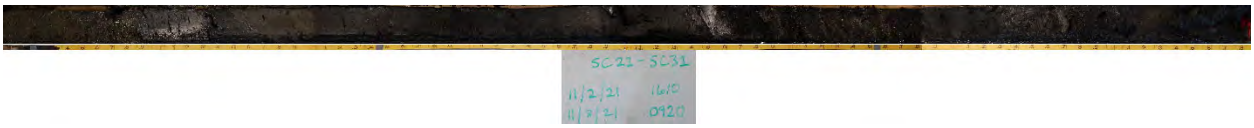

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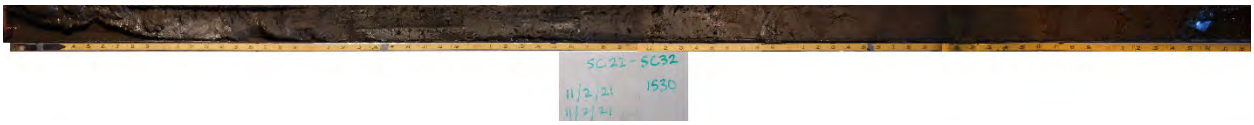

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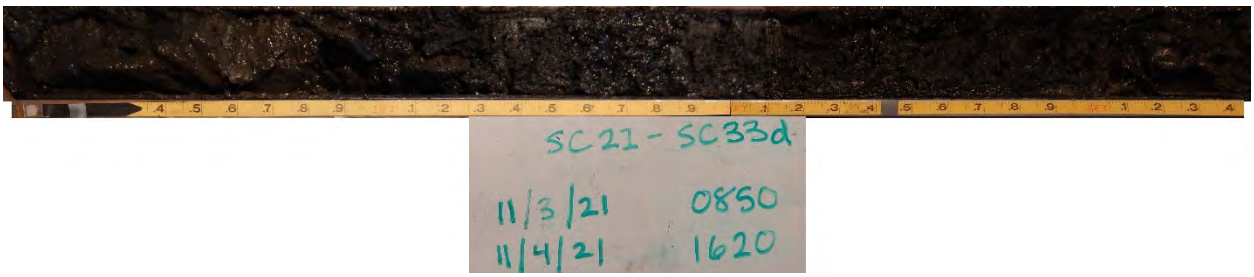

Photographic Record

Sampling Location: SC21-SCREF

SC21-SCREF-SURF

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APPENDIX D:

TOXICITY RESULTS

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RESULTS OF TOXICITY TESTING AND BIOACCUMULATION ANALYSES ON SEDIMENT SAMPLES FROM THE SWAN CREEK MAUMEE AREA OF CONCERN, TOLEDO, OHIO

GREAT LAKES ARCHITECT-ENGINEER SERVICES
CONTRACT NO. 68HE0519D0001

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Results relate only to the items tested or to the samples as received by the laboratory.

This report contains 34 pages plus 7 attachments.

11 February 2022

Michael K. Chanov II
Laboratory Director

Date

EA Project Number 70022.TOX

ACCREDITED IN ACCORDANCE WITH nelac ID# E87550

EA Report Number 8748

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1. INTRODUCTION

EA Engineering, Science, and Technology performed toxicity testing on sediment samples for the Assessment of Contaminated Sediments in Swan Creek Maumee Area of Concern, Toledo, Ohio. The objective of the testing was to evaluate the toxicity and bioaccumulation potential of site sediment samples as compared to control sediment and reference sediments.

The toxicity testing program consisted of: 1) water column bioassays with *Daphnia magna* (water flea), and *Pimephales promelas* (fathead minnow); 2) 10-day whole sediment survival and growth toxicity tests with *Chironomus dilutus* (midge) and *Hyalella azteca* (amphipod); and 3) 28-day bioaccumulation tests with *Lumbriculus variegatus* (oligochaeta worm). The water column bioassays evaluated the effects of exposure to the sediment elutriates on survival of the water column organisms. The whole sediment toxicity tests evaluated the effects of exposure to the sediment samples on survival and growth of the test organisms. The bioaccumulation tests evaluated percent recovery of the test organisms and bioaccumulative effects as a result of 28 days of exposure to the sediment samples. At the completion of the bioaccumulation testing, the organism tissues were submitted for selected chemical analyses, the results of which are not included in this report.

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2. METHODS AND MATERIALS

2.1 SAMPLE DESCRIPTIONS

Twenty sediment samples were collected for the project by EA personnel. In addition, one grab sample of site water were collected from a location within the sampling area. The samples were packed on wet ice and transported to EA's Ecotoxicology Laboratory in Hunt Valley, Maryland. Upon receipt at EA, the samples were visually inspected, compared against the chain-of-custody record, and assigned EA laboratory accession numbers. Copies of the chain-of-custody records are included in Attachment I. Table 1 summarizes the collection and receipt data for the site sediments. When not being processed for testing, the samples were stored in the dark at 4°C.

2.2 CONTROL SEDIMENT

The control sediment used in the toxicity tests was a natural sediment from Pretty Boy Reservoir, Maryland which has been routinely utilized in freshwater sediment toxicity testing.

2.3 LABORATORY WATER

Test solutions for the water column toxicity tests were prepared with moderately hard synthetic freshwater (80-100 mg/L $CaCO_3$). Batches of this water were made with deionized water and adding reagent grade chemicals per US EPA guidance (2002) and aerating overnight. The water was stored up to 14 days at 20 and 25°C under gentle aeration, until needed. Moderately hard synthetic freshwater was also used as the control water for these tests and as culture water for the *D. magna*.

Dechlorinated tap water was used as the overlying water for the sediment exposures. The source of the water was the City of Baltimore municipal water system. Upon entering the laboratory, the water passed through a high-capacity, activated-carbon filtration system to remove any possible contaminants such as chlorine and trace organic compounds. This water source has proven safe for aquatic organism toxicity testing at EA as evidenced by maintenance of the multigeneration *Hyalella azteca*, *Lumbriculus variegatus* and fathead minnow cultures with no evident loss of fecundity. Additionally, this water has been routinely utilized in freshwater sediment toxicity testing, which have met test acceptability criteria.

2.4 TEST ORGANISMS

The *Daphnia magna* (water flea) were obtained from EA's Culture Facility in Hunt Valley, Maryland. The *D. magna* were cultured in moderately hard synthetic freshwater, and the cultures were kept in an environmentally controlled room at 20°C with a 16-hour light/8-hour dark photoperiod. Organisms were fed daily a suspension of yeast/cereal leaves/trout chow supplemented with the algae *Raphidocelis subcapitata* as described in US EPA (2002). Gravid adults were reisolated the day prior to the initiation of toxicity testing to ensure that neonates (young) produced were less than 24 hours old.

The *Pimephales promelas* (fathead minnow) for the acute toxicity tests were obtained from Aqautic BioSystems in Fort Collins, Colorado. The larvae utilized for the acute toxicity testing were all less than 14 days old.

The midges (*Chironomus dilutus*) lot were obtained from Aquatic Research Organisms (Hampton, New Hampshire). Upon receipt at EA, the organisms were gradually acclimated to laboratory water at 23°C. Second to third instar larvae were used in the toxicity testing.

The amphipods (*Hyalella azteca*) were obtained from Aquatic Research Organisms (Hampton, New Hampshire). Organisms were 9 days old for testing and were gradually acclimated to the testing temperature of 23°C during the holding period.

The oligochaetes, *Lumbriculus variegatus* were obtained from Eastern Aquatics, Lancaster, PA. The organisms were gradually acclimated to laboratory water at 23°C and allowed to depurate prior to test initiation.

2.5 TOXICITY TEST OPERATIONS AND PERFORMANCE

Toxicity testing was conducted in accordance with US EPA guidance (US EPA 2002), and test methodologies followed EA's standard toxicity testing protocols DM-AC-06 and FH-AC-06 (EA 2018).

2.5.1 Water Column Toxicity Testing

For the water column toxicity testing, elutriates were prepared from the composited sediment samples using the site water. A subsample of homogenized sediment was combined with site water in a 1:4 sediment to water ratio, on a volume/volume basis. The sediment/water combination was vigorously mixed by aeration and manual stirring for 30 minutes and was then allowed to settle for a minimum of one hour. After settling, the supernatant was siphoned off for testing. The elutriates were used for the water column toxicity testing within 24 hours of preparation.

Test concentrations of 100, 50, 25, 12.5, and 6.25 percent of each elutriate were prepared by measuring aliquots of elutriate in a graduated cylinder and bringing to final volume with moderately hard synthetic freshwater. A dilution water control of moderately hard synthetic freshwater and a undiluted site water were also prepared.

2.5.1.1 *Daphnia magna* Water Column Toxicity Testing

The *D. magna* acute toxicity test was conducted in 30-ml beakers with 25 ml of test solution per cup. The toxicity test had 4 replicates per concentration and control, with five organisms per replicate, for a total of 20 organisms exposed per test concentration and control. To initiate the acute toxicity test, neonates (<24 hours old) were randomly assigned to the test chambers. The test was maintained at 20±1°C with a 16-hour light/8-hour dark photoperiod. Temperature, pH, dissolved oxygen, conductivity measurements as well as survival were recorded on each concentration at test initiation, at 24-hours and test termination.

Summaries of water quality parameters measured during the toxicity tests are presented in Table 2. The number of live organisms in each test chamber were counted daily and recorded on the test data sheets. Copies of the *D. magna* acute toxicity test data sheets are included in Attachments II.

2.5.1.2 *Pimephales promelas* Water Column Toxicity Testing

The *P. promelas* acute toxicity test was conducted in 1,000 ml beakers, with each beaker containing

250 ml test solution. For the acute toxicity test, each test concentration and the control had five replicates of ten organisms, for a total of 50 organisms exposed per test concentration and control. The test was performed at 25±1°C with a 16-hour light/8-hour dark photoperiod. Observations of mortality were recorded daily, and dead organisms were removed when observed. Temperature, pH, dissolved oxygen, and conductivity measurements were recorded on one replicate of each concentration at test initiation and termination, and daily on the test solutions. Test organisms were fed daily to prevent starvation.

Summaries of water quality parameters measured during the toxicity tests are presented in Table 3. The number of live organisms in each test chamber were counted daily and recorded on the test data sheets. Copies of the *P. promelas* acute toxicity test data sheets are included in Attachments III.

2.5.2 *Chironomus dilutus* 10-Day Toxicity Tests

Toxicity testing was conducted in accordance with US EPA guidance (US EPA 2000), and test methodologies followed EA's standard toxicity testing protocol CT-AC-06 (EA 2018).

The test chambers used in the *C. dilutus* 10-day survival and growth toxicity test were 300-ml lipless glass beakers, each containing 100 ml of sediment and 175 ml of overlying water. The tests were performed with eight replicates per sediment. The sediments and overlying water were added to the chambers one day prior to introduction of the test organisms. The beakers were left undisturbed overnight to allow any suspended sediment particles in the water column to settle. The introduction of the test organisms to the test chambers marked the initiation of the toxicity tests. Ten organisms were randomly introduced into each replicate beaker for a total of 80 organisms per sediment. The test chambers were placed in a water bath to maintain temperatures at a target range of 23±1°C, with a 16-hour light/8-hour dark photoperiod. The *C. dilutus* were fed 1.5 ml per replicate of a 4 g/L slurry of Tetramin flake food daily.

The overlying water in the exposure chambers was renewed a minimum of twice daily using a water delivery system (Zumwalt et al. 1994). Fresh overlying water was slowly added to each replicate, displacing the water already in the beaker to flow out through a notch cut into the top

of the beaker. The notch was sealed with fine mesh screen to prevent loss of organisms during the renewal process.

For the midge toxicity testing, water quality parameters of temperature, pH, dissolved oxygen, and conductivity were recorded daily on the overlying water in one replicate of each sediment. Composite samples of the overlying water of each sediment were also analyzed for alkalinity, hardness, conductivity and ammonia at test initiation and termination.

At the end of the 10-day exposure period, the surviving organisms from each replicate were retrieved from the sediment. The number of surviving organisms from each replicate was recorded. The surviving *C. dilutus* from each replicate were then placed in a dried, pre-weighed ceramic crucible and placed in a drying oven at 100°C for a minimum of 24 hours. The crucibles were then removed from the oven, placed in a desiccator to cool, and weighed. The dry weight of the surviving organisms in each replicate was determined by subtracting the weight of the crucible from the weight of the crucible plus dried organisms. The mean dry weight per organism was obtained by dividing the total organism dry weight per replicate by the number of surviving organisms per replicate.

The ash-free dry weight was determined for the *C. dilutus* by placing the crucibles with oven-dried organisms in a muffle furnace at 550°C for at least two hours, then weighing the crucibles with organisms following an appropriate cooling period. For each replicate, the weight of the crucible with furnace-dried organisms was subtracted from the weight of the crucible with oven-dried organisms, yielding a total organism ash-free dry weight. A mean ash-free dry weight per organism was obtained by dividing the total organism ash-free dry weight per replicate by the number of surviving organisms per replicate.

The survival and growth results of the *C. dilutus* toxicity tests were statistically analyzed according to US EPA guidance (US EPA 2000) to determine if any of the site sediments were significantly different ($p=0.05$) from the control or reference sediments. If the data were normally distributed, then a t-Test was performed to detect statistically significant differences between test sediments and the control sediment. If the data distribution was non-normal, then a Wilcoxon Two-Sample Test was used to compare the group means. Shapiro-Wilk's Test was

used to determine if the data were normally distributed, and the F-Test was used to test for homogeneity of variance.

Table 4 presents the water quality for the *C. dilutus* toxicity testing. Copies of the original data sheets and statistical analyses from the sediment toxicity testing are included in Attachment IV for *C. dilutus*.

2.5.3 *Hyalella azteca* 10-Day Toxicity Tests

Toxicity testing was conducted in accordance with US EPA guidance (US EPA 2000), and test methodologies followed EA's standard toxicity testing protocol HA-AC-06 (EA 2018).

The test chambers used in the *H. azteca* 10-day survival and growth toxicity test were 300-ml lipless glass beakers, each containing 100 ml of sediment and 175 ml of overlying water (lab water). The tests were performed with eight replicates per sediment. The sediments and overlying water were added to the chambers at least 24 hours prior to introduction of the test organisms. The beakers were left undisturbed overnight to allow any suspended sediment particles in the water column to settle. The introduction of the test organisms to the test chambers marked the initiation of the toxicity tests. Ten organisms were randomly introduced into each replicate beaker for a total of 80 organisms per sediment. The test chambers were placed in a water bath to maintain temperatures at a target range of 23±1°C, with a 16-hour light/8-hour dark photoperiod.

The the *H. azteca* were fed 1.0 ml per replicate of YCT (a suspension of yeast, ground cereal leaves, and trout chow) daily. The overlying water in the exposure chambers was renewed a minimum of twice daily using a water delivery system (Zumwalt et al. 1994). Fresh overlying water was slowly added to each replicate, displacing the water already in the beaker to flow out through a notch cut into the top of the beaker. The notch was sealed with fine mesh screen to prevent loss of organisms during the renewal process.
For the amphipod toxicity testing, water quality parameters of temperature, pH, dissolved oxygen, and conductivity were recorded daily on the overlying water in one replicate of each

sediment. Composite samples of the overlying water of each sediment were also analyzed for alkalinity, hardness, and ammonia at test initiation and termination.

At the end of the 10-day (*H. azteca*) exposure period, the surviving organisms from each replicate were retrieved from the sediment. The number of surviving organisms from each replicate was recorded. The surviving *H. azteca* from each replicate were then placed in a dried, pre-weighed aluminum pan, and placed in a drying oven at 100°C for at least 24 hours. The pans were then removed from the oven, placed in a desiccator to cool, and weighed. The dry weight of the surviving organisms in each replicate was determined by subtracting the weight of the empty pan from the weight of the pan plus dried organisms. The mean dry weight per organism was obtained by dividing the total organism dry weight per replicate by the number of surviving organisms per replicate.

The survival and growth results of the *H. azteca* toxicity tests were statistically analyzed according to US EPA guidance (2000) to determine if any of the site sediments were significantly different (p=0.05) from the control or reference sediments. If the data were normally distributed, then a t-Test was performed to detect statistically significant differences between test sediments and the control or reference sediments. If the data distribution was non-normal, then a Wilcoxon Two-Sample Test was used to compare the group means. Shapiro-Wilk's Test was used to determine if the data were normally distributed, and the F-Test was used to test for homogeneity of variance.

Table 5 summarizes the water quality measurements recorded during the *H. azteca* toxicity testing. Copies of the original data sheets and statistical analyses from the sediment toxicity testing are included in Attachment V for *H. azteca*.

2.5.4 *Lumbriculus variegatus* 28-day Bioaccumulation Test

Bioaccumulation testing was conducted in accordance with US EPA guidance (US EPA 2000), and test methodologies followed EA's standard toxicity testing protocol LV-BIO-06 (EA 2018).

The *L. variegatus* bioaccumulation test was conducted in 5-gallon aquaria, with five replicates per test sediment and control. Based on the analytical tissue biomass requirements, approximately 15 g wet weight of *L. variegatus* were loaded into each replicate. Each replicate had 1.5 L of sediment and 6 L of overlying water. Sediment and overlying water were loaded into the test chambers two days prior to test initiation to allow time for the suspended sediments to settle.

The overlying water was replaced daily by siphoning approximately 80 percent of the overlying water from the aquaria and replacing with new overlying water, taking care not to disturb the sediment surface. During the 28-day exposure period, the test chambers were maintained at a target temperature of 23±1°C with a 16-hour light/8-hour dark photoperiod. Measurements of temperature, pH, dissolved oxygen, and conductivity of the overlying water were recorded on one replicate of each sample and control at test initiation, termination and on each intermediate day. Composite samples of the overlying water of each sediment were also analyzed for alkalinity, hardness, and ammonia at test initiation and termination. These water quality measurements are summarized in Table 6. The organisms were not fed during the exposure period.

After 28 days of exposure, the *L. variegatus* were recovered from each sediment and placed into clean laboratory water for 24 hours to purge their digestive tracts. Copies of the original data sheets from the *L. variegatus* testing are included in Attachment VI.

2.6 REFERENCE TOXICANT TESTS

In conformance with EA's quality assurance/quality control program, reference toxicant tests were performed on *D. magna*, *P. promelas*, *C. dilutus*, *H. azteca* and *L. variegatus*. The results of the reference toxicant tests were compared to EA's established control chart limits according to US EPA methodology (US EPA 2002). Reference toxicant test data are presented in Table 12.

2.7 ARCHIVES

Original data sheets, records, memoranda, notes, and computer printouts are archived at EA's Office in Hunt Valley, Maryland. These data will be retained for a period of 5 years unless a longer period of time is requested.

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3. RESULTS AND DISCUSSION

3.1 *Daphnia magna* ELUTRIATE TOXICITY TEST

Table 7 summarizes the results of the *D. magna* 48-hour acute toxicity testing on site elutriates. None of the elutriate samples were acutely toxic to *D. magna*. All of the elutriates had 48-hour LC50 values of >100 percent elutriate, and survival in the 100 percent test concentrations ranged from 95 to 100 percent. There was a minimum of 95 percent survival in the laboratory controls, and the site water had 95 percent survival at test termination.

3.2 *Pimephales promelas* ELUTRIATE TOXICITY TEST

Table 8 summarizes the results of the *P. promelas* 96-hour acute toxicity testing on site elutriates. The results indicate that one of the elutriate samples (SC21-COMP-07) was acutely toxic to *P. promelas* with a 96-hour LC50 of 96.1 percent (46 percent survival in 100 percent concentration). All of the other elutriates had 96-hour LC50 values of >100 percent elutriate, and survival in the 100 percent test concentrations ranged from 90 to 100 percent. There was a minimum of 92 percent survival in the laboratory controls, and the site water had 98 percent survival at test termination.

3.3 *Chironomus dilutus* SEDIMENT TOXICITY TEST

Table 9 summarizes the results of the *C. dilutus* 10-day survival and growth test. The survival and growth of *C. dilutus* exposed to the site sediments were statistically compared to organisms exposed to the laboratory control and reference sediments (SC21-MRREF-SURF, SC21-SCREF-SURF). The survival results indicated that the organisms exposed to 6 site sediments were statistically different (p=0.05) from the laboratory control and/or a reference samples. Mean ash free dry weight indicated that 4 sediment samples were significantly different from the control and/or a reference samples.

3.4 *Hyalella azteca* SEDIMENT TOXICITY TEST

Table 10 summarizes the results of the *H. azteca* 10-day survival and growth test. The survival and growth of *H. azteca* exposed to the site sediments were statistically compared to organisms exposed to the laboratory control and reference sediments (SC21-MRREF-SURF, SC21-SCREF-SURF). The results indicated that for survival the organisms exposed to 11 site sediments were statistically different (p=0.05) from the laboratory control and/or a reference samples. Mean weight indicated that 12 sediment samples were significantly different from the control and/or a reference samples.

3.5 *Lumbriculus variegatus* BIOACCUMULATION TEST

After 28 days of exposure, the *L. variegatus* were recovered from the sediment and placed into clean laboratory water for 24 hours to purge their digestive tracts. After the depuration period, the organisms were collected and submitted for chemical analyses. Statistical comparisons were not conducted on the weights of the organisms recovered from the sediments. A summary of the recoveries recorded during the *L. variegatus* bioaccumulation testing is presented in Table 11.

3.6 REFERENCE TOXICANT TESTS

The results of the reference toxicant tests are summarized in Table 12. All of the reference toxicant test results fell within the established laboratory control chart limits.

4. REFERENCES

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Zumwalt, D.C., F.J. Dwyer, I.E. Greer, and C.G. Ingersoll. 1994. A water-renewal system that accurately delivers small volumes of water to exposure chamber. Environmental Toxicology and Chemistry. 13:1311-1314.

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TABLE 1 SUMMARY OF COLLECTION AND RECEIPT INFORMATION FOR SEDIMENT SAMPLES

Sample Identification	EA Accession Number	Sample Time and Date	Receipt Time and Date	Receipt Temperature (ºC)
SC21-SC-WAT	AT1-853	1410, 11/10/21	1250, 11/15/21	<4.0
SC21-COMP-01	AT1-854	1415, 11/11/21	1250, 11/15/21	<4.0
SC21-COMP-02	AT1-855	1045, 11/11/21	1250, 11/15/21	<4.0
SC21-COMP-03	AT1-856	1220, 11/11/21	1250, 11/15/21	<4.0
SC21-COMP-04	AT1-857	0830, 11/11/21	1250, 11/15/21	<4.0
SC21-COMP-05	AT1-858	0930, 11/11/21	1250, 11/15/21	<4.0
SC21-COMP-06	AT1-859	1420, 11/10/21	1250, 11/15/21	<4.0
SC21-COMP-07	AT1-860	1500, 11/11/21	1250, 11/15/21	<4.0
SC21-COMP-08	AT1-861	1115, 11/11/21	1250, 11/15/21	<4.0
SC21-MR06-SURF	AT1-862	1445, 11/8/21	1250, 11/15/21	<4.0
SC21-MRREF-SURF	AT1-863	1535, 11/8/21	1250, 11/15/21	<4.0
SC21-SC01-SURF	AT1-864	1030, 11/9/21	1250, 11/15/21	<4.0
SC21-SC05-SURF	AT1-865	1130, 11/9/21	1250, 11/15/21	<4.0
SC21-SC11-SURF	AT1-866	1220, 11/9/21	1250, 11/15/21	<4.0
SC21-SC14-SURF	AT1-867	1300, 11/9/21	1250, 11/15/21	<4.0
SC21-SC18-SURF	AT1-868	1345, 11/9/21	1250, 11/15/21	<4.0
SC21-SC21-SURF	AT1-869	1420, 11/9/21	1250, 11/15/21	<4.0
SC21-SC27-SURF	AT1-870	1500, 11/9/21	1250, 11/15/21	<4.0
SC21-SC30-SURF	AT1-871	1525, 11/9/21	1250, 11/15/21	<4.0
SC21-SC33-SURF	AT1-872	1600, 11/8/21	1250, 11/15/21	<4.0
SC21-SCREF-SURF	AT1-873	1000, 11/9/21	1250, 11/15/21	<4.0

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TABLE 2 SUMMARY OF WATER QUALITY PARAMETERS MEASURED DURING ELUTRIATE BIOASSAY TESTING WITH *Daphnia magna*

Sample Identification	EA Accession Number	Test Number	Temperature (ºC)		pH (su)		Dissolved Oxygen (mg/L)		Conductivity (µs/cm)		Alkalinity (mg/L)	Hardness (mg/L)	Ammonia (mg/L)
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX			
SC21-SC-WAT	AT1-853	TN-21-750	19.0	21.0	7.7	8.1	8.8	9.5	320	429	246	300	<0.2
SC21-COMP-01	AT1-854	TN-21-733	19.0	20.5	7.6	8.1	7.9	10.3	321	828	224	264	7.7
SC21-COMP-02	AT1-855	TN-21-734	19.0	21.0	7.5	8.2	7.0	9.5	316	972	234	288	1.8
SC21-COMP-03	AT1-856	TN-21-735	19.0	21.0	7.7	8.2	8.2	9.9	320	851	232	292	0.5
SC21-COMP-04	AT1-857	TN-21-736	19.0	21.0	7.8	8.1	8.2	10.2	325	866	240	272	7.1
SC21-COMP-05	AT1-858	TN-21-737	19.0	21.0	7.8	8.2	7.6	9.7	326	847	240	272	9.0
SC21-COMP-06	AT1-859	TN-21-738	19.0	21.0	7.7	8.2	8.2	9.6	326	1,206	236	248	12.0
SC21-COMP-07	AT1-860	TN-21-739	19.0	20.8	7.6	8.3	8.1	9.4	334	950	260	256	16.9
SC21-COMP-08	AT1-861	TN-21-740	19.0	21.0	7.4	8.3	8.5	9.2	320	874	244	260	12.4

TABLE 3 SUMMARY OF WATER QUALITY PARAMETERS MEASURED DURING ELUTRIATE BIOASSAY TESTING WITH *Pimephales promelas*

Sample Identification	EA Accession Number	Test Number	Temperature (°C)		pH (su)		Dissolved Oxygen (mg/L)		Conductivity (µs/cm)		Alkalinity (mg/L)	Hardness (mg/L)	Ammonia (mg/L)
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX			
SC21-SC-WAT	AT1-853	TN-21-749	24.0	24.4	7.5	8.2	6.5	9.1	314	886	246	300	<0.2
SC21-COMP-01	AT1-854	TN-21-786	24.0	25.2	6.8	8.3	6.7	8.6	321	888	224	264	7.7
SC21-COMP-02	AT1-855	TN-21-742	24.0	25.1	7.4	8.2	6.4	8.4	310	952	234	288	1.8
SC21-COMP-03	AT1-856	TN-21-743	24.0	24.7	7.5	8.3	6.8	8.5	310	859	232	292	0.5
SC21-COMP-04	AT1-857	TN-21-744	24.0	25.4	7.4	8.2	4.2	8.7	321	874	240	272	7.1
SC21-COMP-05	AT1-858	TN-21-745	24.0	25.3	7.4	8.2	6.2	8.2	326	890	240	272	9.0
SC21-COMP-06	AT1-859	TN-21-746	24.0	25.5	7.3	8.1	6.6	8.8	321	888	236	248	12.0
SC21-COMP-07	AT1-860	TN-21-747	24.0	25.5	7.3	8.1	6.6	8.7	327	970	260	256	16.9
SC21-COMP-08	AT1-861	TN-21-748	24.0	25.4	7.3	8.2	6.8	9.1	320	875	244	260	12.4

TABLE 4 WATER QUALITY PARAMETERS MEASURED DURING *Chironomus dilutus* 10-DAY TOXICITY TESTING

EA Test Number: TN-21-771
Test Initiation: 3 December 2021
Test Termination: 13 December 2021

Sample Identification	EA Accession Number	Temperature (ºC)		pH (su)		Dissolved Oxygen (mg/L)		Conductivity (µs/cm)	
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
Laboratory Control	AT1-697	22.0	22.4	7.2	8.4	6.9	8.8	327	353
SC21-MR06-SURF	AT1-862	22.0	22.5	7.1	8.4	5.9	8.6	344	395
SC21-MRREF-SURF	AT1-863	22.0	22.5	7.2	8.3	4.3	8.1	356	389
SC21-SC01-SURF	AT1-864	22.0	22.5	7.3	8.3	4.0	8.3	342	376
SC21-SC05-SURF	AT1-865	22.0	22.4	7.3	8.3	5.1	8.3	344	388
SC21-SC11-SURF	AT1-866	22.0	22.4	7.3	8.2	5.4	8.3	339	386
SC21-SC14-SURF	AT1-867	22.0	22.4	7.3	8.2	5.1	8.1	348	413
SC21-SC18-SURF	AT1-868	22.0	22.5	7.3	8.2	5.8	8.0	352	400
SC21-SC21-SURF	AT1-869	22.0	22.6	7.3	8.2	6.0	7.9	371	435
SC21-SC27-SURF	AT1-870	22.0	22.5	7.3	8.1	5.5	8.0	354	400
SC21-SC30-SURF	AT1-871	22.0	22.5	7.4	8.1	4.9	8.2	351	400
SC21-SC33-SURF	AT1-872	22.0	22.4	7.4	8.1	6.3	8.2	352	405
SC21-SCREF-SURF	AT1-873	22.0	22.4	7.4	8.1	5.8	8.2	358	408

TABLE 4 CONTINUED

EA Test Number: TN-21-771
Test Initiation: 3 December 2021
Test Termination: 13 December 2021

Sample Identification	EA Accession Number	Alkalinity (mg/L)		Hardness (mg/L)		Conductivity (µs/cm)		Ammonia (mg/L)	
		Day 0	Day 10	Day 0	Day 10	Day 0	Day 10	Day 0	Day 10
Laboratory Control	AT1-697	56	70	88	104	329	352	1.0	0.7
SC21-MR06-SURF	AT1-862	92	82	124	116	428	373	1.4	1.1
SC21-MRREF-SURF	AT1-863	86	82	120	120	393	380	1.3	0.6
SC21-SC01-SURF	AT1-864	78	76	112	116	394	375	<0.1	0.1
SC21-SC05-SURF	AT1-865	90	70	128	128	413	378	0.4	0.3
SC21-SC11-SURF	AT1-866	78	78	128	120	400	369	1.2	0.6
SC21-SC14-SURF	AT1-867	92	84	116	120	428	377	4.1	1.0
SC21-SC18-SURF	AT1-868	76	78	120	112	421	372	1.5	1.4
SC21-SC21-SURF	AT1-869	100	86	116	128	442	391	1.2	1.3
SC21-SC27-SURF	AT1-870	86	90	120	120	417	384	1.8	2.0
SC21-SC30-SURF	AT1-871	94	80	112	124	420	381	4.2	1.6
SC21-SC33-SURF	AT1-872	90	82	116	120	423	374	2.9	1.4
SC21-SCREF-SURF	AT1-873	88	76	120	116	421	372	2.0	1.0

TABLE 5 WATER QUALITY PARAMETERS MEASURED DURING *Hyalella azteca* 10-DAY TOXICITY TESTING

EA Test Number: TN-21-788
Test Initiation: 10 December 2021
Test Termination: 20 December 2021

Sample Identification	EA Accession Number	Temperature (ºC)		pH (su)		Dissolved Oxygen (mg/L)		Conductivity (µs/cm)	
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
Laboratory Control	AT1-697	22.0	22.4	7.5	8.1	6.4	9.2	327	362
SC21-MR06-SURF	AT1-862	22.0	22.2	7.4	8.0	6.9	8.8	342	371
SC21-MRREF-SURF	AT1-863	22.0	22.2	7.4	8.0	7.1	8.5	335	372
SC21-SC01-SURF	AT1-864	22.0	22.1	7.4	8.0	7.3	8.7	330	370
SC21-SC05-SURF	AT1-865	22.0	22.3	7.4	8.0	7.5	8.6	345	370
SC21-SC11-SURF	AT1-866	22.0	22.2	7.4	8.0	7.3	8.7	351	371
SC21-SC14-SURF	AT1-867	22.0	22.2	7.5	8.0	7.3	8.6	354	382
SC21-SC18-SURF	AT1-868	22.0	22.1	7.5	8.0	7.2	8.7	339	376
SC21-SC21-SURF	AT1-869	22.0	22.2	7.5	8.0	7.2	8.5	339	378
SC21-SC27-SURF	AT1-870	22.0	22.1	7.5	8.0	5.7	8.4	338	372
SC21-SC30-SURF	AT1-871	22.0	22.1	7.5	7.9	7.3	8.6	343	378
SC21-SC33-SURF	AT1-872	22.0	22.3	7.5	7.9	7.3	8.5	346	374
SC21-SCREF-SURF	AT1-873	22.0	22.1	7.5	7.9	7.3	8.9	337	390

TABLE 5 CONTINUED

EA Test Number: TN-21-788
Test Initiation: 10 December 2021
Test Termination: 20 December 2021

Sample Identification	EA Accession Number	Alkalinity (mg/L)		Hardness (mg/L)		Conductivity (µs/cm)		Ammonia (mg/L)	
		Day 0	Day 10	Day 0	Day 10	Day 0	Day 10	Day 0	Day 10
Laboratory Control	AT1-697	64	62	88	104	326	350	1.7	<0.1
SC21-MR06-SURF	AT1-862	94	100	120	144	417	417	3.3	0.8
SC21-MRREF-SURF	AT1-863	100	86	124	128	403	389	1.6	1.2
SC21-SC01-SURF	AT1-864	80	76	124	120	408	369	<0.1	<0.1
SC21-SC05-SURF	AT1-865	100	84	128	120	421	371	0.6	0.6
SC21-SC11-SURF	AT1-866	82	80	112	120	404	372	2.2	0.2
SC21-SC14-SURF	AT1-867	84	88	120	128	424	386	3.5	0.3
SC21-SC18-SURF	AT1-868	82	100	124	152	409	452	1.8	1.0
SC21-SC21-SURF	AT1-869	114	90	128	120	492	394	2.6	0.9
SC21-SC27-SURF	AT1-870	102	88	128	128	445	380	3.6	2.5
SC21-SC30-SURF	AT1-871	110	90	128	124	484	396	6.6	1.0
SC21-SC33-SURF	AT1-872	126	88	120	120	445	382	5.0	1.0
SC21-SCREF-SURF	AT1-873	110	78	208	116	400	372	1.2	0.1

TABLE 6 WATER QUALITY PARAMETERS MEASURED DURING *Lumbriculus variegatus* 28-DAY BIOACCUMULATION TESTING

EA Test Number: TN-21-787
Test Initiation: 8 December 2021
Test Termination: 5 January 2022

Sample Identification	EA Accession Number	Temperature (ºC)		pH (su)		Dissolved Oxygen (mg/L)		Conductivity (µs/cm)	
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
Laboratory Control	AT1-697	22.0	24.0	7.6	8.5	2.6	7.8	319	382
SC21-SC11-SURF	AT1-866	22.0	23.4	7.5	8.5	4.0	7.0	331	409
SC21-SC14-SURF	AT1-867	22.0	23.2	7.5	8.4	4.0	6.5	330	421
SC21-SC18-SURF	AT1-868	22.0	23.3	7.5	8.4	4.0	6.3	332	410
SC21-SCREF-SURF	AT1-873	22.0	23.3	7.5	8.4	3.7	6.4	333	420

Sample Identification	EA Accession Number	Alkalinity (mg/L)		Hardness (mg/L)		Conductivity (µs/cm)		Ammonia (mg/L)	
		Day 0	Day 28	Day 0	Day 28	Day 0	Day 28	Day 0	Day 28
Laboratory Control	AT1-697	70	66	112	108	339	362	1.1	0.3
SC21-SC11-SURF	AT1-866	76	88	120	116	386	381	0.9	<0.1
SC21-SC14-SURF	AT1-867	90	82	116	120	406	384	3.2	0.3
SC21-SC18-SURF	AT1-868	76	78	120	112	390	390	1.1	0.1
SC21-SCREF-SURF	AT1-873	80	80	112	120	393	392	1.1	0.1

TABLE 7 RESULTS OF ELUTRIATE BIOASSAY TESTING WITH *Daphnia magna*

Sample Identification	EA Accession Number	Test Number	48-Hour Survival (%)						
			Lab Control	Percent Elutriate					48-hour LC50 (% elutriate)
				100%	50%	25%	12.5%	6.25%	
SC21-SC-WAT	AT1-853	TN-21-750	100	95	---	---	---	---	>100
SC21-COMP-01	AT1-854	TN-21-733	95	100	100	100	100	100	>100
SC21-COMP-02	AT1-855	TN-21-734	100	100	100	100	100	100	>100
SC21-COMP-03	AT1-856	TN-21-735	100	100	100	100	100	100	>100
SC21-COMP-04	AT1-857	TN-21-736	100	100	95	100	100	100	>100
SC21-COMP-05	AT1-858	TN-21-737	100	100	100	100	100	100	>100
SC21-COMP-06	AT1-859	TN-21-738	100	100	100	100	100	100	>100
SC21-COMP-07	AT1-860	TN-21-739	100	95	95	95	100	100	>100
SC21-COMP-08	AT1-861	TN-21-740	100	100	100	100	100	100	>100

TABLE 8 RESULTS OF ELUTRIATE BIOASSAY TESTING WITH *Pimephales promelas*

Sample Identification	EA Accession Number	Test Number	96-Hour Survival (%)						
			Lab Control	Percent Elutriate					96-hour LC50 (% elutriate)
				100%	50%	25%	12.5%	6.25%	
SC21-SC-WAT	AT1-853	TN-21-749	100	98	---	---	---	---	>100
SC21-COMP-01	AT1-854	TN-21-786	96	92	100	86	92	98	>100
SC21-COMP-02	AT1-855	TN-21-742	98	100	100	100	100	98	>100
SC21-COMP-03	AT1-856	TN-21-743	98	98	100	98	100	100	>100
SC21-COMP-04	AT1-857	TN-21-744	100	94	100	100	100	98	>100
SC21-COMP-05	AT1-858	TN-21-745	92	96	100	98	100	100	>100
SC21-COMP-06	AT1-859	TN-21-746	98	90	98	98	98	92	>100
SC21-COMP-07	AT1-860	TN-21-747	94	46	100	100	100	96	96.1
SC21-COMP-08	AT1-861	TN-21-748	100	98	100	100	100	100	>100

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TABLE 9 RESULTS OF *Chironomus dilutus* 10-DAY TOXICITY TESTING

EA Test Number: TN-21-771
Test Initiation: 3 December 2021
Test Termination: 13 December 2021

Sample Identification	EA Accession Number	10-Day Survival (percent)	Mean Ash Free Dry Weight as mg/Organism (±SD)
Laboratory Control	AT1-697	90	1.156 (±0.168)[c]
SC21-MR06-SURF	AT1-862	35[abc]	0.713 (±0.209)[abc]
SC21-MRREF-SURF	AT1-863	84	1.280 (±0.398)[c]
SC21-SC01-SURF	AT1-864	89	1.065 (±0.391)[c]
SC21-SC05-SURF	AT1-865	88	1.487 (±0.605)
SC21-SC11-SURF	AT1-866	83[a]	1.827 (±0.331)
SC21-SC14-SURF	AT1-867	90	1.658 (±0.379)
SC21-SC18-SURF	AT1-868	3[abc]	0.750 (±1.047)
SC21-SC21-SURF	AT1-869	90	1.905 (±0.422)
SC21-SC27-SURF	AT1-870	84[a]	1.392 (±0.356)
SC21-SC30-SURF	AT1-871	79[a]	0.714 (±0.182)[abc]
SC21-SC33-SURF	AT1-872	76[abc]	1.493 (±0.409)
SC21-SCREF-SURF	AT1-873	85	1.621 (±0.190)

(a) Significantly different (p=0.05) from laboratory control.
(b) Significantly different (p=0.05) from SC21-MRREF-SURF (AT1-863).
(c) Significantly different (p=0.05) from SC21-SCREF-SURF (AT1-873).

TABLE 10 RESULTS OF *Hyalella azteca* 10-DAY TOXICITY TESTING

EA Test Number: TN-21-788
Test Initiation: 10 December 2021
Test Termination: 20 December 2021

Sample Identification	EA Accession Number	10-Day Survival (percent)	Mean Dry Weight as mg/Organism (±SD)
Laboratory Control	AT1-697	91	0.125 (±0.020)
SC21-MR06-SURF	AT1-862	56[abc]	0.066 (±0.014)[ab]
SC21-MRREF-SURF	AT1-863	90	0.099 (±0.007)[a]
SC21-SC01-SURF	AT1-864	80[ab]	0.079 (±0.018)[ab]
SC21-SC05-SURF	AT1-865	36[abc]	0.066 (±0.022)[ab]
SC21-SC11-SURF	AT1-866	49[abc]	0.064 (±0.023)[ab]
SC21-SC14-SURF	AT1-867	55[abc]	0.056 (±0.035)[ab]
SC21-SC18-SURF	AT1-868	59[abc]	0.052 (±0.009)[ab]
SC21-SC21-SURF	AT1-869	74[abc]	0.029 (±0.013)[abc]
SC21-SC27-SURF	AT1-870	74[abc]	0.031 (±0.010)[abc]
SC21-SC30-SURF	AT1-871	83[ab]	0.043 (±0.008)[abc]
SC21-SC33-SURF	AT1-872	74[abc]	0.053 (±0.014)[ab]
SC21-SCREF-SURF	AT1-873	85[a]	0.065 (±0.022)[ab]

(a) Significantly different (p=0.05) from laboratory control.
(b) Significantly different (p=0.05) from SC21-MRREF-SURF (AT1-863).
(c) Significantly different (p=0.05) from SC21-SCREF-SURF (AT1-873).

TABLE 11 RESULTS OF *Lumbriculus variegatus* 28-DAY BIOACCUMULATION TESTING

EA Test Number: TN-21-787
Test Initiation: 8 December 2021
Test Termination: 5 January 2022

Sample Identification	EA Accession Number	Organism Weight Loaded (g)	Organism Weight Recovered (g)				
			A	B	C	D	E
Laboratory Control	AT1-697	15	15	15	15	15	15
SC21-SC11-SURF	AT1-866	15	15	15	15	15	15
SC21-SC14-SURF	AT1-867	15	10	10	12	11	15
SC21-SC18-SURF	AT1-868	15	10	8	10	8	8
SC21-SCREF-SURF	AT1-873	15	11	12	10	13	10

TABLE 12 RESULTS OF REFERENCE TOXICANT TESTING

Test Species	Reference Toxicant	EA Test Number	Test Result	Acceptable Control Chart Limits
Daphnia magna (water flea)	Potassium Chloride (KCl)	RT-21-205	48-Hour LC50: 818 mg/L KCl	502 – 910 mg/L KCl
Pimephales promelas (fatehead minnow)	Potassium Chloride (KCl)	RT-21-202	48-Hour LC50: 1,146 mg/L KCl	564 – 1,245 mg/L KCl
Chironomus dilutus (midge)	Sodium dodecyl sulfate (SDS)	RT-21-216	48-Hour LC50: 67 mg/L SDS	17 – 74 mg/L SDS
Hyalella azteca (amphipod)	Copper sulfate ($CuSO_4$)	RT-21-179	96-Hour LC50: 126 µg/L Cu	0 – 306 µg/L Cu
Lumbriculus variegatus (oligochaete)	Copper chloride ($CuCl_2$)	RT-21-219	96-Hour LC50: 58 µg/L Cu	8 – 134 µg/L Cu

ATTACHMENT I

Chain-of-Custody Record
(4 pages)

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EA Engineering - Swan Creek 1583406
DateShipped:
CarrierName:
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 49759
Contact Name: Michael Durbano
Contact Phone: 6093320534

No: 5-111521-125309-0053
Cooler #:
Lab: EA Ecotoxicology
Lab Phone:

ATI-853

Lab #	Sample #	Analyses	Matrix	Sample Date	Sample Time	Numb Cont	Container	Preservative	Lab QC	Description
	SC21-SC-WAT	Toxicity	Water	11/10/2021	14:10	10	5 gallon carboy		N	EPA 2021.0, EPA 2000.0

Special Instructions:

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
		11/13/01 1600		11/15/21 1250	Good

EA Engineering - Swan Creek 1583406
DateShipped:
CarrierName:
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 49759
Contact Name: Michael Durbano
Contact Phone: 6093320534

No: 5-111521-123508-0052
Cooler #:
Lab: EA Ecotoxicology
Lab Phone:

	Lab #	Sample #	Analyses	Matrix	Sample Date	Sample Time	Numb Cont	Container	Preservative	Description
AT1-854		SC21-COMP-01	Standard Elutriate Preparation	Sediment	11/11/2021	14:15	1	3 gal bucket		Great Lakes Dredged Material
855		SC21-COMP-02	Standard Elutriate Preparation	Sediment	11/11/2021	10:45	1	3 gal bucket		Great Lakes Dredged Material
856		SC21-COMP-03	Standard Elutriate Preparation	Sediment	11/11/2021	12:20	1	3 gal bucket		Great Lakes Dredged Material
857		SC21-COMP-04	Standard Elutriate Preparation	Sediment	11/11/2021	08:30	1	3 gal bucket		Great Lakes Dredged Material
858		SC21-COMP-05	Standard Elutriate Preparation	Sediment	11/11/2021	09:30	1	3 gal bucket		Great Lakes Dredged Material
859		SC21-COMP-06	Standard Elutriate Preparation	Sediment	11/10/2021	14:20	1	3 gal bucket		Great Lakes Dredged Material
860		SC21-COMP-07	Standard Elutriate Preparation	Sediment	11/11/2021	15:00	1	3 gal bucket		Great Lakes Dredged Material
861		SC21-COMP-08	Standard Elutriate Preparation	Sediment	11/11/2021	11:15	1	3 gal bucket		Great Lakes Dredged Material

Special Instructions:

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	EA	11/13/21 1600		11/15/21 1252	Good

EA Engineering - Swan Creek 1583406
DateShipped:
CarrierName:
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 49759
Contact Name: Michael Durbano
Contact Phone: 6093320534

No: 5-111521-123210-0051
Cooler #:
Lab: EA Ecotoxicology
Lab Phone:

Lab #	Sample #	Analyses	Matrix	Sample Date	Sample Time	Numb Cont	Container	Preservative	Description
ATI-862	SC21-MR06-SURF	Tox Sed - Azteca, Dilutus	Sediment	11/8/2021	14:45	1	5 gal bucket		EPA 100.1, EPA 100.2
863	SC21-MRREF-SURF	Tox Sed - Azteca, Dilutus	Sediment	11/8/2021	15:35	1	5 gal bucket		EPA 100.1, EPA 100.2
864	SC21-SC01-SURF	Tox Sed - Azteca, Dilutus	Sediment	11/9/2021	10:30	1	5 gal bucket		EPA 100.1, EPA 100.2
865	SC21-SC05-SURF	Tox Sed - Azteca, Dilutus	Sediment	11/9/2021	11:30	1	5 gal bucket		EPA 100.1, EPA 100.2
866	SC21-SC11-SURF	Tox Sed - Azteca, Dilutus, Variegatus	Sediment	11/9/2021	12:20	1	5 gal bucket		EPA 100.1, EPA 100.2, EPA 100.
867	SC21-SC14-SURF	Tox Sed - Azteca, Dilutus, Variegatus	Sediment	11/9/2021	13:00	1	5 gal bucket		EPA 100.1, EPA 100.2, EPA 100.
868	SC21-SC18-SURF	Tox Sed - Azteca, Dilutus, Variegatus	Sediment	11/9/2021	13:45	1	5 gal bucket		EPA 100.1, EPA 100.2, EPA 100.
869	SC21-SC21-SURF	Tox Sed - Azteca, Dilutus	Sediment	11/9/2021	14:20	1	5 gal bucket		EPA 100.1, EPA 100.2
870	SC21-SC27-SURF	Tox Sed - Azteca, Dilutus	Sediment	11/9/2021	15:00	1	5 gal bucket		EPA 100.1, EPA 100.2
871	SC21-SC30-SURF	Tox Sed - Azteca, Dilutus	Sediment	11/9/2021	15:25	1	5 gal bucket		EPA 100.1, EPA 100.2
872	SC21-SC33-SURF	Tox Sed - Azteca, Dilutus	Sediment	11/8/2021	16:00	1	5 gal bucket		EPA 100.1, EPA 100.2
873	SC21-SCREF-SURF	Tox Sed - Azteca, Dilutus, Variegatus	Sediment	11/9/2021	10:00	1	5 gal bucket		EPA 100.1, EPA 100.2, EPA 100.

Special Instructions:	**SAMPLES TRANSFERRED FROM**
	CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	EA	11/13/21 1400		11/15/21 1250	Good

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ATTACHMENT II

Data Sheets and Statistical Analyses
from *Daphnia magna* Toxicity Tests
(63 pages)

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TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-750

TEST ORGANISM INFORMATION

Common Name: Water flea

Scientific Name: *D. magna*

Lot Number: N/A

Source: EA

Adults Isolated (Time, Date): 11/22/21 1601

Neonates Pulled & Fed (Time, Date): 11/23/21 0945

Acclimation: <24hrs Age: <24 hrs

Culture Water (T/S): 20.9 °C 0 ppt

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	1017	AY	Dilutions Made
↓	↓	↓	Test Vessels Filled
	1113	LMD	Organisms Transferred
↓	1155	SL	Head Counts

TEST SET-UP

Sample Number: AT1-853

Dilution Number: LD1- 788

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	200 ml
		↓
Site Water (AT1-853)	200 ml	

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-750
Test Material: ELUTRIATE
Accession Number: AT1-853
Dilution Water: Mod Hard
Accession Number: LD1-7888

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L Test Container: 30 ml cup
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 25 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Beginning Date: 11/23/21 Time: 1113
Ending Date: 11/25/21 Time: 1114
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm) Salinity (ppt)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control	A	5	5	5			20.7	20.0	19.1			7.7	7.9	8.1			9.7	8.8	9.0			340	377	429		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Site Water	A	5	5	5			21.0	19.0	19.0			7.8	7.9	8.0			8.8	9.1	9.5			320	354	418		
(AT1-853)	B	5	4	4																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							680	680	681			680	680	681			680	680	681			680	680	681		
Time		1155	1033	1114			1110	1035	1114			1110	1035	1114			1110	1035	1114			1110	1035	1114		
Initials		SL	LAD	LAD			LAD	LAD	LAD			LAD	LAD	LAD			LAD	LAD	LAD			LAD	LAD	LAD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 Fathead: 2000.0 Americamysis: 2007.0 Menidia:2006.0
Magna/pulex: 2021.0 X Trout: 2019.0 Cyprinodon: 2004.0 OTHER:

ATS-T01
12/02/08

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-750

Date/Time/Initials	Comments/Activity

RANDOMIZATION CHART

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-750

5	4	1	3	6	2
1	5	3	2	4	6
6	2	4	1	5	3
4	1	2	6	3	5

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-750

Day	Testing Location	Date	Time	Initials
0	S1	11/23/21	1159	SC
1	S1	11/24/21	1035	LMO
2	S1	11/25/21	1115	LMO
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-750

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-733

TEST ORGANISM INFORMATION

Common Name: Water flea

Scientific Name: *D. magna*

Lot Number: N/A

Source: EA

Adults Isolated (Time, Date): 11/23/21 1601

Neonates Pulled & Fed (Time, Date): 11/23/21 0909

Acclimation: <24hrs Age: <24 hrs

Culture Water (T/S): 20.3 °C 0 ppt

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	1045	[illegible]	Dilutions Made
↓	↓	↓	Test Vessels Filled
	1314	AG	Organisms Transferred
	1434	[illegible]	Head Counts

TEST SET-UP

Sample Number: AT1-854

Dilution Number: LD1-788

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	200 ml
6.25%	12.5 ml	↓
12.5%	25 ml	
25%	50 ml	
50%	100 ml	
100%	200 ml	

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-733
Test Material: ELUTRIATE
Accession Number: AT1-854
Dilution Water: Mod Hard
Accession Number: LD1- 788

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L Test Container: 30 ml cup
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 25 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Beginning Date: 11/23/21 Time: 1314
Ending Date: 11/25/21 Time: 1303
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm) Salinity (ppt)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control	A	5	5	5			20.1	19.0	19.1			7.6	8.1	8.0			7.9	10.1	9.3			321	355	377		
	B	5	5	5																						
	C	5	5	4																						
	D	5	5	5																						
6.25%	A	5	5	5			20.4	19.0	19.1			7.6	8.0	8.0			8.3	10.3	9.4			348	365	368		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
12.5%	A	5	5	5			20.5	19.0	19.5			7.6	8.0	8.0			8.4	10.0	9.4			379	396	393		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							T-27	680	681			681	680	681			681	680	681			681	680	681		
Time		1424	1350	1303			1303	1157	1257			1051	1157	1257			1051	1157	1257			1051	1157	1257		
Initials		LAD	LAD	LAD			AY	MT	LAD			AY	MT	LAD			AY	MT	LAD			AY	MT	LAD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0____ Fathead: 2000.0____ Americamysis: 2007.0____ Menidia:2006.0 ____
Magna/pulex: 2021.0__X__ Trout: 2019.0____ Cyprinodon: 2004.0____ OTHER:____

ATS-T01
12/02/08

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-733
Test Material: ELUTRIATE
Accession Number: AT1-854
Dilution Water: Mod Hard
Accession Number: LD1- 788

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L
pH: 6.0 - 9.0 Salinity: 0 ppt
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1314
Ending Date: 11/25/21 Time: 1303
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)
Test Container: 30 ml cup
Test Volume: 25 ml
Test Duration: 48 hrs

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm) Salinity (ppt)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
25%	A	5	5	5			20.5	19.1	19.7			7.7	8.0	8.0			8.5	9.8	9.3			443	458	451		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
50%	A	5	5	5			20.4	19.1	19.7			7.60	7.9	7.8			8.4	9.7	9.2			563	585	578		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
100%	A	5	5	5			20.1	19.1	19.6			7.6	7.8	7.8			8.3	9.7	9.1			827	828	786		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							T-22	680	681			681	681	681			681	680	681			681	680	681		
Time		1454	1350	1303			1303	1157	1257			1051	1157	1257			1051	1157	1257			1051	1157	1257		
Initials		LAD	LAD	LAD			AY	MT	LAD			AY	MT	LAD			AY	MT	LAD			AY	MT	LAD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 Fathead: 2000.0 Americamysis: 2007.0 Menidia:2006.0
Magna/pulex: 2021.0 X Trout: 2019.0 Cyprinodon: 2004.0 OTHER:

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-733

Date/Time/Initials	Comments/Activity

RANDOMIZATION CHART

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-733

5	4	1	3	6	2
1	5	3	2	4	6
6	2	4	1	5	3
4	1	2	6	3	5

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-733

Day	Testing Location	Date	Time	Initials
0	S1	11/23/21	1429	LMD
1	S1	11/24/21	1352	LMD
2	S1	11/25/21	1300	LMD
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-733

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-734

11/23/21
(6) CM

TEST ORGANISM INFORMATION

Common Name: Water flea

Scientific Name: *D. magna*

Lot Number: N/A

Source: EA

Adults Isolated (Time, Date): 11/22/21 1601

Neonates Pulled & Fed (Time, Date): 11/23/21 0909 0945

Acclimation: <24hrs Age: <24 hrs

Culture Water (T/S): 21.0 °C 0 ppt

TEST INITIATION

Date	Time	Initials	Activity
11/23/21 ↓	1028	[illegible]	Dilutions Made
	1108	AG	Test Vessels Filled
	1324	AG	Organisms Transferred
	1427	MD	Head Counts

TEST SET-UP

Sample Number: AT1-855

Dilution Number: LD1- 789

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	200 ml ↓
6.25%	12.5 ml	
12.5%	25 ml	
25%	50 ml	
50%	100 ml	
100%	200 ml	

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-734
Test Material: ELUTRIATE
Accession Number: AT1-855
Dilution Water: Mod Hard
Accession Number: LD1- 789

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

Beginning Date: 11/23/21 Time: 1326
Ending Date: 11/25/21 Time: 1306
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)

TARGET VALUES
Temp: 20±1 °C DO: ≥4.0 mg/L Test Container: 30 ml cup
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 25 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control	A	5	5	5			20.9	19.0	19.1			7.6	8.0	8.2			8.3	7.0	9.3			316	342	359		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
6.25%	A	5	5	5			20.9	19.0	19.2			7.6	8.1	8.1			8.4	8.9	9.3			358	392	407		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5			21.0																			
12.5%	A	5	5	5			~~21.0~~	19.0	19.5			7.6	8.0	8.1			8.4	9.3	9.2			396	441	462		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							681	680	681			681	680	681			681	680	681			681	680	681		
Time		1427	1354	1306			1306	1202	1300			1306	1202	1300			1306	1202	1300			1306	1202	1300		
Initials		LAO	LAO	LAO			AY	MT	LAO			AY	MT	LAO			AY	MT	LAO			AY	MT	LAO		

(d) NS 2/11/22 for AY

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 Fathead: 2000.0 Americamysis: 2007.0 Menidia: 2006.0
Magna/pulex: 2021.0 X Trout: 2019.0 Cyprinodon: 2004.0 OTHER:

ATS-T01
12/02/08

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-734
Test Material: ELUTRIATE
Accession Number: AT1-855
Dilution Water: Mod Hard
Accession Number: LD1- 789

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L
pH: 6.0 - 9.0 Salinity: 0 ppt
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1326
Ending Date: 11/25/21 Time: 1306
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)
Test Container: 30 ml cup
Test Volume: 25 ml
Test Duration: 48 hrs

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
25%	A	5	5	5			21.0	19.0	19.6			7.6	8.0	8.0			8.4	9.3	9.3			473	555	600		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
50%	A	5	5	5			20.9	19.0	19.5			7.5	7.9	7.9			8.4	9.4	9.2			632	717	773		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
100%	A	5	5	5			20.7	19.0	19.3			7.5	7.9	7.9			8.4	9.5	9.2			933	972	971		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							681	680	681			681	680	681			681	680	681			681	680	681		
Time		1427	1354	1306			1306	1202	1300			1306	1202	1300			1306	1202	1300			1306	1202	1300		
Initials		LAD	LAD	LAD			MT	MT	LAD			MT	MT	LAD			MT	MT	LAD			MT	MT	LAD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0____ Fathead: 2000.0____ Americamysis: 2007.0____ Menidia:2006.0 ____
Magna/pulex: 2021.0__X__ Trout: 2019.0____ Cyprinodon: 2004.0____ OTHER:____

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TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-734

Date/Time/Initials	Comments/Activity

RANDOMIZATION CHART

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-734

5	4	1	3	6	2
1	5	3	2	4	6
6	2	4	1	5	3
4	1	2	6	3	5

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-734

Day	Testing Location	Date	Time	Initials
0	S1	11/23/21	1429	CAD
1	S1	11/24/21	1354	CAD
2	S1	11/25/21	1306	CAD
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-734

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-735

TEST ORGANISM INFORMATION

Common Name: Water flea

Scientific Name: *D. magna*

Lot Number: N/A

Source: EA

Adults Isolated (Time, Date): 11/22/21 1601

Neonates Pulled & Fed (Time, Date): 0932 11/23/21

Acclimation: <24hrs Age: <24 hrs

Culture Water (T/S): 20.2 °C 0 ppt

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	1030	TP	Dilutions Made
↓	1108	↓	Test Vessels Filled
↓	1200	↓	Organisms Transferred
↓	1256	MY	Head Counts

TEST SET-UP

Sample Number: AT1-856

Dilution Number: LD1- 789

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	200 ml
6.25%	12.5 ml	↓
12.5%	25 ml	
25%	50 ml	
50%	100 ml	
100%	200 ml	

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-735
Test Material: ELUTRIATE
Accession Number: AT1-856
Dilution Water: Mod Hard
Accession Number: LD1- 789

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*
TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L Test Container: 30 ml cup
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 25 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Beginning Date: 11/23/21 Time: 1200
Ending Date: 11/25/21 Time: 1109
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)

Concentration	Rep	Number of Live Organisms 0	24	48	72	96	Temperature (°C) 0	24	48	72	96	pH 0	24	48	72	96	Dissolved Oxygen (mg/L) 0	24	48	72	96	Conductivity (µS/cm) Salinity (ppt) 0	24	48	72	96
Control	A	5	5	5			21.0	19.0	19.2			8.0	7.9	8.2			8.5	9.9	8.7			320	342	344		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
6.25%	A	5	5	5			21.0	19.0	19.1			7.9	7.9	8.1			8.5	9.8	8.8			354	368	370		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
12.5%	A	5	5	5			20.9	19.0	19.3			7.9	7.9	8.1			8.5	9.7	9.0			389	406	400		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							T-26	680	681			681	680	681			681	680	681			681	680	681		
Time		1256	1100	1109			1157	1044	1041			1112	1044	1041			1112	1044	1041			1112	1044	1041		
Initials		AY	LAD	LAD			TP	LAD	LAD			AY	LAD	LAD			AY	LAD	LAD			AY	LAD	LAD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0____ Fathead: 2000.0____ Americamysis: 2007.0____ Menidia:2006.0 ____
Magna/pulex: 2021.0__X__ Trout: 2019.0____ Cyprinodon: 2004.0____ OTHER:____

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-735
Test Material: ELUTRIATE
Accession Number: AT1-856
Dilution Water: Mod Hard
Accession Number: LD1- 789

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*
TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L Test Container: 30 ml cup
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 25 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Beginning Date: 11/23/21 Time: 1200
Ending Date: 11/25/21 Time: 1109
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm) Salinity (ppt)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
25%	A	5	5	5			20.9	19.0	19.4			7.9	7.9	8.0			8.4	9.7	9.1			447	469	458		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
50%	A	5	5	5			20.9	19.0	19.4			7.8	7.8	7.8			8.5	9.6	7.9			579	608	577		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
100%	A	5	5	5			20.9	19.0	19.3			7.7	7.8	7.8			8.5	9.6	8.2			851	831	783		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							T-20	680	681			681	680	681			681	680	681			681	680	681		
Time		1256	1106	1109			1157	1044	1041			1112	1044	1041			1112	1044	1041			1112	1044	1041		
Initials		AJ	LAD	LAD			TP	LAD	LAD			AJ	LAD	LAD			AJ	LAD	LAD			AJ	LAD	LAD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0____ Fathead: 2000.0____ Americamysis: 2007.0____ Menidia:2006.0 ____
Magna/pulex: 2021.0 X Trout: 2019.0____ Cyprinodon: 2004.0____ OTHER:____

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TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-735

Date/Time/Initials	Comments/Activity

RANDOMIZATION CHART

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-735

5	4	1	3	6	2
1	5	3	2	4	6
6	2	4	1	5	3
4	1	2	6	3	5

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-735

Day	Testing Location	Date	Time	Initials
0	S1	11/23/21	1519	LAD
1	S1	11/24/21	1107	LAD
2	S1	11/25/21	1109	LAD
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-735

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-736

TEST ORGANISM INFORMATION

Common Name: Water flea

Scientific Name: *D. magna*

Lot Number: N/A

Source: EA

Adults Isolated (Time, Date): 11-22-21 1601

Neonates Pulled & Fed (Time, Date): 11-23-21 0858

Acclimation: <24hrs Age: <24 hrs

Culture Water (T/S): 20.2 °C 0 ppt

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	0917	[illegible]	Dilutions Made
↓	0951	[illegible]	Test Vessels Filled
	1048	[illegible]	Organisms Transferred
	1155	[illegible]	Head Counts

TEST SET-UP

Sample Number: AT1-857

Dilution Number: LD1-787

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	200 ml
6.25%	12.5 ml	↓
12.5%	25 ml	
25%	50 ml	
50%	100 ml	
100%	200 ml	

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-736
Test Material: ELUTRIATE
Accession Number: AT1-857
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L Test Container: 30 ml cup
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 25 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Beginning Date: 11/23/21 Time: 1048
Ending Date: 11/25/21 Time: 1043
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm) ~~Salinity (ppt)~~				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control	A	5	5	5			21.0	19.0	20.5			8.1	8.1	8.1			8.7	10.1	8.4			325	367	370		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
6.25%	A	5	5	5			21.0	19.0	20.3			8.1	8.1	8.0			8.5	10.2	8.3			354	398	396		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
12.5%	A	5	5	5			20.8	19.0	20.1			8.0	8.0	8.0			8.4	10.0	8.3			389	429	437		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							T-20	680	681			681	680	681			681	680	681			681	680	681		
Time		1155	1029	1043			1033	1051	1035			0953	1051	1035			0953	1051	1035			0953	1051	1035		
Initials		TP	LAD	LAD			LAD	LAD	LAD			AY	LAD	LAD			AY	LAD	LAD			AY	LAD	LAD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0____ Fathead: 2000.0____ Americamysis: 2007.0____ Menidia:2006.0 ____
Magna/pulex: 2021.0__X__ Trout: 2019.0____ Cyprinodon: 2004.0____ OTHER:____

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-736
Test Material: ELUTRIATE
Accession Number: AT1-857
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L Test Container: 30 ml cup
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 25 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Beginning Date: 11/23/21 Time: 1048
Ending Date: 11/25/21 Time: 1043
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm) Salinity (ppt)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
25%	A	5	5	5			20.8	19.0	20.0			8.0	8.0	8.0			8.3	9.8	8.3			443	487	500		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
50%	A	5	5	5			20.9	19.0	19.6			7.9	7.9	7.9			8.3	9.7	8.2			585	640	655		
	B	5	5	4																						
	C	5	5	5																						
	D	5	5	5																						
100%	A	5	5	5			21.0	19.0	19.7			7.8	7.9	7.8			8.2	9.7	8.2			843	866	826		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							T-20	680	681			681	680	681			681	680	681			681	680	681		
Time		1155	1029	1043			1033	1051	1035			0953	1051	1035			0953	1051	1035			0953	1051	1035		
Initials		[illegible]	LAD	LAD			LAD	LAD	LAD			AJ	LAD	LAD			AJ	LAD	LAD			AJ	LAD	LAD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0____ Fathead: 2000.0____ Americamysis: 2007.0____ Menidia:2006.0 ____
Magna/pulex: 2021.0__X__ Trout: 2019.0____ Cyprinodon: 2004.0____ OTHER:____

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-736

Date/Time/Initials	Comments/Activity

RANDOMIZATION CHART

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-736

5	4	1	3	6	2
1	5	3	2	4	6
6	2	4	1	5	3
4	1	2	6	3	5

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-736

Day	Testing Location	Date	Time	Initials
0	S1	11/23/21	1529	UAD
1	S1	11/24/21	1107	UAD
2	S1	11/25/21	1045	UAD
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-736

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-737

TEST ORGANISM INFORMATION

Common Name: Water flea

Scientific Name: *D. magna*

Lot Number: N/A

Source: EA

Adults Isolated (Time, Date): 11/22/21 1601

Neonates Pulled & Fed (Time, Date): 11/23/21 0858

Acclimation: <24hrs Age: <24 hrs

Culture Water (T/S): 20.9 °C 0 ppt

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	0922	[illegible]	Dilutions Made
	1005	[illegible]	Test Vessels Filled
	1055	[illegible]	Organisms Transferred
	1153	[illegible]	Head Counts

TEST SET-UP

Sample Number: AT1-858

Dilution Number: LD1-785

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	200 ml
6.25%	12.5 ml	
12.5%	25 ml	
25%	50 ml	
50%	100 ml	
100%	200 ml	

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-737
Test Material: ELUTRIATE
Accession Number: AT1-858
Dilution Water: Mod Hard
Accession Number: LD1- 785

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*
TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L Test Container: 30 ml cup
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 25 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Beginning Date: 11/23/21 Time: 1055
Ending Date: 11/25/21 Time: 1055
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm) Salinity (ppt)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control	A	5	5	5			20.4	19.0	19.1			8.2	8.0	8.1			7.6	9.6	9.7			326	350	349		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
6.25%	A	5	5	5			20.8	19.0	19.2			8.1	8.0	8.0			7.7	9.7	9.7			354	382	371		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
12.5%	A	5	5	5			21.0	19.0	19.3			8.1	8.0	8.0			7.8	9.6	9.6			389	413	405		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							681	680	681			681	680	681			681	680	681			681	680	681		
Time		1153	1027	1055			1008	1116	1049			1008	1116	1049			1008	1116	1049			1008	1116	1049		
Initials		LAD	AY	LAD			AY	LAD	LAD			AY	LAD	LAD			AY	LAD	LAD			AY	LAD	LAD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0_____ Americamysis: 2007.0_____ Menidia:2006.0 _____
Magna/pulex: 2021.0 X Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-737
Test Material: ELUTRIATE
Accession Number: AT1-858
Dilution Water: Mod Hard
Accession Number: LD1- 785

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L Test Container: 30 ml cup
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 25 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Beginning Date: 11/23/21 Time: 1055
Ending Date: 11/25/21 Time: 1055
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm) Salinity (ppt)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
25%	A	5	5	5			21.0	19.0	19.5			8.0	7.9	8.0			7.9	9.4	9.4			441	469	456		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
50%	A	5	5	5			21.0	19.0	19.5			7.9	7.9	7.9			8.0	9.3	9.3			585	623	595		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
100%	A	5	5	5			21.0	19.0	19.5			7.8	7.8	7.8			8.0	9.2	9.1			842	847	807		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							681	680	681			681	680	681			681	680	681			681	680	681		
Time		1153	1027	1055			1008	1116	1049			1008	1116	1049			1008	1116	1049			1008	1116	1049		
Initials		LAD	AY	LAD			AY	LAD	LAD			AY	LAD	LAD			AY	LAD	LAD			AY	LAD	LAD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0_____ Americamysis: 2007.0_____ Menidia:2006.0 _____
Magna/pulex: 2021.0 X Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

ATS-T01
12/02/08

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-737

Date/Time/Initials	Comments/Activity

RANDOMIZATION CHART

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-737

5	4	1	3	6	2
1	5	3	2	4	6
6	2	4	1	5	3
4	1	2	6	3	5

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-737

Day	Testing Location	Date	Time	Initials
0	S1	11/23/21	1200	SC
1	S1	11/24/21	1027	AZ
2	S1	11/25/21	1056	LAO
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-737

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-738

(d) RSB 12/1/21 for TP

TEST ORGANISM INFORMATION

Common Name: Water flea

Scientific Name: *D. magna*

Lot Number: N/A

Source: EA

Adults Isolated (Time, Date): 11/23/21 1601

Neonates Pulled & Fed (Time, Date): 11/23/21 0858

Acclimation: <24hrs Age: <24 hrs

Culture Water (T/S): 20.9 °C 0 ppt

TEST INITIATION

Date	Time	Initials	Activity
11/23/21 ↓	0908	TP	Dilutions Made
	0933	AH	Test Vessels Filled
	1100	TP	Organisms Transferred
	1158	LAD	Head Counts

TEST SET-UP

Sample Number: AT1-859

Dilution Number: LD1- 787

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	200 ml ↓
6.25%	12.5 ml	
12.5%	25 ml	
25%	50 ml	
50%	100 ml	
100%	200 ml	

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-738
Test Material: ELUTRIATE
Accession Number: AT1-859
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L Test Container: 30 ml cup
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 25 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Beginning Date: 11/23/21 Time: 1100
Ending Date: 11/25/21 Time: 1058
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm) Salinity (ppt)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control	A	5	5	5			20.8	19.0	19.0			8.1	7.9	8.2			8.8	9.6	9.1			326	341	367		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
6.25%	A	5	5	5			20.9	19.0	19.0			8.1	7.9	8.1			8.4	9.3	9.0			353	471	510		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
12.5%	A	5	5	5			21.0	19.0	19.0			8.0	7.9	8.0			8.4	9.5	(E)			388	507	555		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							T-22	680	681			681	680	681			681	680	681			681	680	681		
Time		1158	1138	1058			1050	1136	1105			0936	1136	1105			0936	1136	1105			0936	1136	1105		
Initials		LAO	LAO	LAO			TF	LAO	LAO			AY	LAO	LAO			AY	LAO	LAO			AY	LAO	LAO		

(E) RSB 12/3/21 for LAO

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0_____ Americamysis: 2007.0_____ Menidia:2006.0 _____
Magna/pulex: 2021.0 X Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

ATS-T01
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ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-738
Test Material: ELUTRIATE
Accession Number: AT1-859
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L Test Container: 30 ml cup
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 25 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Beginning Date: 11/23/21 Time: 1105
Ending Date: 11/25/21 Time: ~~1105~~ 1058
TEST TYPE: (Static) / Flowthrough (b) LMD 11/25/21
Renewal / (Non-renewal)

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm) Salinity (ppt)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
25%	A	5	5	5			21.0	19.0	19.0			8.0	7.9	8.0			8.3	9.5	9.1			447	555	467		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
50%	A	5	5	5			21.0	19.0	19.0			7.9	7.8	7.9			8.2	9.5	9.1			592	746	848		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
100%	A	5	5	5			21.0	19.0	19.3			7.7	7.8	7.7			8.2	9.5	8.3			853	1011	1046		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							T22	680	681			681	680	681			681	680	681			681	680	681		
Time		1158	1128	1058			1050	1136	1105			0936	1136	1105			0936	1136	1105			0936	1136	1105		
Initials		LMD	LMD	LMD			TP	LMD	LMD			AZ	LMD	LMD			AZ	LMD	LMD			AZ	LMD	LMD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0_____ Americamysis: 2007.0_____ Menidia:2006.0 _____
Magna/pulex: 2021.0__X__ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-738

Date/Time/Initials	Comments/Activity

RANDOMIZATION CHART

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-738

5	4	1	3	6	2
1	5	3	2	4	6
6	2	4	1	5	3
4	1	2	6	3	5

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-738

Day	Testing Location	Date	Time	Initials
0	S1	11/23/21	1200	SL
1	S1	11/24/21	1137	LAD
2	S1	11/25/21	1059	LAD
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-738

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-739

(6) UAO 11/23/21

1601

TEST ORGANISM INFORMATION

Common Name: Water flea

Scientific Name: *D. magna*

Lot Number: N/A

Source: EA

Adults Isolated (Time, Date): 11/22/21 0855

Neonates Pulled & Fed (Time, Date): 11/23/21 0858

Acclimation: <24hrs Age: <24 hrs

Culture Water (T/S): 20.4 °C 0 ppt

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	0900	[illegible]	Dilutions Made
	0913	[illegible]	Test Vessels Filled
	1102	UAO	Organisms Transferred
	1202	[illegible]	Head Counts

TEST SET-UP

Sample Number: AT1-860

Dilution Number: LD1- 787

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	200 ml
6.25%	12.5 ml	
12.5%	25 ml	
25%	50 ml	
50%	100 ml	
100%	200 ml	

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-739
Test Material: ELUTRIATE
Accession Number: AT1-860
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

TARGET VALUES
Temp: 20±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*

Beginning Date: 11/23/21 Time: 1102
Ending Date: 11/25/21 Time: 1133
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)

DO: >4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Test Container: 30 ml cup
Test Volume: 25 ml
Test Duration: 48 hrs

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control	A	5	S	S			20.7	19.4	19.0			7.8	8.3	7.7			8.4	9.1	9.0			334	357	367		
	B	5	S	S																						
	C	5	S	S																						
	D	5	S	S																						
6.25%	A	5	S	S			20.7	19.4	19.1			7.9	8.3	7.7			8.5	9.2	9.3			365	381	381		
	B	5	S	S																						
	C	5	S	S																						
	D	5	S	S																						
12.5%	A	5	S	S			20.8	19.4	19.2			7.9	8.2	7.6			8.4	9.2	9.4			401	424	420		
	B	5	S	S																						
	C	5	S	S																						
	D	5	S	S																						
Meter Number							7-21	1681	6801			1681	6801	6801			6801	6801	6801			6801	6801	6801		
Time		1202	1034	1133			1051	1035	1130			0916	1035	1130			0916	1035	1130			0916	1035	1130		
Initials		AY	AY	LAD			LAD	AY	LAD			AY	AY	LAD			AY	AY	LAD			AY	AY	LAD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0____ Fathead: 2000.0____ Americamysis: 2007.0____ Menidia:2006.0 ____
Magna/pulex: 2021.0__X__ Trout: 2019.0____ Cyprinodon: 2004.0____ OTHER:____

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-739
Test Material: ELUTRIATE
Accession Number: AT1-860
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L Test Container: 30 ml cup
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 25 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Beginning Date: 11/23/21 Time: 1102
Ending Date: 11/25/21 Time: 1133
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
25%	A	5	5	5			20.4	19.3	19.4			7.8	8.2	7.7			8.3	9.2	9.3			481	498	500		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	4																						
50%	A	5	5	5			20.6	19.2	19.4			7.8	8.1	7.6			8.2	9.2	9.4			628	654	649		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	4																						
100%	A	5	5	5			20.6	19.0	19.4			7.7	8.1	7.6			8.1	9.1	9.4			937	950	933		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	4																						
Meter Number							T-21	681	681			681	681	681			681	681	681			681	681	681		
Time		1202	1034	1133			1051	1035	1130			0916	1035	1130			0916	1035	1130			0916	1035	1130		
Initials		AY	AY	LMD			LMD	AY	LMD			AY	AY	LMD			AY	AY	LMD			AY	AY	LMD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 Fathead: 2000.0 Americamysis: 2007.0 Menidia:2006.0
Magna/pulex: 2021.0 X Trout: 2019.0 Cyprinodon: 2004.0 OTHER:

ATS-T01
12/02/08

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-739

Date/Time/Initials	Comments/Activity

RANDOMIZATION CHART

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-739

5	4	1	3	6	2
1	5	3	2	4	6
6	2	4	1	5	3
4	1	2	6	3	5

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-739

Day	Testing Location	Date	Time	Initials
0	S1	11/23/21	1517	UAD
1	S1	11/24/21	1040	AH
2	S1	11/25/21	1134	UAD
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-739

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-740

TEST ORGANISM INFORMATION

Common Name: Water flea

Scientific Name: *D. magna*

Lot Number: N/A

Source: EA

Adults Isolated (Time, Date): 1600 11/22/01

Neonates Pulled & Fed (Time, Date): 0909 11/23/01

Acclimation: <24hrs Age: <24 hrs

Culture Water (T/S): 20.4 °C 0 ppt

TEST INITIATION

Date	Time	Initials	Activity
11/23/01	1040	TP	Dilutions Made
↓	↓	↓	Test Vessels Filled
	1305	UAO	Organisms Transferred
	1318	MT	Head Counts

TEST SET-UP

Sample Number: AT1-861

Dilution Number: LD1- 788

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	200 ml
6.25%	12.5 ml	↓
12.5%	25 ml	
25%	50 ml	
50%	100 ml	
100%	200 ml	

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-740
Test Material: ELUTRIATE
Accession Number: AT1-861
Dilution Water: Mod Hard
Accession Number: LD1- 788

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L Test Container: 30 ml cup
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 25 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Beginning Date: 11/23/21 Time: 1305
Ending Date: 11/25/21 Time: 1251
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm) Salinity (ppt)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control	A	5	5	5			20.0	19.0	21.0			7.6	8.3	8.1			9.1	9.1	8.5			320	346	352		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
6.25%	A	5	5	5			20.0	19.0	20.4			7.6	8.2	8.1			9.1	9.1	8.4			351	367	363		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
12.5%	A	5	5	5			20.0	19.0	20.4			7.6	8.2	8.0			9.1	9.1	8.5			388	404	398		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							680	681	681			680	681	681			680	681	681			680	681	681		
Time		1318	1314	1251			1147	1040	1248			1147	1040	1248			1147	1040	1248			1147	1040	1248		
Initials		MT	LMD	LMD			SL	AY	LMD			SL	AY	LMD			SL	AY	LMD			SL	AY	LMD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0____ Fathead: 2000.0____ Americamysis: 2007.0____ Menidia:2006.0 ____
Magna/pulex: 2021.0__X__ Trout: 2019.0____ Cyprinodon: 2004.0____ OTHER:____

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-740
Test Material: ELUTRIATE
Accession Number: AT1-861
Dilution Water: Mod Hard
Accession Number: LD1- 788

TEST ORGANISM
Common Name: Water flea
Scientific Name: *D. magna*

TARGET VALUES
Temp: 20±1 °C DO: >4.0 mg/L
pH: 6.0 - 9.0 Salinity: 0 ppt
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1305
Ending Date: 11/25/21 Time: 1251
TEST TYPE: (Static) / Flowthrough
Renewal / (Non-renewal)
Test Container: 30 ml cup
Test Volume: 25 ml
Test Duration: 48 hrs

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm) ~~Salinity (ppt)~~				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
25%	A	5	5	5			20.0	19.0	20.3			7.6	8.2	8.0			9.1	9.2	8.5			458	470	460		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
50%	A	5	5	5			20.0	19.0	20.1			7.5	8.1	7.9			8.9	9.2	8.5			591	604	595		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
100%	A	5	5	5			20.0	19.0	20.0			7.4	8.1	7.9			8.9	9.2	8.5			873	874	831		
	B	5	5	5																						
	C	5	5	5																						
	D	5	5	5																						
Meter Number							680	681	681			680	681	681			680	681	681			680	681	681		
Time		1316	1314	1251			1147	1040	1248			1147	1040	1248			1147	1040	1248			1147	1040	1248		
Initials		MT	LMD	LMD			SL	AY	LMD			SL	AY	LMD			SL	AY	LMD			SC	AY	LMD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0____ Fathead: 2000.0____ Americamysis: 2007.0____ Menidia:2006.0 ____
Magna/pulex: 2021.0__X__ Trout: 2019.0____ Cyprinodon: 2004.0____ OTHER:____

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-740

Date/Time/Initials	Comments/Activity

RANDOMIZATION CHART

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-740

5	4	1	3	6	2
1	5	3	2	4	6
6	2	4	1	5	3
4	1	2	6	3	5

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-740

Day	Testing Location	Date	Time	Initials
0	51	11/23/21	1517	LAO
1	51	11/24/21	1040	AL
2	51	11/25/21	1254	LAO
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-740

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

ATTACHMENT III

Data Sheets and Statistical Analyses
from *Pimephales promelas* Toxicity Tests
(72 pages)

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TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-749

TEST ORGANISM INFORMATION

Common Name: Fathead minnow

Scientific Name: *P. promelas*

Lot Number: FH 5L16

Source: ABS

Adults Isolated (Time, Date): _____

Neonates Pulled & Fed (Time, Date): _____

Acclimation: < 24hr Age: 2 days

Culture Water (T/S): 25.1 °C 0 ppt

TEST SET-UP

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	1025	TP	Dilutions Made
			Test Vessels Filled
	1351	UAO	Organisms Transferred
	1425	AJK	Head Counts

CONCENTRATION SERIES

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	1250 ml
Site Water	~~1000~~ 1250 ml	

(9) AJK 12/1/21

Comments:

INTERMEDIATE DILUTION PREPARATION AND FEEDING

DILUTION PREPARATION

Day	Date	Time	Initials	Sample / Diluent
0	11/23/21	1025	TP	ATI-853 / UDI-788
1				
2	11/25/21	0936	UAO	ATI-853 / UDI-792
3				
4				
5				
6				

FEEDING

Food: *Artemia*

Day	Time, Initials, Amount	Time, Initials, Amount	Time, Initials, Amount
0			1611 MT 3 drops
1	0828 MT 3 drops		1439 SL 3 drops
2	0803 UAO 3 drops		1750 UAO 3 drops
3	0940 3 drops		1600 3 drops
4	0807 3 drops		
5			
6			

ACUTE TOXICITY TEST DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-749
Test Material: SITE WATER
Accession Number: AT1-853
Dilution Water: Mod Hard
Accession Number: LD1- 788

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1351
Ending Date: 11/27/21 Time: 1357
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1 L Beaker
Test Volume: 250 ml
Test Duration: 96 hrs

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control								24.0	24.4	24.2	24.1		7.7	7.9	7.9	8.2		7.5	6.5	7.1	7.8		337	335	342	335
Site Water								24.1	24.2	24.2	24.2		7.6	7.6	7.6	7.9		7.2	6.7	7.1	7.8		875	885	881	886
Meter Number								680	681	681	681		680	681	681	681		680	681	681	681		680	681	681	681
Time								0930	1008	1030	0959		0930	1008	1030	0959		0930	1008	1030	0959		0930	1008	1030	0959
Initials								LAD	LAD		TP		LAD	LAD		TP		LAD	LAD		TP		LAD	LAD		TP

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-749
Test Material: ELUTRIATE
Accession Number: AT1-853
Dilution Water: Mod Hard
Accession Number: LD1- 788

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1351
Ending Date: 11/27/21 Time: 1357
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
CONTROL	A	10	10	10	10	10	24.0		24.1			8.2		7.8			9.1		8.1			329		314		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
Site Water	A	10	10	10	10	10	24.0		24.7			7.8		7.5			8.9		8.4			836		831		
(AT1-853)	B	10	10	10	10	9																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
Meter Number							681		681			681		681			681		681			681		681		
Time		1425	1413	1313	1251	1357	1118		1007			1118		1007			1118		1007			1118		1007		
Initials		AY	MT	UAD	~	TP	AY		UAD			AY		UAD			AY		UAD			AY		UAD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 Fathead: 2000.0 X Americamysis: 2007. Menidia: 2006.0
Magna/pulex: 2021.0 Trout: 2019.0 Cyprinodon: 2004.0 OTHER:

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-749

Date/Time/Initials	Comments/Activity

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-749

Day	Testing Location	Date	Time	Initials
0	16	11/23/21	1118	AY
1	16	11/24/21	1436	CAD
2	16	11/25/21	1314	CAD
3	16	11/26/21	1030	~
4	16	11/27/21	1357	[illegible]
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-749

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-786

TEST ORGANISM INFORMATION

Common Name: Fathead minnow

Scientific Name: *P. promelas*

Lot Number: FH-567

Source: ABS

Adults Isolated (Time, Date): _____

Neonates Pulled & Fed (Time, Date): _____

Acclimation: 2 days Age: 2 days

Culture Water (T/S): 24.1 °C 0 ppt

TEST SET-UP

TEST INITIATION

Date	Time	Initials	Activity
12/2/21	0906	TP	Dilutions Made
			Test Vessels Filled
	0930	TP	Organisms Transferred
	0939	AY	Head Counts

CONCENTRATION SERIES

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	1250 ml
6.25%	78.125 ml	
12.5%	156.25 ml	
25%	312.5 ml	
50%	625 ml	
100%	1250 ml	

Comments:

INTERMEDIATE DILUTION PREPARATION AND FEEDING

DILUTION PREPARATION

Day	Date	Time	Initials	Sample / Diluent
0	12/2/21	0906	TP	ATI-854 / LDI-808
1				
2	12/4/21	0913	TP	ATI-854 / LDI-810
3				
4				
5				
6				

FEEDING

Food: *Artemia*

Day	Time, Initials, Amount	Time, Initials, Amount	Time, Initials, Amount
0			1611 MT 3 drops
1	0833 MT 3 drops		1620 MT 3 drops
2	0930 TP 3 drops		1530 MT 3 drops
3	0833 SL 3 drops		1520 AY 3 drops
4	0815 AY 3 drops		
5			
6			

ACUTE TOXICITY TEST DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-786
Test Material: ELUTRIATE
Accession Number: AT1-854
Dilution Water: Mod Hard
Accession Number: LD1- 808

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 12/2/21 Time: 0930
Ending Date: 12/6/21 Time: 0858
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1 L Beaker
Test Volume: 250 ml
Test Duration: 96 hrs

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control								24.9	24.5	25.2	24.3		8.2	8.3	8.1	6.9		8.2	8.0	7.4	7.5		325	334	336	342
6.25%								25.0	25.2	25.2	24.8		8.1	8.2	8.0	6.8		8.1	7.2	7.3	7.6		361	363	368	367
12.5%								25.1	25.2	25.1	26.0		8.1	8.1	8.0	6.8		7.8	7.0	6.7	7.2		395	398	400	406
25%								24.8	25.2	25.0	25.2		8.1	8.1	7.9	6.8		7.8	6.7	6.5	6.8		469	474	477	476
50%								25.0	24.9	24.9	25.1		8.0	8.0	7.9	6.8		7.8	7.0	6.8	7.1		610	610	608	603
100%								24.9	25.0	24.9	25.2		8.0	8.0	7.9	6.9		7.8	7.1	6.7	7.1		864	843	856	851
Meter Number								680	680	680	681		680	680	680	681		680	680	680	681		680	680	680	681
Time								0916	0939	1009	0846		0916	0939	1009	0846		0916	0939	1009	0846		0916	0939	1009	0846
Initials								MT	MT	AY	SL		MT	MT	AY	SL		MT	MT	AY	SL		MT	MT	AY	SL

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-786
Test Material: ELUTRIATE
Accession Number: AT1-854
Dilution Water: Mod Hard
Accession Number: LD1- 808

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 12/2/21 Time: 0930
Ending Date: 12/6/21 Time: 0858
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
CONTROL	A	10	10	10	10	10	24.3		24.0			8.2		8.3			7.6		8.4			321		330		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	9	9	9																				
	E	10	10	9	9	9																				
6.25%	A	10	9	9	9	9	24.5		24.0			8.2		8.3			8.0		8.5			356		358		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
Meter Number							681		C450			681		680			681		680			681		650		
Time		0939	0930	1012	1002	0855	0910		0944			0910		0944			0910		0944			0910		0944		
Initials		AY	MT	MT	AY	SL	TP		MT			TP		MT			TP		MT			TP		MT		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-786
Test Material: ELUTRIATE
Accession Number: AT1-854
Dilution Water: Mod Hard
Accession Number: LD1- 808

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 12/2/21 Time: 0930
Ending Date: 12/6/21 Time: 0858
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
12.5%	A	10	10	10	8	8	24.5		24.0			8.2		8.3			8.1		8.5			392		391		
	B	10	10	10	10	10																				
	C	10	9	9	9	9																				
	D	10	10	10	10	10																				
	E	10	10	10	9	9																				
25%	A	10	10	10	10	9	24.6		24.0			8.2		8.2			8.2		8.6			466		453		
	B	10	10	9	9	9																				
	C	10	10	10	10	9																				
	D	10	10	10	10	9																				
	E	10	9	9	8	7																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-786
Test Material: ELUTRIATE
Accession Number: AT1-854
Dilution Water: Mod Hard
Accession Number: LD1- 808

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C DO: ≥4.0 mg/L
pH: 6.0 - 9.0 Salinity: 0 ppt
Photoperiod: 16 l, 8 d Light Intensity: 50 - 100 fc

Beginning Date: 12/2/21 Time: 0930
Ending Date: 12/6/21 Time: 0858
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
50%	A	10	10	10	10	10	24.7		24.6			8.0		8.1			8.2		8.6			618		581		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
100%	A	10	10	10	10	9	24.7		24.0			7.8		8.1			8.2		8.6			888		846		
	B	10	9	9	9	9																				
	C	10	10	10	10	10																				
	D	10	10	10	9	9																				
	E	10	10	9	10	9																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-786

Date/Time/Initials	Comments/Activity

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-786

Day	Testing Location	Date	Time	Initials
0	TB	12/2/21	0911	TP
1	TB	12/3/21	0930	MT
2	TB	12/4/21	1205	TP
3	TB	12/5/21	1010	BJ
4	TB	12/6/21	0900	BC
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-786

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-742

TEST ORGANISM INFORMATION

Common Name: Fathead minnow

Scientific Name: *P. promelas*

Lot Number: FH-566

Source: ABS

Adults Isolated (Time, Date): _____

Neonates Pulled & Fed (Time, Date): _____

Acclimation: <24hrs Age: 2 days

Culture Water (T/S): 24.4 °C 0 ppt

TEST SET-UP

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	1028	[illegible]	Dilutions Made
			Test Vessels Filled
	1415		Organisms Transferred
	1445	AY	Head Counts

CONCENTRATION SERIES

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	1250 ml
6.25%	78.125 ml	
12.5%	156.25 ml	
25%	312.5 ml	
50%	625 ml	
100%	1250 ml	

Comments:

INTERMEDIATE DILUTION PREPARATION AND FEEDING

DILUTION PREPARATION

Day	Date	Time	Initials	Sample / Diluent
0	11/23/21	1028	[illegible]	ATI-855 / UDI-788
1				
2	11/25/21	1000	[illegible]	ATI-855 / UDI-792
3				
4				
5				
6				

FEEDING

Food: *Artemia*

Day	Time, Initials, Amount	Time, Initials, Amount	Time, Initials, Amount
0			1611 MT 3 drops
1	0828 MT 3 drops		1443 SL 3 drops
2	0807 MD 3 drops		1751 MD 3 drops
3	[illegible] 3 drops		1600 [illegible] 3 drops
4	0807 MD 3 drops		
5			
6			

ACUTE TOXICITY TEST DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-742
Test Material: ELUTRIATE
Accession Number: AT1-855
Dilution Water: Mod Hard
Accession Number: LD1- 788

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*

DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1415
Ending Date: 11/27/21 Time: 1413
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal

Test Container: 1 L Beaker
Test Volume: 250 ml
Test Duration: 96 hrs

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control								24.9	24.0	24.1	24.0		7.8	7.8	7.8	8.2		7.0	7.1	7.1	7.7		337	340	344	333
6.25%								25.1	24.0	24.1	24.1		7.8	7.7	7.7	8.2		7.1	7.2	7.1	7.7		374	376	379	371
12.5%								25.1	24.3	24.3	24.2		7.8	7.6	7.7	8.2		7.0	7.2	7.0	7.5		413	414	416	414
25%								25.1	24.3	24.4	24.2		7.8	7.6	7.7	8.1		6.7	7.2	7.0	7.5		491	492	494	485
50%								25.1	24.3	24.4	24.2		7.7	7.5	7.6	8.0		6.7	7.1	6.9	7.4		645	643	651	637
100%								24.6	24.3	24.4	24.3		7.6	7.4	7.5	7.9		6.4	6.9	6.5	7.2		952	919	926	896
Meter Number								680	681	691	681		680	681	691	681		680	681	691	681		680	681	691	681
Time								1436	1321	1021	1006		1436	1321	1021	1006		1436	1321	1021	1006		1436	1321	1021	1006
Initials								MT	LAD	~	[illegible]		MT	LAD	~	[illegible]		MT	LAD	~	[illegible]		MT	LAD	~	[illegible]

ACUTE TOXICITY TEST DATA SHEET

(b) AY 11/23/21

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-742
Test Material: ELUTRIATE
Accession Number: AT1-855
Dilution Water: Mod Hard
Accession Number: LD1- 789 788

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1415
Ending Date: 11/27/21 Time: 1413
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
CONTROL	A	10	10	10	10	10	25.1		24.5			7.6		7.6			8.3		8.0			316		310		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	9	9	9																				
	E	10	10	10	10	10																				
6.25%	A	10	10	9	9	9	24.9		24.5			7.6		7.6			8.4		7.9			358		349		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
Meter Number							T-22		681			681		681			681		681			681		681		
Time		1445	1405	1351	1315	1413	1403		1005			1300		1005			1300		1005			1300		1005		
Initials		AY	MT	LAD	~	TP	AY		LAD			AY		LAD			AY		LAD			AY		LAD		

(b)MT 11/24/21

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 Fathead: 2000.0 X Americamysis: 2007. Menidia:2006.0
Magna/pulex: 2021.0 Trout: 2019.0 Cyprinodon: 2004.0 OTHER:

(b) AT 11/23/21

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-742
Test Material: ELUTRIATE
Accession Number: AT1-855
Dilution Water: Mod Hard
Accession Number: LD1- ~~789~~ 789

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1415
Ending Date: 11/27/21 Time: 1413
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
12.5%	A	10	~~9~~10	10	10	10	24.8		24.4			7.60		7.6			8.4		8.2			3960		397		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
25%	A	10	10	10	10	10	24.8		24.4			7.6		7.5			8.4		8.7			473		460		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				

(b) MT 11/24/21

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0____ Fathead: 2000.0 X Americamysis: 2007.____ Menidia:2006.0 ____
Magna/pulex: 2021.0____ Trout: 2019.0____ Cyprinodon: 2004.0____ OTHER:____

ACUTE TOXICITY TEST DATA SHEET

(b) BG 11/23/21

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-742
Test Material: ELUTRIATE
Accession Number: AT1-855
Dilution Water: Mod Hard
Accession Number: LD1- 789788

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C DO: ≥4.0 mg/L Test Container: 1-L BEAKER
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 250 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 96 hours

Beginning Date: 11/23/21 Time: 1415
Ending Date: 11/27/21 Time: 1413
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
50%	A	10	10	10	10	10	24.8		24.5			7.5		7.5			8.4		8.2			632		638		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
100%	A	10	10	10	10	10	24.7		24.6			7.5		7.5			8.4		8.1			933		913		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-742

Date/Time/Initials	Comments/Activity

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-742

Day	Testing Location	Date	Time	Initials
0	14B	11/23/21	1405	AY
1	14B	11/24/21	1436	MT
2	14B	11/25/21	1352	LAD
3	14B	11/26/21	1024	~
4	14B	11/27/21	1415	MP
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-742

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-743

TEST ORGANISM INFORMATION

Common Name: Fathead minnow

Scientific Name: *P. promelas*

Lot Number: FM-5606

Source: ABS

Adults Isolated (Time, Date): _____

Neonates Pulled & Fed (Time, Date): _____

Acclimation: 624 HOURS Age: 2 DAYS

Culture Water (T/S): 24.8 °C 0 ppt

TEST SET-UP

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	1030	[illegible]	Dilutions Made
	1108	AM	Test Vessels Filled
	1455	SL	Organisms Transferred
	1458	AM	Head Counts

CONCENTRATION SERIES

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	1250 ml
6.25%	78.125 ml	
12.5%	156.25 ml	
25%	312.5 ml	
50%	625 ml	
100%	1250 ml	

Comments:

INTERMEDIATE DILUTION PREPARATION AND FEEDING

DILUTION PREPARATION

Day	Date	Time	Initials	Sample / Diluent
0	11/23/21	1030	[illegible]	ATI-856 / CD1-789
1				
2	11/25/21	1015	CAO	ATI-856 / CD1-792
3				
4				
5				
6				

FEEDING

Food: *Artemia*

Day	Time, Initials, Amount	Time, Initials, Amount	Time, Initials, Amount
0			1611 MT 3 drops
1	0825 MT 3 drops		1441 SL 3 drops
2	0800 CAO 3 drops		1300 CAO 3 drops
3	0940 [illegible] 3 drops		1600 [illegible] 3 drops
4	0807 AP 3 drops		
5			
6			

ACUTE TOXICITY TEST DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-743
Test Material: ELUTRIATE
Accession Number: AT1-856
Dilution Water: Mod Hard
Accession Number: LD1-789

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1455
Ending Date: 11/27/21 Time: 1502
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1 L Beaker
Test Volume: 250 ml
Test Duration: 96 hrs

Concentration	Rep	Number of Live Organisms 0	24	48	72	96	Temperature (°C) 0	24	48	72	96	pH 0	24	48	72	96	Dissolved Oxygen (mg/L) 0	24	48	72	96	Conductivity (µS/cm) 0	24	48	72	96
Control								24.4	24.4	24.6	24.1		7.9	7.9	7.4	8.3		7.0	7.6	7.2	7.8		336	335	334	336
6.25%								24.5	24.2	24.5	24.2		7.8	7.8	7.5	8.2		7.2	7.0	7.2	7.6		373	373	374	374
12.5%								24.4	24.2	24.3	24.2		7.8	7.8	7.6	8.2		7.2	7.0	7.1	7.5		412	414	414	406
25%								24.3	24.1	24.3	24.3		7.8	7.7	7.6	8.1		7.3	7.0	7.1	7.5		479	478	482	473
50%								24.4	24.1	24.3	24.3		7.7	7.6	7.6	8.0		7.3	7.1	7.1	7.5		619	617	622	619
100%								24.5	24.1	24.3	24.3		7.7	7.6	7.6	7.9		6.8	7.1	7.1	7.5		854	819	839	843
Meter Number								680	681	681	681		680	681	681	681		680	681	681	681		680	681	681	681
Time								1019	1030	1026	0957		1019	1030	1026	0957		1019	1030	1026	0957		1019	1030	1026	0957
Initials								LAD	LAD	~	TP		LAD	LAD	~	TP		LAD	LAD	~	TP		LAD	LAD	~	TP

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-743
Test Material: ELUTRIATE
Accession Number: AT1-856
Dilution Water: Mod Hard
Accession Number: LD1- 789

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C DO: ≥4.0 mg/L
pH: 6.0 - 9.0 Salinity: 0 ppt
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1455
Ending Date: 11/27/21 Time: 1502
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
CONTROL	A	10	10	10	10	10	24.0		24.7			8.0		7.7			8.5		7.7			320		310		
	B	10	10	10	10	10																				
	C	10	10	10	10	9																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
6.25%	A	10	10	10	10	10	24.0		24.5			7.9		7.7			8.5		7.9			354		346		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
Meter Number							681		681			681		681			681		681			681		681		
Time		1453	1420	1537	1355	1502	1112		1020			1117		1020			1117		1070			1112		1020		
Initials		AJ	SL	LAD	~	~	AJ		LAD			AJ		LAD			AJ		LAD			AJ		LAD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

ATS-T01
12/02/08

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-743
Test Material: ELUTRIATE
Accession Number: AT1-856
Dilution Water: Mod Hard
Accession Number: LD1- 789

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1455
Ending Date: 11/27/21 Time: 1502
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
12.5%	A	10	10	10	10	10	24.0		24.4			7.9		7.7			8.5		8.1			389		379		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
25%	A	10	10	10	10	10	24.1		24.3			7.9		7.6			8.4		8.7			447		454		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	9																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 ____ Magna/pulex: 2021.0 ____
Fathead: 2000.0 X Trout: 2019.0 ____
Americamysis: 2007. ____ Cyprinodon: 2004.0 ____
Menidia: 2006.0 ____ OTHER: ____

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-743
Test Material: ELUTRIATE
Accession Number: AT1-856
Dilution Water: Mod Hard
Accession Number: LD1- 789

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C DO: ≥4.0 mg/L
pH: 6.0 - 9.0 Salinity: 0 ppt
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1455
Ending Date: 11/27/21 Time: 1502
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
50%	A	10	10	10	10	10	24.2		24.4			7.8		7.6			8.5		8.3			579		578		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
100%	A	10	10	10	10	10	24.2		24.4			7.7		7.5			8.5		8.3			851		859		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	9	9	9																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-743

Date/Time/Initials	Comments/Activity

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-743

Day	Testing Location	Date	Time	Initials
0	16	11/23/21	1108	AM
1	16	11/24/21	1418	SL
2	16	11/25/21	1548	LD
3	16	11/26/21	1026	~
4	16	11/27/21	1510	TP
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-743

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-744

TEST ORGANISM INFORMATION

Common Name: Fathead minnow

Scientific Name: *P. promelas*

Lot Number: FH-566

Source: ABS

Adults Isolated (Time, Date): _____

Neonates Pulled & Fed (Time, Date): _____

Acclimation: <24hrs Age: 2days

Culture Water (T/S): 24.3 °C 0 ppt

TEST SET-UP

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	0917	TP	
			Dilutions Made
	0951	AY	Test Vessels Filled
	1330	TP	Organisms Transferred
	1433	AY	Head Counts

CONCENTRATION SERIES

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	1250 ml
6.25%	78.125 ml	
12.5%	156.25 ml	
25%	312.5 ml	
50%	625 ml	
100%	1250 ml	

Comments:

INTERMEDIATE DILUTION PREPARATION AND FEEDING

DILUTION PREPARATION

Day	Date	Time	Initials	Sample / Diluent
0	11/23/21	0917	TP	ATW-857 CDJ-787
1				
2	11/25/21	1415	VAD	ATW-857 WC-794
3				
4				
5				
6				

FEEDING

Food: *Artemia*

Day	Time, Initials, Amount	Time, Initials, Amount	Time, Initials, Amount
0			1611 MT 3 drops
1	0827 MT 3 drops		1425 SZ 3 drops
2	0804 VAD 3 drops		1735 VAD 3 drops
3	0940 AM 3 drops		1033 AM 3 drops
4	0807 TP 3 drops		
5			
6			

ACUTE TOXICITY TEST DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-744
Test Material: ELUTRIATE
Accession Number: AT1-857
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1330
Ending Date: 11/27/21 Time: 1245
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1 L Beaker
Test Volume: 250 ml
Test Duration: 96 hrs

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control								24.7	24.0	24.2	24.0		7.9	7.9	7.9	8.2		8.1	7.0	7.4	8.3		345	351	353	356
6.25%								25.0	24.6	24.7	24.0		7.8	7.7	7.8	8.2		7.5	5.1	6.6	7.8		376	375	374	382
12.5%								25.1	24.7	24.5	24.0		7.8	7.5	7.6	8.2		6.6	4.1	6.2	7.6		411	418	426	420
25%								25.2	24.8	24.4	24.2		7.7	7.4	7.6	8.2		6.6	5.0	6.4	7.4		467	470	468	467
50%								25.3	24.4	24.4	24.4		7.7	7.4	7.5	8.1		6.2	4.9	6.3	6.9		612	607	616	602
100%								25.4	24.3	24.4	24.4		7.6	7.5	7.5	7.9		4.2	4.3	6.0	6.5		860	814	844	793
Meter Number								680	681	681	681		680	681	681	681		680	681	681	681		680	681	681	681
Time								1347	1435	1010	1000		1347	1435	1040	1000		1347	1435	1040	1000		1347	1435	1040	1000
Initials								SL	LAO	~	TP		SL	LAO	~	TP		SL	LAO	~	TP		SL	LAO	~	TP

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-744
Test Material: ELUTRIATE
Accession Number: AT1-857
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1330
Ending Date: 11/27/21 Time: 1245
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
CONTROL	A	10	10	10	10	10	24.2		24.0			8.1		7.8			8.7		7.1			325		321		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
6.25%	A	10	10	10	10	9	24.1		24.0			8.1		7.7			8.5		8.1			354		361		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
Meter Number							681		681			681		681			681		681			681		681		
Time		1430	1410	1426	1230	1245	0953		1420			0953		1420			0953		1420			0953		1420		
Initials		AY	SL	UAD	~	TC	AY		UA			AY		UA			AY		UA			AY		UA		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 ____ Magna/pulex: 2021.0 ____
Fathead: 2000.0 X Trout: 2019.0 ____
Americamysis: 2007. ____ Cyprinodon: 2004.0 ____
Menidia:2006.0 ____ OTHER: ____

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ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-744
Test Material: ELUTRIATE
Accession Number: AT1-857
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1330
Ending Date: 11/27/21 Time: 1245
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
12.5%	A	10	10	10	10	10	24.0		24.0			8.0		7.7			8.4		8.1			389		394		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
25%	A	10	10	10	10	10	24.1		24.0			8.0		7.7			8.3		8.1			443		455		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

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ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-744
Test Material: ELUTRIATE
Accession Number: AT1-857
Dilution Water: Mod Hard
Accession Number: LD1-787

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C DO: ≥4.0 mg/L Test Container: 1-L BEAKER
pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 250 ml
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc Test Duration: 96 hours

Beginning Date: 11/23/21 Time: 1330
Ending Date: 11/27/21 Time: 1245
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
50%	A	10	10	10	10	10	24.0		24.0			7.9		7.5			8.3		7.6			585		601		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
100%	A	10	10	9	9	9	24.0		24.0			7.8		7.4			8.2		7.3			843		874		
	B	10	10	10	10	10																				
	C	10	10	10	10	9																				
	D	10	10	10	10	9																				
	E	10	10	10	10	10																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-744

Date/Time/Initials	Comments/Activity

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-744

Day	Testing Location	Date	Time	Initials
0	14C	11/23/21	0952	AY
1	14C	11/24/21	1357	SC
2	14C	11/25/21	1435	CAO
3	14C	11/26/21	1040	
4	14C	11/27/21	1250	
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-744

Correction Explanations	
(a) Technician Error-Mathematical	
(b) Technician Error-Manual Data Recording	
(c) Technician Error-Head Count Observation	
(d) Technician Error-Overwrite	
(e) Technician Error-Missing Data	
(f) Technician Error-Lost Organism	
(g) Technician Error-Transcription Error	
(h) Technician Error-Other:	
(i) Meter Malfunction	

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-745

TEST ORGANISM INFORMATION

Common Name: Fathead minnow

Scientific Name: *P. promelas*

Lot Number: FH-566

Source: ABS

Adults Isolated (Time, Date): _____

Neonates Pulled & Fed (Time, Date): _____

Acclimation: <24hrs Age: 2 days

Culture Water (T/S): 25.1 °C 0 ppt

TEST SET-UP

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	0922	TG	
			Dilutions Made
	1005	AY	Test Vessels Filled
	1350	TP	Organisms Transferred
	1440	AY	Head Counts

CONCENTRATION SERIES

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	1250 ml
6.25%	78.125 ml	
12.5%	156.25 ml	
25%	312.5 ml	
50%	625 ml	
100%	1250 ml	

Comments:

INTERMEDIATE DILUTION PREPARATION AND FEEDING

DILUTION PREPARATION

Day	Date	Time	Initials	Sample / Diluent
0	11/23/21	0922	TG	ATI-858 / LDI-785
1				
2	11/24/21	1358	LDO	ATI-850 / LDI-793
3				
4				
5				
6				

FEEDING

Food: *Artemia*

Day	Time, Initials, Amount	Time, Initials, Amount	Time, Initials, Amount
0			1611 MT 3 drops
1	0827 MT 3 drops		1445 SL 3 drops
2	0804 MD 3 drops		1735 MD 3 drops
3	0940 A 3 drops		1600 A 3 drops
4	0807 TP 3 drops		
5			
6			

ACUTE TOXICITY TEST DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-745
Test Material: ELUTRIATE
Accession Number: AT1-858
Dilution Water: Mod Hard
Accession Number: LD1- 785

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*

DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1350
Ending Date: 11/27/21 Time: 1387
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal

Test Container: 1 L Beaker
Test Volume: 250 ml
Test Duration: 96 hrs

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control								24.7	24.3	24.2	24.0		7.7	7.8	7.9	8.2		6.9	7.9	7.2	8.2		344	387	391	369
6.25%								25.0	24.4	24.3	24.0		7.7	7.7	7.7	8.2		6.9	7.7	7.1	8.0		377	384	386	380
12.5%								25.1	24.4	24.3	24.3		7.7	7.7	7.7	8.2		6.9	7.4	7.4	7.6		416	418	419	412
25%								25.3	24.5	24.4	24.4		7.7	7.6	7.6	8.1		6.7	6.9	6.9	7.4		468	471	476	476
50%								25.3	24.5	24.5	24.4		7.6	7.6	7.6	8.0		6.7	6.6	6.6	7.3		620	607	622	608
100%								25.2	24.6	24.5	24.4		7.6	7.6	7.6	7.9		6.4	6.6	6.6	7.0		890	877	890	843
Meter Number								680	681	681	681		680	681	681	681		680	681	681	681		680	681	681	681
Time								1402	1409	1035	1003		1402	1409	1035	1003		1402	1409	1035	1003		1402	1409	1035	1003
Initials								SL	LAD	~	TP		SL	LAD	~	TP		SL	LAD	~	TP		SL	LAD	~	TP

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-745
Test Material: ELUTRIATE
Accession Number: AT1-858
Dilution Water: Mod Hard
Accession Number: LD1- 785

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C DO: ≥4.0 mg/L
pH: 6.0 - 9.0 Salinity: 0 ppt
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1350
Ending Date: 11/27/21 Time: 1351
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
CONTROL	A	10	10	10	10	10	24.0		24.4			8.2		7.4			7.6		7.6			326		328		
	B	10	10	10	10	9																				
	C	10	7	7	7	7																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
6.25%	A	10	10	10	10	10	24.0		24.5			8.1		7.4			7.7		7.9			354		363		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
Meter Number							1681		1681			1681		1681			1681		1681			1681		1681		
Time		1440	1411	1447	1250	1351	1008		1405			1008		1405			1008		1405			1008		1405		
Initials		AY	SL	UD	~	~	AY		UD			AY		UD			AY		UD			AY		UD		

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

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ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-745
Test Material: ELUTRIATE
Accession Number: AT1-858
Dilution Water: Mod Hard
Accession Number: LD1- 785

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: >4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1350
Ending Date: 11/27/21 Time: 1357
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
12.5%	A	10	10	10	10	10	24.0		24.6			8.1		7.4			7.7		8.0			390		391		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
25%	A	10	10	10	10	10	24.0		24.7			8.0		7.4			7.9		8.0			441		457		
	B	10	10	10	10	10																				
	C	10	10	10	10	9																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 ____ Fathead: 2000.0 X ____ Americamysis: 2007. ____ Menidia:2006.0 ____
Magna/pulex: 2021.0 ____ Trout: 2019.0 ____ Cyprinodon: 2004.0 ____ OTHER: ____

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-745
Test Material: ELUTRIATE
Accession Number: AT1-858
Dilution Water: Mod Hard
Accession Number: LD1- 785

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C DO: ≥4.0 mg/L
pH: 6.0 - 9.0 Salinity: 0 ppt
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1350
Ending Date: 11/27/21 Time: 1351
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
50%	A	10	10	10	10	10	24.0		24.7			7.9		7.4			8.0		7.9			585		584		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
100%	A	10	10	10	10	10	24.1		24.4			7.8		7.4			8.0		7.7			842		853		
	B	10	10	10	10	10																				
	C	10	10	10	10	9																				
	D	10	10	10	10	9																				
	E	10	10	10	10	10																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-745

Date/Time/Initials	Comments/Activity

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-745

Day	Testing Location	Date	Time	Initials
0	14C	11/23/21	1005	AH
1	14C	11/24/21	1411	SC
2	14C	11/25/21	1357	UAD
3	14C	11/26/21	1035	—
4	14C	11/27/21	1355	—
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-745

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-746

TEST ORGANISM INFORMATION

Common Name: Fathead minnow

Scientific Name: *P. promelas*

Lot Number: FH-5616

Source: ABS

Adults Isolated (Time, Date): _____

Neonates Pulled & Fed (Time, Date): _____

Acclimation: L24 HOURS Age: 2 DAYS

Culture Water (T/S): 24.8 °C 0 ppt

TEST SET-UP

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	0908	TO	Dilutions Made
	0933	AY	Test Vessels Filled
	1417	SC	Organisms Transferred
	1419	AY	Head Counts

CONCENTRATION SERIES

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	1250 ml
6.25%	78.125 ml	
12.5%	156.25 ml	
25%	312.5 ml	
50%	625 ml	
100%	1250 ml	

Comments:

INTERMEDIATE DILUTION PREPARATION AND FEEDING

DILUTION PREPARATION

Day	Date	Time	Initials	Sample / Diluent
0	11/23/21	0908	TO	AY1-859 UD1-787
1				
2	11/25/21	1515	TO	AY-859 UD1-794
3				
4				
5				
6				

FEEDING

Food: *Artemia*

Day	Time, Initials, Amount	Time, Initials, Amount	Time, Initials, Amount
0			1611 HT 3 drops
1	0828 HT 3 drops		1434 3 drops
2	0800 TO 3 drops		1730 TO 3 drops
3	0940 3 drops		1400 3 drops
4	0807 TO 3 drops		
5			
6			

ACUTE TOXICITY TEST DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-746
Test Material: ELUTRIATE
Accession Number: AT1-859
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1417
Ending Date: 11/27/21 Time: 1453
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1 L Beaker
Test Volume: 250 ml
Test Duration: 96 hrs

Concentration	Rep	Number of Live Organisms					Temperature (°C)				pH				Dissolved Oxygen (mg/L)				Conductivity (µS/cm)			
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control								25.0	24.6	24.4	24.0		7.7	7.7	7.6	8.1		6.8	6.7	7.0	8.0		340	345	351	355
6.25%								25.0	24.7	24.5	24.1		7.6	7.6	7.6	8.1		7.0	6.8	7.0	8.0		378	383	379	382
12.5%								25.0	24.5	24.5	24.2		7.6	7.6	7.6	8.0		7.0	6.7	7.0	7.6		416	419	420	415
25%								25.1	24.5	24.5	24.4		7.6	7.6	7.6	8.0		7.1	6.8	7.1	7.6		482	484	488	476
50%								25.1	24.5	24.5	24.3		7.5	7.5	7.5	7.9		7.2	7.0	7.0	7.4		629	629	630	627
100%								25.1	24.6	24.4	24.3		7.6	7.5	7.5	7.8		6.6	6.7	6.6	7.4		888	864	869	865
Meter Number								680	681	681	681		680	681	681	681		680	681	681	681		680	681	681	681
Time								1431	1529	1017	0945		1431	1529	1017	0945		1431	1529	1017	0945		1431	1529	1017	0945
Initials								MT	LAD	~	TP		MT	LAD	~	TP		MT	LAD	~	TP		MT	LAD	~	TP

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-746
Test Material: ELUTRIATE
Accession Number: AT1-859
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1417
Ending Date: 11/27/21 Time: 1453
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
CONTROL	A	10	10	10	10	10	24.0		24.0			8.1		7.4			8.8		7.7			326		321		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	~~10~~ 9	9	9	9																				
6.25%	A	10	8	8	8	8	24.3		24.0			8.1		7.3			8.4		8.1			353		359		
	B	10	10	10	10	10																				
	C	10	10	9	9	9																				
	D	10	10	10	10	9																				
	E	10	10	10	10	10																				
Meter Number							1081		1081			1081		1081			1081		1081			1081		1081		
Time		1419	1426	1510	1317	1453	0936		1525			0936		1525			0936		1525			0936		1525		
Initials		AY	MT	LAD	—	[illegible]	AY		LAD			AY		LAD			AY		LAD			AY		LAD		

(i)MT 11/24/21

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 ____ Fathead: 2000.0 X ____ Americamysis: 2007. ____ Menidia: 2006.0 ____
Magna/pulex: 2021.0 ____ Trout: 2019.0 ____ Cyprinodon: 2004.0 ____ OTHER: ____

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-746
Test Material: ELUTRIATE
Accession Number: AT1-859
Dilution Water: Mod Hard
Accession Number: LD1-787

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1417
Ending Date: 11/27/21 Time: 1453
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
12.5%	A	10	10	10	10	9	24.3		24.0			8.0		7.4			8.4		8.2			388		389		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
25%	A	10	10	10	10	10	24.3		24.0			8.0		7.3			8.3		8.4			447		458		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	9	9	9																				
	E	10	10	10	10	10																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-746
Test Material: ELUTRIATE
Accession Number: AT1-859
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C DO: ≥4.0 mg/L
pH: 6.0 - 9.0 Salinity: 0 ppt
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1417
Ending Date: 11/27/21 Time: 1453
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
50%	A	10	10	10	10	10	24.2		25.1			7.9		7.3			8.2		8.7			593		626		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	9	9	9	9																				
	E	10	10	10	10	10																				
100%	A	10	10	10	10	9	24.3		25.5			7.7		7.3			8.2		7.9			853		868		
	B	10	10	10	10	10																				
	C	10	10	10	10	7																				
	D	10	10	10	10	9																				
	E	10	10	10	10	12																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-746

Date/Time/Initials	Comments/Activity

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-746

Day	Testing Location	Date	Time	Initials
0	17	11/23/21	0933	AM
1	17	11/24/21	1435	LMO
2	17	11/25/21	1526	LMO
3	17	11/26/21	1017	~
4	17	11/27/21	1500	~
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-746

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-747

TEST ORGANISM INFORMATION

Common Name: Fathead minnow

Scientific Name: *P. promelas*

Lot Number: FH-566

Source: ABS

Adults Isolated (Time, Date): _____

Neonates Pulled & Fed (Time, Date): _____

Acclimation: 24h Age: 2 days

Culture Water (T/S): 24.8 °C 0 ppt

TEST SET-UP

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	0900	GP	
			Dilutions Made
	0923	AY	Test Vessels Filled
	1342	SL	Organisms Transferred
	1413	AY	Head Counts

CONCENTRATION SERIES

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	1250 ml
6.25%	78.125 ml	
12.5%	156.25 ml	
25%	312.5 ml	
50%	625 ml	
100%	1250 ml	

Comments:

INTERMEDIATE DILUTION PREPARATION AND FEEDING

DILUTION PREPARATION

Day	Date	Time	Initials	Sample / Diluent
0	11/23/21	0950	GP	ATI-860 CDI-787
1				
2	11/25/21	1241	LAD	ATI-860 CDI-793
3				
4				
5				
6				

FEEDING

Food: *Artemia*

Day	Time, Initials, Amount	Time, Initials, Amount	Time, Initials, Amount
0			1611 MT 3 drops
1	0928 MT 3 drops		1443 SL 3 drops
2	0901 LAD 3 drops		1730 LD 3 drops
3	0940 3 drops		1600 3 drops
4	0807 GP 3 drops		
5			
6			

ACUTE TOXICITY TEST DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-747
Test Material: ELUTRIATE
Accession Number: AT1-860
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1342
Ending Date: 11/27/21 Time: 1310
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1 L Beaker
Test Volume: 250 ml
Test Duration: 96 hrs

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
Control								24.6	24.0	24.0	24.0		7.3	7.9	7.2	7.8		7.8	7.2	7.4	8.2		346	351	342	355
6.25%								25.0	24.0	24.1	24.0		7.4	7.8	7.5	7.8		7.6	7.3	7.5	7.8		385	386	389	385
12.5%								25.1	24.1	24.1	24.1		7.4	7.8	7.9	7.8		7.6	7.2	7.2	7.7		426	425	429	424
25%								25.2	24.2	24.2	24.4		7.4	7.7	7.9	7.7		7.3	7.2	7.2	7.4		516	517	520	503
50%								25.3	24.3	24.2	24.4		7.4	7.6	7.6	7.7		7.0	6.9	6.6	7.4		670	668	669	658
100%								25.5	24.2	24.2	24.4		7.5	7.6	7.6	7.7		7.1	6.7	6.5	7.3		970	944	959	936
Meter Number								681	681	681	681		681	681	681	681		681	681	681	681		681	681	681	681
Time								1341	1324	1006	0941		1341	1324	1006	0941		1341	1324	1006	0941		1341	1324	1006	0941
Initials								SL	LAO	~	TP		SL	LAO	~	TP		SL	LAO	~	TP		SL	LAO	~	TP

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-747
Test Material: ELUTRIATE
Accession Number: AT1-860
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1342
Ending Date: 11/27/21 Time: 1310
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
CONTROL	A	10	10	10	9	9	24.0		24.4			7.8		8.1			8.4		8.7			334		327		
	B	10	10	10	10	10																				
	C	10	10	10	10	9																				
	D	10	10	10	10	10																				
	E	10	9	9	9	9																				
6.25%	A	10	10	10	10	10	24.0		24.6			7.9		8.0			8.5		8.6			365		367		
	B	10	10	9	9	9																				
	C	10	10	10	10	10																				
	D	10	10	10	10	9																				
	E	10	10	10	10	10																				
Meter Number							681		681			681		681			681		681			681		681		
Time		1413	1357	1440	1242	1310	0916		1245			0916		1245			0916		1245			0916		1245		
Initials		AY	SL	UAO	—	TO	AY		UAO			AY		UAO			AY		UAO			AY		UAO		

(6) UAO 11/25/21

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 ____ Fathead: 2000.0 X ____ Americamysis: 2007. ____ Menidia:2006.0 ____
Magna/pulex: 2021.0 ____ Trout: 2019.0 ____ Cyprinodon: 2004.0 ____ OTHER: ____

ATS-T01
12/02/08

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-747
Test Material: ELUTRIATE
Accession Number: AT1-860
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*

TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: >4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1342
Ending Date: 11/27/21 Time: 1310
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
12.5%	A	10	10	10	10	10	24.0		24.6			7.9		8.0			8.4		8.5			401		406		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
25%	A	10	10	10	10	10	24.2		24.7			7.8		7.9			8.3		8.4			481		487		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-747
Test Material: ELUTRIATE
Accession Number: AT1-860
Dilution Water: Mod Hard
Accession Number: LD1- 787

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C DO: ≥4.0 mg/L
pH: 6.0 - 9.0 Salinity: 0 ppt
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1342
Ending Date: 11/27/21 Time: 1310
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
50%	A	10	10	10	10	10	24.2		24.8			7.8		7.8			8.2		8.4			628		639		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
100%	A	10	9	9	9	5	24.1		24.7			7.7		7.6			8.1		8.5			937		954		
	B	10	10	5	5	3																				
	C	10	9	7	7	2																				
	D	10	10	7	7	5																				
	E	10	10	10	10	8																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-747

Date/Time/Initials	Comments/Activity

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-747

Day	Testing Location	Date	Time	Initials
0	17	11/23/21	0923	AY
1	17	11/24/21	1341	SL
2	17	11/25/21	1456	LAD
3	17	11/26/21	1003	~
4	17	11/27/21	1310	TP
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-747

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

Acute Fish Test-96 Hr Survival

Start Date:	11/23/2021	Test ID:	TN-21-747	Sample ID:	Swan Creek
End Date:	11/27/2021	Lab ID:	AT1-860	Sample Type:	Elutriate
Sample Date:		Protocol:	EPAF 91-EPA Freshwater	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4	5
Control	0.9000	1.0000	0.9000	1.0000	0.9000
6.25	1.0000	0.9000	1.0000	0.9000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000
100	0.5000	0.3000	0.2000	0.5000	0.8000

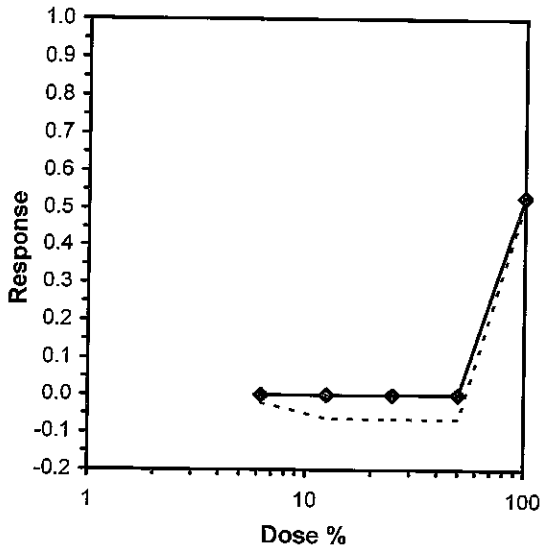
			Transform: Arcsin Square Root					Rank	1-Tailed	Number	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	Resp	Number
Control	0.9400	1.0000	1.3142	1.2490	1.4120	6.792	5			3	50
6.25	0.9600	1.0213	1.3468	1.2490	1.4120	6.628	5	30.00	16.00	2	50
12.5	1.0000	1.0638	1.4120	1.4120	1.4120	0.000	5	35.00	16.00	0	50
25	1.0000	1.0638	1.4120	1.4120	1.4120	0.000	5	35.00	16.00	0	50
50	1.0000	1.0638	1.4120	1.4120	1.4120	0.000	5	35.00	16.00	0	50
*100	0.4600	0.4894	0.7442	0.4636	1.1071	32.975	5	15.00	16.00	27	50

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.82168	0.9	0.73357	6.17841
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	50	100	70.7107	2

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%			
5.0%			
10.0%			
20.0%			
Auto-46.9%	96.080	80.755	114.313



Reviewed by: JR

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-748

TEST ORGANISM INFORMATION

Common Name: Fathead minnow

Scientific Name: *P. promelas*

Lot Number: FH-566

Source: ABS

Adults Isolated (Time, Date): _____

Neonates Pulled & Fed (Time, Date): _____

Acclimation: <24 hrs Age: 2 days

Culture Water (T/S): 24.1 °C 0 ppt

TEST SET-UP

TEST INITIATION

Date	Time	Initials	Activity
11/23/21	1040	[illegible]	
			Dilutions Made
	1200	MT	Test Vessels Filled
	1302	[illegible]	Organisms Transferred
	1350	AH	Head Counts

CONCENTRATION SERIES

Test Concentration	Volume Test Material	Final Volume
Control	0 ml	1250 ml
6.25%	78.125 ml	
12.5%	156.25 ml	
25%	312.5 ml	
50%	625 ml	
100%	1250 ml	

Comments:

INTERMEDIATE DILUTION PREPARATION AND FEEDING

DILUTION PREPARATION

Day	Date	Time	Initials	Sample / Diluent
0	11/23/21	1040	[illegible]	ATI-861 / LDI-788
1				
2	11/25/21	1210	[illegible]	ATI-861 / LDI-793
3				
4				
5				
6				

FEEDING

Food: *Artemia*

Day	Time, Initials, Amount	Time, Initials, Amount	Time, Initials, Amount
0			1611 MT 3 drops
1	0828 MT 3 drops		1442 MT 3 drops
2	0907 LMD 3 drops		1737 LMD 3 drops
3	0940 [illegible] 3 drops		1600 [illegible] 3 drops
4	0807 TP 3 drops		
5			
6			

ACUTE TOXICITY TEST DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-748
Test Material: ELUTRIATE
Accession Number: AT1-861
Dilution Water: Mod Hard
Accession Number: LD1- 788

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*

DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1302
Ending Date: 11/27/21 Time: 1237
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1 L Beaker
Test Volume: 250 ml
Test Duration: 96 hrs

Concentration	Rep	Number of Live Organisms 0	24	48	72	96	Temperature (°C) 0	24	48	72	96	pH 0	24	48	72	96	Dissolved Oxygen (mg/L) 0	24	48	72	96	Conductivity (µS/cm) 0	24	48	72	96
Control								24.8	24.3	24.4	24.0		7.4	8.0	8.0	8.2		7.2	7.3	7.5	8.3		334	333	318	342
6.25%								24.5	24.3	24.4	24.0		7.3	8.0	8.0	8.2		7.2	7.3	7.9	8.1		368	364	366	372
																							405			
12.5%								25.1	24.3	24.3	24.0		7.4	7.9	8.0	8.1		7.3	7.3	7.4	7.8		~~368~~	402	412	408
																							472			
25%								25.3	24.2	24.3	24.1		7.4	7.8	7.6	8.1		7.4	7.1	7.1	7.5		~~405~~	468	471	471
																							607			
50%								25.4	24.2	24.3	24.3		7.4	7.7	7.6	8.0		6.8	7.0	7.1	7.4		~~607~~	603	606	598
100%								25.2	24.2	24.3	24.4		7.4	7.7	7.7	7.9		7.5	7.0	7.0	7.3		825	837	861	836
Meter Number								681	681	681	681		681	681	681	681		681	681	681	681		681	681	681	681
Time								1317	1217	1012	0955		1317	1217	1012	0955		1317	1217	1012	0955		1317	1217	1012	0955
Initials								SL	LMD	~	~		SL	LMD	~	~		SL	LMD	~	~		SL	LMD	~	~

(b) SL
11/24/21

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-748
Test Material: ELUTRIATE
Accession Number: AT1-861
Dilution Water: Mod Hard
Accession Number: LD1-788

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C
pH: 6.0 - 9.0
Photoperiod: 16 *l*, 8 *d*
DO: ≥4.0 mg/L
Salinity: 0 ppt
Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1309
Ending Date: 11/27/21 Time: 1237
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms 0	24	48	72	96	Temperature (°C) 0	24	48	72	96	pH 0	24	48	72	96	Dissolved Oxygen (mg/L) 0	24	48	72	96	Conductivity (µS/cm) 0	24	48	72	96
CONTROL	A	10	10	10	10	10	24.0		25.0			7.6		7.9			9.1		8.4			320		325		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
																						351				
6.25%	A	10	10	10	10	10	24.0		25.0			7.6		7.9			9.1		8.4			7.6		360		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
Meter Number		1349					680		681			680		681			680		681			680		681		
Time		1356	~~1454~~	1233	1202	1237	1147		1214			1147		1214			1147		1214			1147		1214		
Initials		AG	MT	LAD	~	~~MT~~	SL		LAD			SL		LAD			SL		LAD			SL		LAD		

(b) MT 11/24/21

(b) 11/23/21 SL

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 Fathead: 2000.0 X Americamysis: 2007. Menidia: 2006.0
Magna/pulex: 2021.0 Trout: 2019.0 Cyprinodon: 2004.0 OTHER:

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-748
Test Material: ELUTRIATE
Accession Number: AT1-861
Dilution Water: Mod Hard
Accession Number: LD1- 788

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C DO: ≥4.0 mg/L
pH: 6.0 - 9.0 Salinity: 0 ppt
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1302
Ending Date: 11/27/21 Time: 1237
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
12.5%	A	10	10	10	10	10	24.0		24.9			7.6		7.8			9.1		8.3			388		390		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
25%	A	10	10	10	10	10	24.0		24.8			7.5		7.8			9.1		8.3			458		453		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-748
Test Material: ELUTRIATE
Accession Number: AT1-861
Dilution Water: Mod Hard
Accession Number: LD1- 788

TEST ORGANISM
Common Name: Fathead minnow
Scientific Name: *P. promelas*
TARGET VALUES
Temp: 25±1 °C DO: ≥4.0 mg/L
pH: 6.0 - 9.0 Salinity: 0 ppt
Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Beginning Date: 11/23/21 Time: 1302
Ending Date: 11/27/21 Time: 1237
TEST TYPE: **Static** / Flowthrough
Renewal / Non-renewal
Test Container: 1-L BEAKER
Test Volume: 250 ml
Test Duration: 96 hours

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)				
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
50%	A	10	10	10	10	10	24.0		24.7			7.5		7.7			8.9		8.3			591		573		
	B	10	10	10	10	10																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				
100%	A	10	10	10	10	10	24.0		24.7			7.4		7.7			8.9		8.3			873		845		
	B	10	10	9	9	9																				
	C	10	10	10	10	10																				
	D	10	10	10	10	10																				
	E	10	10	10	10	10																				

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0_____ Fathead: 2000.0 X Americamysis: 2007._____ Menidia:2006.0 _____
Magna/pulex: 2021.0_____ Trout: 2019.0_____ Cyprinodon: 2004.0_____ OTHER:_____

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-748

Date/Time/Initials	Comments/Activity

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-748

Day	Testing Location	Date	Time	Initials
0	14A	11/23/21	1358	AG
1	14A	11/24/21	1349	MT
2	14A	11/25/21	1033	LAO
3	14A	11/26/21	1012	—
4	14A	11/27/21	1240	[illegible]
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-748

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

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ATTACHMENT IV

Data Sheets and Statistical Analyses
from *Chironomus dilutus* Toxicity Tests
(100 pages)

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SEDIMENT TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-771

TEST ORGANISM INFORMATION

Common Name: Midge

Scientific Name: *C. dilutus*

Lot Number: CH-093

Source: ARO

Adults Isolated (Time, Date): _____

Neonates Pulled (Time, Date): _____

Acclimation: 24hrs Age: 14 days

Culture Water (T/S): 22.5 °C ϕ ppt

TEST INITIATION

Date	Time	Initials	Activity
12/2/21	1430	MJ/SG/MT	Sediment Added to Chambers
	1503	LAD	Overlying Water Added to Chambers
↓ 12/3/21	1115	MP	Organisms Transferred

TEST SET-UP

Sample Number(s): AT1-697 (Control), AT1-862 → 873

~~Overlying~~ Water Number: Dechlor

Overlying (9) NSI 2/11/22

Treatment	Volume Test Sediment	Volume Overlying Water
Pretty Boy Control (AT1- 697)	100 ml	175 ml
AT1-862 ↓ AT1-873	↓	↓

TOXICOLOGY LABORATORY BENCH SHEET - ORGANISM RECOVERY RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-771

Organisms Recovered (date, time, initials): 12/13/21 1400 MM

TEST ORGANISM

Common Name: Midge

Scientific Name: *C. dilutus*

Treatment	Replicate	Number of Organisms Loaded	Number of Organisms Recovered
AT1-697	A	10	9
(Lab Control)	B	10	9
	C	10	9
	D	10	9
	E	10	9
	F	10	9
	G	10	9
	H	10	9
AT1-862	A	10	3
	B	10	3
	C	10	3
	D	10	3
	E	10	4
	F	10	4
	G	10	4
	H	10	4
AT1-863	A	10	8
	B	10	9
	C	10	7
	D	10	9
	E	10	8
	F	10	8
	G	10	9
	H	10	9

TOXICOLOGY LABORATORY BENCH SHEET - ORGANISM RECOVERY RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-771

TEST ORGANISM

Common Name: Midge

Scientific Name: *C. dilutus*

Organisms Recovered (date, time, initials): 12/13/21 1400 MM

Treatment	Replicate	Number of Organisms Loaded	Number of Organisms Recovered
AT1-864	A	10	9
	B	10	9
	C	10	8
	D	10	9
	E	10	9
	F	10	9
	G	10	9
	H	10	9
AT1-865	A	10	9
	B	10	8
	C	10	9
	D	10	9
	E	10	9
	F	10	9
	G	10	9
	H	10	8
AT1-866	A	10	8
	B	10	9
	C	10	7
	D	10	9
	E	10	9
	F	10	8
	G	10	8
	H	10	8

TOXICOLOGY LABORATORY BENCH SHEET - ORGANISM RECOVERY RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-771

TEST ORGANISM

Common Name: Midge

Scientific Name: *C. dilutus*

Organisms Recovered (date, time, initials): 12/13/21 1700 MM

Treatment	Replicate	Number of Organisms Loaded	Number of Organisms Recovered
AT1-867	A	10	10
	B	10	9
	C	10	9
	D	10	9
	E	10	8
	F	10	9
	G	10	10
	H	10	8
AT1-869	A	10	9
	B	10	9
	C	10	9
	D	10	8
	E	10	9
	F	10	10
	G	10	9
	H	10	9
AT1-868	A	10	1
	B	10	1
	C	10	0
	D	10	0
	E	10	0
	F	10	0
	G	10	0
	H	10	0

67M 12/13/21

TOXICOLOGY LABORATORY BENCH SHEET - ORGANISM RECOVERY RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-771

Organisms Recovered (date, time, initials): 12/13/21 1700 mm

TEST ORGANISM

Common Name: Midge

Scientific Name: *C. dilutus*

Treatment	Replicate	Number of Organisms Loaded	Number of Organisms Recovered
AT1-870	A	10	8
	B	10	8
	C	10	8
	D	10	8
	E	10	9
	F	10	9
	G	10	8
	H	10	9
AT1-871	A	10	8
	B	10	7
	C	10	8
	D	10	9
	E	10	8
	F	10	7
	G	10	8
	H	10	8
AT1-872	A	10	7
	B	10	7
	C	10	8
	D	10	7
	E	10	8
	F	10	8
	G	10	8
	H	10	8

TOXICOLOGY LABORATORY BENCH SHEET - ORGANISM RECOVERY RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-771

Organisms Recovered (date, time, initials): 12/13/21 1700 MM

TEST ORGANISM

Common Name: Midge

Scientific Name: *C. dilutus*

Treatment	Replicate	Number of Organisms Loaded	Number of Organisms Recovered
AT1-873	A	10	10
	B	10	9
	C	10	9
	D	10	9
	E	10	8
	F	10	8
	G	10	7
	H	10	8

ASH-FREE DRY WEIGHT DATA (Test Species: *C. dilutus*)

Project Number: 70019.TOX Client: Swan Creek QC Test Number: TN-21-771

	Date	Time	Initials		Date	Time	Initials
Loaded pans in oven:	12/13/21	1600		Loaded pans in furnace:	1/8/22	1000	
Loaded pans out oven:	~~12/13/21~~ 12/14/2021	1312	JR	Loaded pans out furnace:	1/8/22	1450	
Loaded pans weighed:	12/14/2021	1520	JR	Loaded pans weighed:	1/20/22	1500	JR

Oven Temp (°C): 96 Furnace Temp (°C): 550

Oven Number: BLM-01 / G4-009646 (b) GN 12/13/21 Balance Number: TS-L-225.C / P0115825

Test Concentration	Rep	Pan #	A Weight of Pan (mg)	B Weight of Pan and Oven-Dried Organisms (mg)	C Weight of Pan and Furnace-Dried Organisms (mg)	B-C Total Ash-Free Dry Weight (mg)	D Number of Organisms Weighed	(B-C)/D Mean Ash-Free Dry Organism Weight (mg)
Control	A	300	4646.80	4661.37	4651.31	10.06	9	1.118
(AT1-697)	B	221	4656.27	4670.88	4659.60	11.28	9	1.253
	C	346	4717.58	4726.09	4721.20	7.89	9	0.877
	D	179	4549.41	4564.34	4555.18	9.16	9	1.018
	E	282	4617.27	4639.17	4626.10	13.07	9	1.452
	F	78	5634.94	5648.77	5638.36	10.41	9	1.157
	G	212	4742.77	4761.19	4750.62	10.57	9	1.174
	H	32	5323.81	5340.16	5329.38	10.78	9	1.198
AT1-862	A	165	5006.23	5009.75	5007.81	1.94	3	0.647
	B	166	5420.80	5423.59	5422.08	1.51	3	0.503
	C	28	5132.64	5137.32	5135.52	1.80	3	0.600
	D	268	4444.00	4447.32	4445.74	1.58	3	0.527
	E	283	4195.95	4200.57	4198.19	2.38	4	0.595
	F	288	5029.07	5034.72	5030.97	3.75	4	0.938
	G	301	4855.94	4860.95	4857.69	3.26	4	0.815
	H	320	4690.61	4696.86	4692.53	4.33	4	1.083

Dry wt. calculations checked (date, initials): 2/2/22, RSB Ash-Free calculations checked (date, initials): 2/2/22, RSB

ASH-FREE DRY WEIGHT DATA (Test Species: *C. dilutus*)

Project Number: 70019.TOX Client: Swan Creek QC Test Number: TN-21-771

	Date	Time	Initials		Date	Time	Initials
Loaded pans in oven:	12/13/21	1600		Loaded pans in furnace:	1/7/22	1000	
Loaded pans out oven:	12/14/2021	1312	JR	Loaded pans out furnace:	1/8/22	1450	
Loaded pans weighed:	12/14/2021	1520	JR	Loaded pans weighed:	1/20/22	1500	JR

Oven Temp (°C): 98 Furnace Temp (°C): 550

Oven Number: BLM-01 / 64-009646 Balance Number: TS-L-225.C / P0115825

Test Concentration	Rep	Pan #	A Weight of Pan (mg)	B Weight of Pan and Oven-Dried Organisms (mg)	C Weight of Pan and Furnace-Dried Organisms (mg)	B-C Total Ash-Free Dry Weight (mg)	D Number of Organisms Weighed	(B-C)/D Mean Ash-Free Dry Organism Weight (mg)
AT1-863	A	259	4255.70	4271.38	4259.76	11.62	8	1.453
	B	168	4806.69	4822.56	4810.69	11.87	9	1.319
	C	40	4843.27	4856.05	4847.00	9.05	7	1.293
	D	4	4612.18	4620.37	4614.84	5.53	9	0.614
	E	129	4711.64	4731.73	4717.56	14.17	8	1.771
	F	338	4520.38	4535.08	4523.95	11.13	8	1.391
	G	147	4782.40	4802.15	4787.49	14.66	9	1.629
	H	77	4329.21	4340.25	4333.30	6.95	9	0.772
AT1-864	A	106	3624.64	3668.45	3657.80	10.59	9	1.177
	B	190	4709.40	4740.92	4729.90	11.02	9	1.224
	C	314	5336.94	5366.65	5359.96	6.69	8	0.836
	D	325	4769.96	4793.94	4783.69	10.25	9	1.139
	E	104	4859.74	4965.12	4950.01	15.11	9	1.679
	F	255	4723.55	4752.13	4741.41	10.72	9	1.191
	G	50	4192.77	4235.70	4232.91	2.79	9	0.310
	H	199	4589.33	4617.15	4608.51	8.64	9	0.960

Dry wt. calculations checked (date, initials): 2/2/22, RSB Ash-Free calculations checked (date, initials): 2/2/22, RSB

ASH-FREE DRY WEIGHT DATA (Test Species: *C. dilutus*)

Project Number: 70019.TOX Client: Swan Creek QC Test Number: TN-21-771

	Date	Time	Initials		Date	Time	Initials
Loaded pans in oven:	12/13/21	1600	~	Loaded pans in furnace:	1/8/22	1000	~
Loaded pans out oven:	12/14/2021	1312	JR	Loaded pans out furnace:	1/8/22	1450	~
Loaded pans weighed:	12/14/2021	1520	JR	Loaded pans weighed:	1/20/22	1500	JR

Oven Temp (°C): 98 Furnace Temp (°C): 550

Oven Number: BLM-01 (G4-009646) Balance Number: (TS-L-225.C) / P0115825

Test Concentration	Rep	Pan #	A Weight of Pan (mg)	B Weight of Pan and Oven-Dried Organisms (mg)	C Weight of Pan and Furnace-Dried Organisms (mg)	B-C Total Ash-Free Dry Weight (mg)	D Number of Organisms Weighed	(B-C)/D Mean Ash-Free Dry Organism Weight (mg)
AT1-865	A	106	5229.00	5243.71	5234.57	9.14	9	1.016
	B	313	4474.92	4492.93	4483.09	9.84	8	1.230
	C	280	4676.72	4689.85	4683.02	6.83	9	0.759
	D	272	4507.35	4520.11	4509.46	10.65	9	1.183
	E	230	4859.88	4906.60	4887.54	19.06	9	2.118
	F	185	4832.09	4873.86	4863.63	10.23	9	1.137
	G	337	4489.28	4534.85	4513.56	21.29	9	2.366
	H	71	4804.45	4865.27	4848.59	16.68	8	2.085
AT1-866	A	W	3680.38	3710.37	3695.19	15.18	8	1.898
	B	Q	3650.20	3678.29	3665.94	12.35	9	1.372
	C	J	3638.87	3658.017	3645.79	12.28	7	1.754
	D	343	4612.54	4629.88	4615.72	14.16	9	1.573
	E	26	4708.91	4729.90	4716.19	13.71	9	1.523
	F	M	3808.72	3846.94	3828.75	18.19	8	2.274
	G	305	5123.29	5145.80	5129.99	15.81	8	1.976
	H	193	4616.62	4667.97	4650.03	17.94	8	2.243

Dry wt. calculations checked (date, initials): 2/4/22, RSB Ash-Free calculations checked (date, initials): 2/2/22, RSB

ASH-FREE DRY WEIGHT DATA (Test Species: *C. dilutus*)

Project Number: 70019.TOX Client: Swan Creek QC Test Number: TN-21-771

	Date	Time	Initials		Date	Time	Initials
Loaded pans in oven:	12/13/21	1600	~	Loaded pans in furnace:	1/5/22	1020	~
Loaded pans out oven:	12/14/2021	1312	JR	Loaded pans out furnace:	1/6/22	1450	~
Loaded pans weighed:	12/14/2021	1520	JR	Loaded pans weighed:	1/20/22	1500	JR

Oven Temp (°C): 98 Furnace Temp (°C): 550

Oven Number: BLM-01 / G4-009646 Balance Number: TS-L-225.C / P0115825

Test Concentration	Rep	Pan #	A Weight of Pan (mg)	B Weight of Pan and Oven-Dried Organisms (mg)	C Weight of Pan and Furnace-Dried Organisms (mg)	B-C Total Ash-Free Dry Weight (mg)	D Number of Organisms Weighed	(B-C)/D Mean Ash-Free Dry Organism Weight (mg)
AT1-867	A	131	4786.61	4802.81	4792.00	10.81	10	1.081
	B	126	4775.55	4796.61	4781.43	15.18	9	1.687
	C	264	4650.64	4671.56	4655.57	15.99	9	1.777
	D	27	4600.92	4618.26	4605.89	12.37	9	1.374
	E	267	4883.13	4905.53	4888.49	17.04	8	2.130
	F	19	4886.38	4913.69	4896.42	17.27	9	1.919
	G	12	4818.27	4835.39	4822.68	12.71	10	1.271
	H	113	5002.21	5023.18	5006.98	16.20	8	2.025
AT1-868	A	248	4475.76	4478.95	4477.46	1.49	1	1.490
	B	119	5061.73	5062.47	5062.46	0.01	1	0.010
	C	–					0	
	D	–					0	
	E	–					0	
	F	–					0	
	G	–					0	
	H	–					0	

Dry wt. calculations checked (date, initials): 2/2/22, RSB Ash-Free calculations checked (date, initials): 2/2/22, RSB

ASH-FREE DRY WEIGHT DATA (Test Species: *C. dilutus*)

Project Number: 70019.TOX Client: Swan Creek QC Test Number: TN-21-771

	Date	Time	Initials		Date	Time	Initials
Loaded pans in oven:	12/13/21	1600		Loaded pans in furnace:	1/8/22	1000	
Loaded pans out oven:	12/14/21	1312	JR	Loaded pans out furnace:	1/8/22	1450	
Loaded pans weighed:	12/14/21	1520	JR	Loaded pans weighed:	1/20/22	1500	JR

Oven Temp (°C): 90 Furnace Temp (°C): 550

Oven Number: BLM-01 / G4-009646 Balance Number: TS-L-225.C / P0115825

Test Concentration	Rep	Pan #	A Weight of Pan (mg)	B Weight of Pan and Oven-Dried Organisms (mg)	C Weight of Pan and Furnace-Dried Organisms (mg)	B-C Total Ash-Free Dry Weight (mg)	D Number of Organisms Weighed	(B-C)/D Mean Ash-Free Dry Organism Weight (mg)
AT1-869	A	67	4768.11	4796.28	4775.37	20.91	9	2.323
	B	304	4961.43	4986.37	4969.99	16.38	9	1.820
	C	53	4914.69	4944.47	4923.63	20.84	9	2.316
	D	11	4817.64	4844.96	4825.16	19.80	8	2.475
	E	A	3729.31	3748.26	3736.40	11.86	9	1.318
	F	17	5705.53	5731.73	5714.30	17.43	10	1.743
	G	149	5092.06	5115.51	5099.59	15.92	9	1.769
	H	202	4881.18	4899.90	4886.60	13.30	9	1.478
AT1-870	A	206	4824.15	4836.02	4830.40	5.62	8	0.703
	B	38	4714.11	4733.33	4721.37	11.96	8	1.495
	C	21	4592.71	4608.48	4596.75	11.73	8	1.466
	D	256	5017.81	5032.85	5021.65	11.23	8	1.404
	E	342	4932.00	4952.32	4938.16	14.16	9	1.573
	F	130	5123.61	5149.74	5134.15	15.59	9	1.732
	G	14	3731.18	3745.05	3736.29	8.26	8	1.033
	H	75	5021.02	5043.18	5027.59	15.59	9	1.732

Dry wt. calculations checked (date, initials): 2/2/22, NSB Ash-Free calculations checked (date, initials): 2/2/22, NSB

ASH-FREE DRY WEIGHT DATA (Test Species: *C. dilutus*)

Project Number: 70019.TOX Client: Swan Creek QC Test Number: TN-21-771

	Date	Time	Initials		Date	Time	Initials
Loaded pans in oven:	12/11/21	1603	[illegible]	Loaded pans in furnace:	1/19/22	1000	[illegible]
Loaded pans out oven:	12/14/2021	1312	JR	Loaded pans out furnace:	1/19/22	1450	[illegible]
Loaded pans weighed:	12/14/2021	1520	JR	Loaded pans weighed:	1/20/22	1500	JR

Oven Temp (°C): 95 Furnace Temp (°C): 550

Oven Number: BLM-01 ~~KG4-009640~~ Balance Number: TS-L-225.C / P0115825

Test Concentration	Rep	Pan #	A Weight of Pan (mg)	B Weight of Pan and Oven-Dried Organisms (mg)	C Weight of Pan and Furnace-Dried Organisms (mg)	B-C Total Ash-Free Dry Weight (mg)	D Number of Organisms Weighed	(B-C)/D Mean Ash-Free Dry Organism Weight (mg)
AT1-871	A	119	4463.13	4471.72	4465.10	6.62	8	0.828
	B	31	4828.67	4837.41	4831.78	5.63	7	0.804
	C	5	5189.16	5199.26	5193.59	5.67	8	0.709
	D	293	5058.69	5073.56	5064.70	8.86	9	0.984
	E	91	5324.50	5331.09	5327.32	3.77	8	0.471
	F	154	4638.42	4647.30	4643.92	3.38	7	0.483
	G	277	4802.63	4812.21	4805.60	6.61	8	0.826
	H	294	5316.26	5323.33	5318.48	4.85	8	0.606
AT1-872	A	11	3608.70	3620.92	3612.40	8.52	7	1.217
	B	243	5025.95	5040.22	5029.77	10.45	7	1.493
	C	162	5359.06	5380.86	5365.48	15.38	8	1.923
	D	81	5450.75	5474.85	5460.06	14.79	7	2.113
	E	116	5557.27	5568.62	5561.05	7.57	8	0.946
	F	60	4920.90	4932.85	4924.49	8.36	8	1.045
	G	199	5097.18	5114.00	5101.54	12.46	8	1.558
	H	332	4439.61	4456.66	4443.46	13.20	8	1.650

Dry wt. calculations checked (date, initials): 2/2/22, RSB Ash-Free calculations checked (date, initials): 2/2/22, RSB

ASH-FREE DRY WEIGHT DATA (Test Species: *C. dilutus*)

Project Number: 70019.TOX Client: Swan Creek QC Test Number: TN-21-771

	Date	Time	Initials		Date	Time	Initials
Loaded pans in oven:	12/13/21	1600	~	Loaded pans in furnace:	1/8/22	1000	~
Loaded pans out oven:	12/14/2021	~~1315~~ 1312	JR	Loaded pans out furnace:	1/9/22	1450	~
Loaded pans weighed:	12/14/2021	1520	JR	Loaded pans weighed:	1/20/22	1500	JR
Oven Temp (°C):	96	(9) 12/14/2021 JR		Furnace Temp (°C):	550		

Oven Number: BLM-01 / ~~G4-009646~~ Balance Number: TS-L-225.C / P0115825

Test Concentration	Rep	Pan #	A Weight of Pan (mg)	B Weight of Pan and Oven-Dried Organisms (mg)	C Weight of Pan and Furnace-Dried Organisms (mg)	B-C Total Ash-Free Dry Weight (mg)	D Number of Organisms Weighed	(B-C)/D Mean Ash-Free Dry Organism Weight (mg)
AT1-873	A	23	3614.36	3642.82	3626.22	16.60	10	1.660
	B	4	3655.27	3673.85	3660.00	13.85	9	1.542
	C	94	5232.97	5253.22	5237.85	15.37	9	1.708
	D	L	3762.72	3785.34	3770.82	12.52	9	1.391
	E	296	4645.65	4662.86	4650.61	12.25	8	1.531
	F	O	4294.09	4315.57	4299.90	15.67	8	1.959
	G	174	5101.42	5120.67	5108.34	12.33	7	1.761
	H	89	5397.53	5413.88	5402.55	11.33	8	1.416

Dry wt. calculations checked (date, initials): 2/2/22, NSA Ash-Free calculations checked (date, initials): 2/2/22, NSA

TOXICITY TEST WATER QUALITY DATA SHEET - NEW SOLUTIONS

Project Number: 70019.TOX | TEST ORGANISM | Beginning Date: 12/3/21 Time: 1115

Client: Swan Creek | Common Name: Midge | Ending Date: 12/13/21 Time: 1400

QC Test Number: TN-21-771 | Scientific Name: *C. dilutus*

TARGET VALUES Temp: 23±1 °C pH: 6.0 - 9.0 DO: ≥4.0 mg/L Salinity: 0 ppt Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Test Conc	Rep	Temperature (°C)							pH							Dissolved Oxygen (mg/L)							Conductivity (µS/cm)						
		0	1	2	3	4	5	6	0	1	2	3	4	5	6	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Control (AT1-697)		22.0							8.4							8.8							351						
AT1-862		22.0							8.4							8.6							384						
AT1-863		22.0							8.3							8.1							370						
AT1-864		22.0							8.3							8.3							371						
AT1-865		22.1							8.3							8.3							376						
AT1-866		22.0							8.2							8.3							380						
AT1-867		22.1							8.2							8.1							393						
AT1-868		22.2							8.2							8.0							388						
AT1-869		22.2							8.2							7.9							419						
AT1-870		22.2							8.1							8.0							392						
AT1-871		22.1							8.1							8.2							389						
AT1-872		22.1							8.1							8.2							391						
AT1-873		22.2							8.1							8.2							396						
Meter Number		681							681							681							681						
Time		1005							1005							1005							1005						
Initials		TP							TP							TP							TP						

TOXICITY TEST WATER QUALITY DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-771

TEST ORGANISM
Common Name: Midge
Scientific Name: *C. dilutus*

Beginning Date: 12/3/21 Time: 1115
Ending Date: 12/13/21 Time: 1400

TARGET VALUES Temp: 23±1 °C pH: 6.0 - 9.0 DO: ≥4.0 mg/L Salinity: 0 ppt Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Test Conc	Rep	Temperature (°C)							pH							Dissolved Oxygen (mg/L)							Conductivity (µS/cm)						
		1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Control (AT1-697)		22.4	22.3	22.0	22.0	22.2	22.0	22.2	7.2	8.1	7.7	8.0	8.0	7.8	7.7	8.0	6.9	7.9	7.5	7.9	7.3	7.8	344	344	345	341	343	353	327
AT1-862		22.5	22.1	22.0	22.0	22.2	22.0	22.2	7.1	8.1	7.7	8.0	8.0	7.8	7.7	5.9	7.0	7.2	7.2	7.3	7.3	7.3	395	380	374	367	367	365	344
AT1-863		22.5	22.1	22.0	22.0	22.1	22.0	22.0	7.2	8.1	7.6	8.0	8.0	7.8	7.6	6.3	6.9	6.9	6.8	7.5	7.5	7.5	389	383	382	374	383	361	356
AT1-864		22.5	22.1	22.0	22.1	22.0	22.0	22.0	7.3	8.1	7.6	8.0	8.0	7.8	7.6	7.7	7.7	6.7	7.1	7.2	7.3	7.1	376	369	367	370	365	358	342
AT1-865		22.4	22.0	22.1	22.2	22.0	22.0	22.0	7.3	8.1	7.5	8.0	7.9	7.8	7.6	7.6	7.7	7.1	6.8	7.8	7.7	7.7	388	367	375	365	367	360	344
AT1-866		22.4	22.0	22.2	22.3	22.0	22.0	22.6	7.3	8.1	7.5	8.0	8.0	7.8	7.6	7.3	8.0	6.8	6.5	7.5	7.5	7.4	386	362	363	357	360	357	339
AT1-867		22.4	22.0	22.2	22.1	22.1	22.0	22.6	7.3	8.0	7.5	8.0	8.0	7.8	7.5	7.2	7.7	7.1	7.2	7.7	7.1	7.5	398	413	376	385	375	380	348
AT1-868		22.4	22.0	22.1	22.5	22.1	22.0	22.0	7.3	8.0	7.5	8.0	8.1	7.7	7.5	7.2	7.5	7.5	6.4	7.5	7.4	7.3	400	387	381	378	376	364	352
AT1-869		22.4	22.4	22.3	22.4	22.1	22.0	22.1	7.3	8.0	7.5	8.0	8.0	7.7	7.6	6.7	7.3	7.1	6.2	7.2	7.3	7.1	435	393	394	394	394	378	371
AT1-870		22.4	22.4	22.3	22.5	22.0	22.0	22.1	7.3	8.0	7.5	8.0	7.9	7.7	7.6	6.6	7.4	6.5	6.1	6.8	7.2	7.0	400	377	372	380	379	360	354
AT1-871		22.4	22.5	22.2	22.5	22.0	22.0	22.0	7.4	8.0	7.5	8.1	7.9	7.7	7.6	6.7	7.5	7.1	6.2	7.3	7.4	6.7	400	382	376	373	375	368	351
AT1-872		22.4	22.4	22.2	22.2	22.1	22.0	22.0	7.4	8.0	7.4	8.1	7.9	7.7	7.6	6.7	7.4	6.9	6.8	7.3	7.5	7.0	405	385	380	372	380	372	352
AT1-873		22.4	22.2	22.1	22.0	22.0	22.0	22.0	7.4	8.0	7.4	8.1	8.0	7.7	7.6	6.7	7.4	5.8	6.8	7.2	7.5	7.0	408	383	382	376	390	359	358
Meter Number		681	680	680	680	680	680	681	681	680	680	680	680	680	681	681	680	680	680	680	680	681	681	680	680	680	680	680	681
Time		0906	0848	0810	0745	0810	0817	0808	0906	0848	0810	0745	0810	0817	0808	0906	0848	0810	0745	0810	0817	0808	0906	0848	0810	0745	0810	0817	0808
Initials		MT	AZ	TP	TP	TP	AZ	TP	MT	AZ	TP	TP	TP	AZ	TP	MT	AZ	TP	TP	TP	AZ	TP	MT	AZ	TP	TP	TP	AZ	TP

TOXICITY TEST WATER QUALITY DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-771

TEST ORGANISM
Common Name: Midge
Scientific Name: *C. dilutus*

Beginning Date: 12/3/21 Time: 1115
Ending Date: 12/13/21 Time: 1405

TARGET VALUES Temp: 23±1 °C pH: 6.0 - 9.0 DO: ≥4.0 mg/L Salinity: 0 ppt Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Test Conc	Rep	Temperature (°C)							pH							Dissolved Oxygen (mg/L)							Conductivity (µS/cm)						
		8	9	10	11	12	13	14	8	9	10	11	12	13	14	8	9	10	11	12	13	14	8	9	10	11	12	13	14
Control (AT1-697)		22.3	22.0	22.0					7.8	7.8	7.7					8.3	7.1	8.5					346	342	349				
AT1-862		22.2	22.0	22.0					7.8	7.8	7.6					6.1	7.3	6.3					360	352	360				
AT1-863		22.2	22.0	22.0					7.8	7.8	7.6					6.7	7.0	4.3					367	362	369				
AT1-864		22.2	22.0	22.0					7.8	7.8	7.6					7.0	6.8	4.0					365	353	360				
AT1-865		22.2	22.0	22.0					7.8	7.8	7.6					6.8	7.2	5.1					367	363	364				
AT1-866		22.3	22.0	22.0					7.8	7.8	7.6					6.4	7.1	5.4					357	351	362				
AT1-867		22.3	22.0	22.0					7.8	7.8	7.6					6.7	7.4	5.1					362	356	364				
AT1-868		22.3	22.0	22.0					7.8	7.8	7.6					7.1	6.0	5.8					361	362	361				
AT1-869		22.3	22.0	22.0					7.8	7.8	7.6					6.9	7.3	6.0					380	378	381				
AT1-870		22.3	22.0	22.0					7.8	7.7	7.6					5.5	6.3	6.0					371	373	372				
AT1-871		22.2	22.0	22.0					7.8	7.8	7.6					6.3	5.5	4.9					362	369	364				
AT1-872		22.3	22.0	22.0					7.8	7.7	7.6					6.3	7.0	6.3					368	364	360				
AT1-873		22.4	22.0	22.0					7.8	7.7	7.6					6.1	6.9	6.4					372	368	362				
Meter Number		680	681	680					680	681	680					658	681	680					680	681	680				
Time		0918	1036	0832					0918	1036	0832					0918	1036	0832					0918	1036	0832				
Initials		MT	SL	SL					MT	SL	SL					MT	SL	SL					MT	SL	SL				

TOXICOLOGY LABORATORY BENCH SHEET - RENEWAL RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-771

Day	Date	Time		Initials
0	12/3/21	AM	1000	TP
		PM		
1	12/4/21	AM	0815	TP
		PM	1505	TP
2	12/5/21	AM	0830	AH
		PM	1315	SL
3	12/6/21	AM	0755	TP
		PM	1410	AH
4	12/7/21	AM	0716	TP
		PM	1540	AH
5	12/8/21	AM	0800	TP
		PM	1404	AH
6	12/9/21	AM	0810	AH
		PM	1356	AH
7	12/10/21	AM	0748	TP
		PM	1600	MB
8	12/11/21	AM	0830	TP
		PM	1550	TP
9	12/12/21	AM	0958	SL
		PM	1440	AH
10	12/13/21	AM	0815	SL
		PM	1158	LAD

TOXICOLOGY LABORATORY BENCH SHEET - FEEDING RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-771

Food: 1.5 ml Tetramin Slurry

Day	Date	Time	Initials
0	12/3/21	1700	[illegible]
1	12/4/21	1520	[illegible]
2	12/5/21	1326	SL
3	12/6/21	1425	[illegible]
4	12/7/21	1550	[illegible]
5	12/8/21	1418	[illegible]
6	12/9/21	1440	[illegible]
7	12/10/21	1627	RSB
8	12/11/21	1605	[illegible]
9	12/12/21	1500	[illegible]
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-771

Day	Testing Location	Date	Time	Initials
0	55B	12/3/21	1355	UAO
1	55B	12/4/21	1506	TP
2	55B	12/5/21	0840	AH
3	55B	12/6/21	0800	TP
4	55B	12/7/21	0745	TP
5	55B	12/8/21	1404	AH
6	55B	12/9/21	0814	AH
7	55B	12/10/21	1600	NB
8	55B	12/11/21	1605	TP
9	55B	12/12/21	1004	SC
10	55B	12/13/21	0815	SC
11				
12				
13				
14				
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TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-771

Date/Time/Initials	Comments/Activity

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-771

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
*AT1-862	0.3500	0.3889	0.6322	0.5796	0.6847	8.885	8	36.00	47.00
AT1-863	0.8375	0.9306	1.1636	0.9912	1.2490	8.502	8	52.00	47.00
AT1-864	0.8875	0.9861	1.2313	1.1071	1.2490	4.074	8	64.00	47.00
AT1-865	0.8750	0.9722	1.2136	1.1071	1.2490	5.413	8	60.00	47.00
AT1-866	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8	48.00	47.00
AT1-867	0.9000	1.0000	1.2543	1.1071	1.4120	9.198	8	68.00	47.00
*AT1-868	0.0250	0.0278	0.1995	0.1588	0.3218	37.811	8	36.00	47.00
AT1-869	0.9000	1.0000	1.2517	1.1071	1.4120	6.521	8	68.00	47.00
AT1-870	0.8375	0.9306	1.1604	1.1071	1.2490	6.329	8	48.00	47.00
*AT1-871	0.7875	0.8750	1.0959	0.9912	1.2490	7.399	8	40.00	47.00
*AT1-872	0.7625	0.8472	1.0637	0.9912	1.1071	5.644	8	36.00	47.00
AT1-873	0.8500	0.9444	1.1840	0.9912	1.4120	11.040	8	56.00	47.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution ($p > 0.01$)	1.00328	1.035	0.08845	0.36405
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Rank Sum Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
*AT1-862	0.3500	0.3889	0.6322	0.5796	0.6847	8.885	8	36.00	51.00
AT1-863	0.8375	0.9306	1.1636	0.9912	1.2490	8.502	8		
AT1-864	0.8875	0.9861	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	0.9722	1.2136	1.1071	1.2490	5.413	8		
AT1-866	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0000	1.2543	1.1071	1.4120	9.198	8		
AT1-868	0.0250	0.0278	0.1995	0.1588	0.3218	37.811	8		
AT1-869	0.9000	1.0000	1.2517	1.1071	1.4120	6.521	8		
AT1-870	0.8375	0.9306	1.1604	1.1071	1.2490	6.329	8		
AT1-871	0.7875	0.8750	1.0959	0.9912	1.2490	7.399	8		
AT1-872	0.7625	0.8472	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	0.9444	1.1840	0.9912	1.4120	11.040	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.81997	0.844	0	-0.9066
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.3500	0.3889	0.6322	0.5796	0.6847	8.885	8		
AT1-863	0.8375	0.9306	1.1636	0.9912	1.2490	8.502	8	52.00	51.00
AT1-864	0.8875	0.9861	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	0.9722	1.2136	1.1071	1.2490	5.413	8		
AT1-866	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0000	1.2543	1.1071	1.4120	9.198	8		
AT1-868	0.0250	0.0278	0.1995	0.1588	0.3218	37.811	8		
AT1-869	0.9000	1.0000	1.2517	1.1071	1.4120	6.521	8		
AT1-870	0.8375	0.9306	1.1604	1.1071	1.2490	6.329	8		
AT1-871	0.7875	0.8750	1.0959	0.9912	1.2490	7.399	8		
AT1-872	0.7625	0.8472	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	0.9444	1.1840	0.9912	1.4120	11.040	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.84338	0.844	-0.7831	1.67986
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.3500	0.3889	0.6322	0.5796	0.6847	8.885	8		
AT1-863	0.8375	0.9306	1.1636	0.9912	1.2490	8.502	8		
AT1-864	0.8875	0.9861	1.2313	1.1071	1.2490	4.074	8	64.00	51.00
AT1-865	0.8750	0.9722	1.2136	1.1071	1.2490	5.413	8		
AT1-866	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0000	1.2543	1.1071	1.4120	9.198	8		
AT1-868	0.0250	0.0278	0.1995	0.1588	0.3218	37.811	8		
AT1-869	0.9000	1.0000	1.2517	1.1071	1.4120	6.521	8		
AT1-870	0.8375	0.9306	1.1604	1.1071	1.2490	6.329	8		
AT1-871	0.7875	0.8750	1.0959	0.9912	1.2490	7.399	8		
AT1-872	0.7625	0.8472	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	0.9444	1.1840	0.9912	1.4120	11.040	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.4689	0.844	-3.5489	13.5047
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.3500	0.3889	0.6322	0.5796	0.6847	8.885	8		
AT1-863	0.8375	0.9306	1.1636	0.9912	1.2490	8.502	8		
AT1-864	0.8875	0.9861	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	0.9722	1.2136	1.1071	1.2490	5.413	8	60.00	51.00
AT1-866	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0000	1.2543	1.1071	1.4120	9.198	8		
AT1-868	0.0250	0.0278	0.1995	0.1588	0.3218	37.811	8		
AT1-869	0.9000	1.0000	1.2517	1.1071	1.4120	6.521	8		
AT1-870	0.8375	0.9306	1.1604	1.1071	1.2490	6.329	8		
AT1-871	0.7875	0.8750	1.0959	0.9912	1.2490	7.399	8		
AT1-872	0.7625	0.8472	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	0.9444	1.1840	0.9912	1.4120	11.040	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.67657	0.844	-1.807	2.82967
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.3500	0.3889	0.6322	0.5796	0.6847	8.885	8		
AT1-863	0.8375	0.9306	1.1636	0.9912	1.2490	8.502	8		
AT1-864	0.8875	0.9861	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	0.9722	1.2136	1.1071	1.2490	5.413	8		
*AT1-866	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8	48.00	51.00
AT1-867	0.9000	1.0000	1.2543	1.1071	1.4120	9.198	8		
AT1-868	0.0250	0.0278	0.1995	0.1588	0.3218	37.811	8		
AT1-869	0.9000	1.0000	1.2517	1.1071	1.4120	6.521	8		
AT1-870	0.8375	0.9306	1.1604	1.1071	1.2490	6.329	8		
AT1-871	0.7875	0.8750	1.0959	0.9912	1.2490	7.399	8		
AT1-872	0.7625	0.8472	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	0.9444	1.1840	0.9912	1.4120	11.040	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.8252	0.844	-0.1837	1.69018
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.3500	0.3889	0.6322	0.5796	0.6847	8.885	8		
AT1-863	0.8375	0.9306	1.1636	0.9912	1.2490	8.502	8		
AT1-864	0.8875	0.9861	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	0.9722	1.2136	1.1071	1.2490	5.413	8		
AT1-866	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0000	1.2543	1.1071	1.4120	9.198	8	68.00	51.00
AT1-868	0.0250	0.0278	0.1995	0.1588	0.3218	37.811	8		
AT1-869	0.9000	1.0000	1.2517	1.1071	1.4120	6.521	8		
AT1-870	0.8375	0.9306	1.1604	1.1071	1.2490	6.329	8		
AT1-871	0.7875	0.8750	1.0959	0.9912	1.2490	7.399	8		
AT1-872	0.7625	0.8472	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	0.9444	1.1840	0.9912	1.4120	11.040	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.71493	0.844	0.22865	1.90891
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.3500	0.3889	0.6322	0.5796	0.6847	8.885	8		
AT1-863	0.8375	0.9306	1.1636	0.9912	1.2490	8.502	8		
AT1-864	0.8875	0.9861	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	0.9722	1.2136	1.1071	1.2490	5.413	8		
AT1-866	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0000	1.2543	1.1071	1.4120	9.198	8		
*AT1-868	0.0250	0.0278	0.1995	0.1588	0.3218	37.811	8	36.00	51.00
AT1-869	0.9000	1.0000	1.2517	1.1071	1.4120	6.521	8		
AT1-870	0.8375	0.9306	1.1604	1.1071	1.2490	6.329	8		
AT1-871	0.7875	0.8750	1.0959	0.9912	1.2490	7.399	8		
AT1-872	0.7625	0.8472	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	0.9444	1.1840	0.9912	1.4120	11.040	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.67657	0.844	1.80702	2.82967
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.3500	0.3889	0.6322	0.5796	0.6847	8.885	8		
AT1-863	0.8375	0.9306	1.1636	0.9912	1.2490	8.502	8		
AT1-864	0.8875	0.9861	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	0.9722	1.2136	1.1071	1.2490	5.413	8		
AT1-866	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0000	1.2543	1.1071	1.4120	9.198	8		
AT1-868	0.0250	0.0278	0.1995	0.1588	0.3218	37.811	8		
AT1-869	0.9000	1.0000	1.2517	1.1071	1.4120	6.521	8	68.00	51.00
AT1-870	0.8375	0.9306	1.1604	1.1071	1.2490	6.329	8		
AT1-871	0.7875	0.8750	1.0959	0.9912	1.2490	7.399	8		
AT1-872	0.7625	0.8472	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	0.9444	1.1840	0.9912	1.4120	11.040	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.52841	0.844	0.48455	7.59964
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.3500	0.3889	0.6322	0.5796	0.6847	8.885	8		
AT1-863	0.8375	0.9306	1.1636	0.9912	1.2490	8.502	8		
AT1-864	0.8875	0.9861	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	0.9722	1.2136	1.1071	1.2490	5.413	8		
AT1-866	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0000	1.2543	1.1071	1.4120	9.198	8		
AT1-868	0.0250	0.0278	0.1995	0.1588	0.3218	37.811	8		
AT1-869	0.9000	1.0000	1.2517	1.1071	1.4120	6.521	8		
*AT1-870	0.8375	0.9306	1.1604	1.1071	1.2490	6.329	8	48.00	51.00
AT1-871	0.7875	0.8750	1.0959	0.9912	1.2490	7.399	8		
AT1-872	0.7625	0.8472	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	0.9444	1.1840	0.9912	1.4120	11.040	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.7856	0.844	0.80812	-0.1593
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.3500	0.3889	0.6322	0.5796	0.6847	8.885	8		
AT1-863	0.8375	0.9306	1.1636	0.9912	1.2490	8.502	8		
AT1-864	0.8875	0.9861	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	0.9722	1.2136	1.1071	1.2490	5.413	8		
AT1-866	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0000	1.2543	1.1071	1.4120	9.198	8		
AT1-868	0.0250	0.0278	0.1995	0.1588	0.3218	37.811	8		
AT1-869	0.9000	1.0000	1.2517	1.1071	1.4120	6.521	8		
AT1-870	0.8375	0.9306	1.1604	1.1071	1.2490	6.329	8		
*AT1-871	0.7875	0.8750	1.0959	0.9912	1.2490	7.399	8	40.00	51.00
AT1-872	0.7625	0.8472	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	0.9444	1.1840	0.9912	1.4120	11.040	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.67553	0.844	0.58372	4.66035
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.3500	0.3889	0.6322	0.5796	0.6847	8.885	8		
AT1-863	0.8375	0.9306	1.1636	0.9912	1.2490	8.502	8		
AT1-864	0.8875	0.9861	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	0.9722	1.2136	1.1071	1.2490	5.413	8		
AT1-866	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0000	1.2543	1.1071	1.4120	9.198	8		
AT1-868	0.0250	0.0278	0.1995	0.1588	0.3218	37.811	8		
AT1-869	0.9000	1.0000	1.2517	1.1071	1.4120	6.521	8		
AT1-870	0.8375	0.9306	1.1604	1.1071	1.2490	6.329	8		
AT1-871	0.7875	0.8750	1.0959	0.9912	1.2490	7.399	8		
*AT1-872	0.7625	0.8472	1.0637	0.9912	1.1071	5.644	8	36.00	51.00
AT1-873	0.8500	0.9444	1.1840	0.9912	1.4120	11.040	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.7856	0.844	-0.8081	-0.1593
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8			
AT1-862	0.3500	0.3889	0.6322	0.5796	0.6847	8.885	8			
AT1-863	0.8375	0.9306	1.1636	0.9912	1.2490	8.502	8			
AT1-864	0.8875	0.9861	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	0.9722	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0000	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0278	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0000	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	0.9306	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.8750	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.8472	1.0637	0.9912	1.1071	5.644	8			
AT1-873	0.8500	0.9444	1.1840	0.9912	1.4120	11.040	8	1.408	1.895	0.0876

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.87107	0.844	0.44503	2.94491
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates no significant differences	0.05838	0.06487	0.01694	0.00854	0.18089	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8	S.D.
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978	0.16814
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825	0.20946
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722	0.39779
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600	0.39088
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850	0.60483
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425	0.33126
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250	0.37863
AT1-868	1.4900	0.0100							1.04652
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778	0.42221
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322	0.35563
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063	0.18157
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500	0.4094
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163	0.18969

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	1.1558	1.0000	1.1558	0.8767	1.4522	14.547	8			
AT1-862	0.7133	0.6172	0.7133	0.5033	1.0825	29.363	8	2.365	2.701	0.5054
AT1-863	1.2803	1.1077	1.2803	0.6144	1.7713	31.070	8	-0.665	2.701	0.5054
AT1-864	1.0645	0.9210	1.0645	0.3100	1.6789	36.718	8	0.488	2.701	0.5054
AT1-865	1.4866	1.2862	1.4866	0.7589	2.3656	40.686	8	-1.768	2.701	0.5054
AT1-866	1.8266	1.5804	1.8266	1.3722	2.2738	18.135	8	-3.586	2.701	0.5054
AT1-867	1.6580	1.4344	1.6580	1.0810	2.1300	22.837	8	-2.684	2.701	0.5054
AT1-868	0.7500	0.6489	0.7500	0.0100	1.4900	139.536	2	1.372	2.701	0.7990
AT1-869	1.9052	1.6483	1.9052	1.3178	2.4750	22.161	8	-4.006	2.701	0.5054
AT1-870	1.3922	1.2045	1.3922	0.7025	1.7322	25.544	8	-1.264	2.701	0.5054
AT1-871	0.7139	0.6177	0.7139	0.4713	0.9844	25.431	8	2.362	2.701	0.5054
AT1-872	1.4930	1.2917	1.4930	0.9463	2.1129	27.421	8	-1.802	2.701	0.5054
AT1-873	1.6211	1.4025	1.6211	1.3911	1.9588	11.701	8	-2.487	2.701	0.5054

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.58535	1.035	-0.0263	-0.2071
Bartlett's Test indicates equal variances (p = 0.01)	26.0406	26.217		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Bonferroni t Test indicates no significant differences	0.50536	0.43723	1.17897	0.13999	2.9E-10	12, 85

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	1.1558	1.0000	1.1558	0.8767	1.4522	14.547	8			
*AT1-862	0.7133	0.6172	0.7133	0.5033	1.0825	29.363	8	4.660	1.761	0.1673
AT1-863	1.2803	1.1077	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.9210	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.2862	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.5804	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.4344	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.6489	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.6483	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.2045	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.6177	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.2917	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.4025	1.6211	1.3911	1.9588	11.701	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96228	0.844	0.56801	-0.2811
F-Test indicates equal variances (p = 0.58)	1.55182	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.16726	0.14471	0.78323	0.03607	3.7E-04	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	1.1558	1.0000	1.1558	0.8767	1.4522	14.547	8			
AT1-862	0.7133	0.6172	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	1.1077	1.2803	0.6144	1.7713	31.070	8	-0.815	1.761	0.2689
AT1-864	1.0645	0.9210	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.2862	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.5804	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.4344	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.6489	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.6483	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.2045	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.6177	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.2917	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.4025	1.6211	1.3911	1.9588	11.701	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.93592	0.844	-0.7611	0.91206
F-Test indicates equal variances (p = 0.04)	5.59706	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.26893	0.23267	0.06196	0.09325	0.42867	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	1.1558	1.0000	1.1558	0.8767	1.4522	14.547	8			
AT1-862	0.7133	0.6172	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	1.1077	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.9210	1.0645	0.3100	1.6789	36.718	8	0.607	1.761	0.2650
AT1-865	1.4866	1.2862	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.5804	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.4344	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.6489	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.6483	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.2045	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.6177	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.2917	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.4025	1.6211	1.3911	1.9588	11.701	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.92106	0.844	-0.621	3.05668
F-Test indicates equal variances (p = 0.04)	5.40418	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.26497	0.22925	0.03334	0.09053	0.55363	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	1.1558	1.0000	1.1558	0.8767	1.4522	14.547	8			
AT1-862	0.7133	0.6172	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	1.1077	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.9210	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.2862	1.4866	0.7589	2.3656	40.686	8	-1.490	1.860	0.4127
AT1-866	1.8266	1.5804	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.4344	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.6489	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.6483	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.2045	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.6177	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.2917	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.4025	1.6211	1.3911	1.9588	11.701	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95706	0.844	0.55052	-0.0104
F-Test indicates unequal variances (p = 3.19E-03)	12.9395	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates no significant differences	0.41273	0.35708	0.43762	0.19705	0.15834	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	1.1558	1.0000	1.1558	0.8767	1.4522	14.547	8			
AT1-862	0.7133	0.6172	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	1.1077	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.9210	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.2862	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.5804	1.8266	1.3722	2.2738	18.135	8	-5.107	1.761	0.2313
AT1-867	1.6580	1.4344	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.6489	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.6483	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.2045	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.6177	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.2917	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.4025	1.6211	1.3911	1.9588	11.701	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.97239	0.844	0.13621	-0.3483
F-Test indicates equal variances (p = 0.09)	3.88145	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.23133	0.20014	1.79996	0.069	1.6E-04	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	1.1558	1.0000	1.1558	0.8767	1.4522	14.547	8			
AT1-862	0.7133	0.6172	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	1.1077	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.9210	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.2862	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.5804	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.4344	1.6580	1.0810	2.1300	22.837	8	-3.428	1.761	0.2580
AT1-868	0.7500	0.6489	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.6483	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.2045	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.6177	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.2917	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.4025	1.6211	1.3911	1.9588	11.701	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.97582	0.844	-0.323	-0.19
F-Test indicates equal variances (p = 0.05)	5.07094	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.25798	0.2232	1.00852	0.08582	0.00408	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	1.1558	1.0000	1.1558	0.8767	1.4522	14.547	8			
AT1-862	0.7133	0.6172	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	1.1077	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.9210	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.2862	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.5804	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.4344	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.6489	0.7500	0.0100	1.4900	139.536	2	0.547	6.314	4.6872
AT1-869	1.9052	1.6483	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.2045	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.6177	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.2917	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.4025	1.6211	1.3911	1.9588	11.701	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.93526	0.781	0.00663	2.1521
F-Test indicates unequal variances (p = 8.70E-04)	38.7386	16.2356		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates no significant differences	4.68723	4.05528	0.26352	0.16164	0.23747	1, 8

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	1.1558	1.0000	1.1558	0.8767	1.4522	14.547	8			
AT1-862	0.7133	0.6172	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	1.1077	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.9210	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.2862	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.5804	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.4344	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.6489	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.6483	1.9052	1.3178	2.4750	22.161	8	-4.664	1.761	0.2830
AT1-870	1.3922	1.2045	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.6177	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.2917	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.4025	1.6211	1.3911	1.9588	11.701	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.97122	0.844	0.10625	-0.1465
F-Test indicates equal variances (p = 0.03)	6.3052	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.283	0.24484	2.246	0.10326	3.7E-04	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	1.1558	1.0000	1.1558	0.8767	1.4522	14.547	8			
AT1-862	0.7133	0.6172	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	1.1077	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.9210	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.2862	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.5804	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.4344	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.6489	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.6483	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.2045	1.3922	0.7025	1.7322	25.544	8	-1.700	1.761	0.2450
AT1-871	0.7139	0.6177	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.2917	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.4025	1.6211	1.3911	1.9588	11.701	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.90862	0.844	-1.123	1.74117
F-Test indicates equal variances (p = 0.07)	4.47343	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.24496	0.21193	0.22352	0.07737	0.11129	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	1.1558	1.0000	1.1558	0.8767	1.4522	14.547	8			
AT1-862	0.7133	0.6172	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	1.1077	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.9210	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.2862	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.5804	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.4344	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.6489	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.6483	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.2045	1.3922	0.7025	1.7322	25.544	8			
*AT1-871	0.7139	0.6177	0.7139	0.4713	0.9844	25.431	8	5.051	1.761	0.1541
AT1-872	1.4930	1.2917	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.4025	1.6211	1.3911	1.9588	11.701	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95854	0.844	-0.0296	-0.4818
F-Test indicates equal variances (p = 0.84)	1.16607	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.1541	0.13332	0.78105	0.03062	1.8E-04	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	1.1558	1.0000	1.1558	0.8767	1.4522	14.547	8			
AT1-862	0.7133	0.6172	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	1.1077	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.9210	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.2862	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.5804	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.4344	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.6489	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.6483	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.2045	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.6177	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.2917	1.4930	0.9463	2.1129	27.421	8	-2.155	1.761	0.2756
AT1-873	1.6211	1.4025	1.6211	1.3911	1.9588	11.701	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.97259	0.844	0.13711	0.24958
F-Test indicates equal variances (p = 0.03)	5.92843	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.2756	0.23844	0.45476	0.09794	0.04907	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	1.1558	1.0000	1.1558	0.8767	1.4522	14.547	8			
AT1-862	0.7133	0.6172	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	1.1077	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.9210	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.2862	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.5804	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.4344	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.6489	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.6483	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.2045	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.6177	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.2917	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.4025	1.6211	1.3911	1.9588	11.701	8	-5.192	1.761	0.1578

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96945	0.844	0.33151	-0.1233
F-Test indicates equal variances (p = 0.76)	1.27276	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.15785	0.13657	0.86589	0.03213	1.4E-04	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.8375	1.0000	1.1636	0.9912	1.2490	8.502	8		
*AT1-862	0.3500	0.4179	0.6322	0.5796	0.6847	8.885	8	36.00	47.00
AT1-864	0.8875	1.0597	1.2313	1.1071	1.2490	4.074	8	80.50	47.00
AT1-865	0.8750	1.0448	1.2136	1.1071	1.2490	5.413	8	77.00	47.00
AT1-866	0.8250	0.9851	1.1459	0.9912	1.2490	8.205	8	64.50	47.00
AT1-867	0.9000	1.0746	1.2543	1.1071	1.4120	9.198	8	81.00	47.00
*AT1-868	0.0250	0.0299	0.1995	0.1588	0.3218	37.811	8	36.00	47.00
AT1-869	0.9000	1.0746	1.2517	1.1071	1.4120	6.521	8	82.50	47.00
AT1-870	0.8375	1.0000	1.1604	1.1071	1.2490	6.329	8	66.50	47.00
AT1-871	0.7875	0.9403	1.0959	0.9912	1.2490	7.399	8	55.50	47.00
AT1-872	0.7625	0.9104	1.0637	0.9912	1.1071	5.644	8	50.00	47.00
AT1-873	0.8500	1.0149	1.1840	0.9912	1.4120	11.040	8	70.00	47.00
Control	0.9000	1.0746	1.2490	1.2490	1.2490	0.000	8	84.00	47.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	1.00328	1.035	0.08845	0.36405
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Rank Sum Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.8375	1.0000	1.1636	0.9912	1.2490	8.502	8		
*AT1-862	0.3500	0.4179	0.6322	0.5796	0.6847	8.885	8	36.00	51.00
AT1-864	0.8875	1.0597	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	1.0448	1.2136	1.1071	1.2490	5.413	8		
AT1-866	0.8250	0.9851	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0746	1.2543	1.1071	1.4120	9.198	8		
AT1-868	0.0250	0.0299	0.1995	0.1588	0.3218	37.811	8		
AT1-869	0.9000	1.0746	1.2517	1.1071	1.4120	6.521	8		
AT1-870	0.8375	1.0000	1.1604	1.1071	1.2490	6.329	8		
AT1-871	0.7875	0.9403	1.0959	0.9912	1.2490	7.399	8		
AT1-872	0.7625	0.9104	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	1.0149	1.1840	0.9912	1.4120	11.040	8		
Control	0.9000	1.0746	1.2490	1.2490	1.2490	0.000	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.83131	0.844	-0.515	-0.4607
F-Test indicates equal variances (p = 0.16)	3.10192	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.8375	1.0000	1.1636	0.9912	1.2490	8.502	8			
AT1-862	0.3500	0.4179	0.6322	0.5796	0.6847	8.885	8			
AT1-864	0.8875	1.0597	1.2313	1.1071	1.2490	4.074	8	-1.727	1.761	0.0691
AT1-865	0.8750	1.0448	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9851	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0746	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0299	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0746	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	1.0000	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9403	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.9104	1.0637	0.9912	1.1071	5.644	8			
AT1-873	0.8500	1.0149	1.1840	0.9912	1.4120	11.040	8			
Control	0.9000	1.0746	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.86777	0.844	-0.8839	0.42101
F-Test indicates equal variances (p = 0.09)	3.88814	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.05334	0.06327	0.01834	0.00615	0.10622	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.8375	1.0000	1.1636	0.9912	1.2490	8.502	8			
AT1-862	0.3500	0.4179	0.6322	0.5796	0.6847	8.885	8			
AT1-864	0.8875	1.0597	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0448	1.2136	1.1071	1.2490	5.413	8	-1.190	1.761	0.0739
AT1-866	0.8250	0.9851	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0746	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0299	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0746	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	1.0000	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9403	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.9104	1.0637	0.9912	1.1071	5.644	8			
AT1-873	0.8500	1.0149	1.1840	0.9912	1.4120	11.040	8			
Control	0.9000	1.0746	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.86348	0.844	-0.7586	-0.5012
F-Test indicates equal variances (p = 0.30)	2.26808	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.05733	0.068	0.00999	0.00705	0.25371	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.8375	1.0000	1.1636	0.9912	1.2490	8.502	8			
AT1-862	0.3500	0.4179	0.6322	0.5796	0.6847	8.885	8			
AT1-864	0.8875	1.0597	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0448	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9851	1.1459	0.9912	1.2490	8.205	8	0.368	1.761	0.0850
AT1-867	0.9000	1.0746	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0299	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0746	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	1.0000	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9403	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.9104	1.0637	0.9912	1.1071	5.644	8			
AT1-873	0.8500	1.0149	1.1840	0.9912	1.4120	11.040	8			
Control	0.9000	1.0746	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.84717	0.844	-0.3583	-1.0052
F-Test indicates equal variances (p = 0.90)	1.10719	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.06646	0.07882	0.00126	0.00931	0.71866	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.8375	1.0000	1.1636	0.9912	1.2490	8.502	8			
AT1-862	0.3500	0.4179	0.6322	0.5796	0.6847	8.885	8			
AT1-864	0.8875	1.0597	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0448	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9851	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0746	1.2543	1.1071	1.4120	9.198	8	-1.688	1.761	0.0946
AT1-868	0.0250	0.0299	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0746	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	1.0000	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9403	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.9104	1.0637	0.9912	1.1071	5.644	8			
AT1-873	0.8500	1.0149	1.1840	0.9912	1.4120	11.040	8			
Control	0.9000	1.0746	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.93202	0.844	-0.116	-0.8757
F-Test indicates equal variances (p = 0.70)	1.36007	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.07455	0.08841	0.03292	0.01155	0.11348	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.8375	1.0000	1.1636	0.9912	1.2490	8.502	8		
AT1-862	0.3500	0.4179	0.6322	0.5796	0.6847	8.885	8		
AT1-864	0.8875	1.0597	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	1.0448	1.2136	1.1071	1.2490	5.413	8		
AT1-866	0.8250	0.9851	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0746	1.2543	1.1071	1.4120	9.198	8		
*AT1-868	0.0250	0.0299	0.1995	0.1588	0.3218	37.811	8	36.00	51.00
AT1-869	0.9000	1.0746	1.2517	1.1071	1.4120	6.521	8		
AT1-870	0.8375	1.0000	1.1604	1.1071	1.2490	6.329	8		
AT1-871	0.7875	0.9403	1.0959	0.9912	1.2490	7.399	8		
AT1-872	0.7625	0.9104	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	1.0149	1.1840	0.9912	1.4120	11.040	8		
Control	0.9000	1.0746	1.2490	1.2490	1.2490	0.000	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.84182	0.844	0.00924	-0.6704
F-Test indicates equal variances (p = 0.49)	1.71944	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Reviewed by: JR

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.8375	1.0000	1.1636	0.9912	1.2490	8.502	8			
AT1-862	0.3500	0.4179	0.6322	0.5796	0.6847	8.885	8			
AT1-864	0.8875	1.0597	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0448	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9851	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0746	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0299	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0746	1.2517	1.1071	1.4120	6.521	8	-1.943	1.761	0.0799
AT1-870	0.8375	1.0000	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9403	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.9104	1.0637	0.9912	1.1071	5.644	8			
AT1-873	0.8500	1.0149	1.1840	0.9912	1.4120	11.040	8			
Control	0.9000	1.0746	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.93287	0.844	-0.2344	0.05396
F-Test indicates equal variances (p = 0.62)	1.46876	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.06221	0.07378	0.03103	0.00822	0.07246	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.8375	1.0000	1.1636	0.9912	1.2490	8.502	8		
AT1-862	0.3500	0.4179	0.6322	0.5796	0.6847	8.885	8		
AT1-864	0.8875	1.0597	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	1.0448	1.2136	1.1071	1.2490	5.413	8		
AT1-866	0.8250	0.9851	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0746	1.2543	1.1071	1.4120	9.198	8		
AT1-868	0.0250	0.0299	0.1995	0.1588	0.3218	37.811	8		
AT1-869	0.9000	1.0746	1.2517	1.1071	1.4120	6.521	8		
AT1-870	0.8375	1.0000	1.1604	1.1071	1.2490	6.329	8	66.50	51.00
AT1-871	0.7875	0.9403	1.0959	0.9912	1.2490	7.399	8		
AT1-872	0.7625	0.9104	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	1.0149	1.1840	0.9912	1.4120	11.040	8		
Control	0.9000	1.0746	1.2490	1.2490	1.2490	0.000	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.77035	0.844	-0.2342	-1.021
F-Test indicates equal variances (p = 0.45)	1.81446	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.8375	1.0000	1.1636	0.9912	1.2490	8.502	8			
AT1-862	0.3500	0.4179	0.6322	0.5796	0.6847	8.885	8			
AT1-864	0.8875	1.0597	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0448	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9851	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0746	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0299	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0746	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	1.0000	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9403	1.0959	0.9912	1.2490	7.399	8	1.497	1.761	0.0797
AT1-872	0.7625	0.9104	1.0637	0.9912	1.1071	5.644	8			
AT1-873	0.8500	1.0149	1.1840	0.9912	1.4120	11.040	8			
Control	0.9000	1.0746	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95077	0.844	-0.2135	-0.4293
F-Test indicates equal variances (p = 0.61)	1.48822	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.06203	0.07357	0.01834	0.00818	0.15653	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.8375	1.0000	1.1636	0.9912	1.2490	8.502	8			
AT1-862	0.3500	0.4179	0.6322	0.5796	0.6847	8.885	8			
AT1-864	0.8875	1.0597	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0448	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9851	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0746	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0299	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0746	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	1.0000	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9403	1.0959	0.9912	1.2490	7.399	8			
*AT1-872	0.7625	0.9104	1.0637	0.9912	1.1071	5.644	8	2.443	1.761	0.0721
AT1-873	0.8500	1.0149	1.1840	0.9912	1.4120	11.040	8			
Control	0.9000	1.0746	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.85587	0.844	-0.6021	-0.5733
F-Test indicates equal variances (p = 0.21)	2.71543	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.05578	0.06616	0.03996	0.00669	0.02842	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.8375	1.0000	1.1636	0.9912	1.2490	8.502	8			
AT1-862	0.3500	0.4179	0.6322	0.5796	0.6847	8.885	8			
AT1-864	0.8875	1.0597	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0448	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9851	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0746	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0299	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0746	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	1.0000	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9403	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.9104	1.0637	0.9912	1.1071	5.644	8			
AT1-873	0.8500	1.0149	1.1840	0.9912	1.4120	11.040	8	-0.352	1.761	0.1021
Control	0.9000	1.0746	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.9169	0.844	0.05352	-0.3043
F-Test indicates equal variances (p = 0.48)	1.74583	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.08085	0.09589	0.00166	0.01344	0.73045	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.8375	1.0000	1.1636	0.9912	1.2490	8.502	8		
AT1-862	0.3500	0.4179	0.6322	0.5796	0.6847	8.885	8		
AT1-864	0.8875	1.0597	1.2313	1.1071	1.2490	4.074	8		
AT1-865	0.8750	1.0448	1.2136	1.1071	1.2490	5.413	8		
AT1-866	0.8250	0.9851	1.1459	0.9912	1.2490	8.205	8		
AT1-867	0.9000	1.0746	1.2543	1.1071	1.4120	9.198	8		
AT1-868	0.0250	0.0299	0.1995	0.1588	0.3218	37.811	8		
AT1-869	0.9000	1.0746	1.2517	1.1071	1.4120	6.521	8		
AT1-870	0.8375	1.0000	1.1604	1.1071	1.2490	6.329	8		
AT1-871	0.7875	0.9403	1.0959	0.9912	1.2490	7.399	8		
AT1-872	0.7625	0.9104	1.0637	0.9912	1.1071	5.644	8		
AT1-873	0.8500	1.0149	1.1840	0.9912	1.4120	11.040	8		
Control	0.9000	1.0746	1.2490	1.2490	1.2490	0.000	8	84.00	51.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.84338	0.844	-0.7831	1.67986
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	1.2803	1.0000	1.2803	0.6144	1.7713	31.070	8			
*AT1-862	0.7133	0.5572	0.7133	0.5033	1.0825	29.363	8	3.031	2.701	0.5054
AT1-864	1.0645	0.8315	1.0645	0.3100	1.6789	36.718	8	1.153	2.701	0.5054
AT1-865	1.4866	1.1611	1.4866	0.7589	2.3656	40.686	8	-1.103	2.701	0.5054
AT1-866	1.8266	1.4267	1.8266	1.3722	2.2738	18.135	8	-2.921	2.701	0.5054
AT1-867	1.6580	1.2950	1.6580	1.0810	2.1300	22.837	8	-2.019	2.701	0.5054
AT1-868	0.7500	0.5858	0.7500	0.0100	1.4900	139.536	2	1.793	2.701	0.7990
AT1-869	1.9052	1.4881	1.9052	1.3178	2.4750	22.161	8	-3.340	2.701	0.5054
AT1-870	1.3922	1.0874	1.3922	0.7025	1.7322	25.544	8	-0.598	2.701	0.5054
*AT1-871	0.7139	0.5576	0.7139	0.4713	0.9844	25.431	8	3.027	2.701	0.5054
AT1-872	1.4930	1.1662	1.4930	0.9463	2.1129	27.421	8	-1.137	2.701	0.5054
AT1-873	1.6211	1.2662	1.6211	1.3911	1.9588	11.701	8	-1.822	2.701	0.5054
Control	1.1558	0.9028	1.1558	0.8767	1.4522	14.547	8	0.665	2.701	0.5054

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.58535	1.035	-0.0263	-0.2071
Bartlett's Test indicates equal variances (p = 0.01)	26.0406	26.217		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Bonferroni t Test indicates significant differences	0.50536	0.39472	1.17897	0.13999	2.9E-10	12, 85

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	1.2803	1.0000	1.2803	0.6144	1.7713	31.070	8			
*AT1-862	0.7133	0.5572	0.7133	0.5033	1.0825	29.363	8	3.567	1.761	0.2800
AT1-864	1.0645	0.8315	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.1611	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.4267	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.2950	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.5858	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.4881	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.0874	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.5576	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.1662	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.2662	1.6211	1.3911	1.9588	11.701	8			
Control	1.1558	0.9028	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96601	0.844	-0.5672	0.34377
F-Test indicates equal variances (p = 0.11)	3.60676	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.27995	0.21866	1.28575	0.10105	0.00309	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	1.2803	1.0000	1.2803	0.6144	1.7713	31.070	8			
AT1-862	0.7133	0.5572	0.7133	0.5033	1.0825	29.363	8			
AT1-864	1.0645	0.8315	1.0645	0.3100	1.6789	36.718	8	1.094	1.761	0.3473
AT1-865	1.4866	1.1611	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.4267	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.2950	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.5858	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.4881	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.0874	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.5576	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.1662	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.2662	1.6211	1.3911	1.9588	11.701	8			
Control	1.1558	0.9028	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.92763	0.844	-0.6364	0.11074
F-Test indicates equal variances (p = 0.96)	1.03569	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.34729	0.27126	0.1862	0.15551	0.29232	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	1.2803	1.0000	1.2803	0.6144	1.7713	31.070	8			
AT1-862	0.7133	0.5572	0.7133	0.5033	1.0825	29.363	8			
AT1-864	1.0645	0.8315	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.1611	1.4866	0.7589	2.3656	40.686	8	-0.806	1.761	0.4508
AT1-866	1.8266	1.4267	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.2950	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.5858	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.4881	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.0874	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.5576	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.1662	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.2662	1.6211	1.3911	1.9588	11.701	8			
Control	1.1558	0.9028	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95906	0.844	0.19414	-1.0795
F-Test indicates equal variances (p = 0.29)	2.31185	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.4508	0.35211	0.17025	0.26203	0.43368	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	1.2803	1.0000	1.2803	0.6144	1.7713	31.070	8			
AT1-862	0.7133	0.5572	0.7133	0.5033	1.0825	29.363	8			
AT1-864	1.0645	0.8315	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.1611	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.4267	1.8266	1.3722	2.2738	18.135	8	-2.985	1.761	0.3224
AT1-867	1.6580	1.2950	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.5858	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.4881	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.0874	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.5576	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.1662	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.2662	1.6211	1.3911	1.9588	11.701	8			
Control	1.1558	0.9028	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95052	0.844	-0.4006	-0.7607
F-Test indicates equal variances (p = 0.64)	1.442	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.32236	0.25178	1.19403	0.13399	0.00984	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	1.2803	1.0000	1.2803	0.6144	1.7713	31.070	8			
AT1-862	0.7133	0.5572	0.7133	0.5033	1.0825	29.363	8			
AT1-864	1.0645	0.8315	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.1611	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.4267	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.2950	1.6580	1.0810	2.1300	22.837	8	-1.945	1.761	0.3420
AT1-868	0.7500	0.5858	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.4881	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.0874	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.5576	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.1662	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.2662	1.6211	1.3911	1.9588	11.701	8			
Control	1.1558	0.9028	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.92153	0.844	-0.5163	-0.9455
F-Test indicates equal variances (p = 0.90)	1.10375	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.34198	0.26712	0.57054	0.1508	0.07213	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	1.2803	1.0000	1.2803	0.6144	1.7713	31.070	8			
AT1-862	0.7133	0.5572	0.7133	0.5033	1.0825	29.363	8			
AT1-864	1.0645	0.8315	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.1611	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.4267	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.2950	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.5858	0.7500	0.0100	1.4900	139.536	2	1.278	1.860	0.7714
AT1-869	1.9052	1.4881	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.0874	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.5576	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.1662	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.2662	1.6211	1.3911	1.9588	11.701	8			
Control	1.1558	0.9028	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.93599	0.781	-0.2972	-0.9263
F-Test indicates equal variances (p = 0.07)	6.92124	16.2356		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.77143	0.60254	0.44993	0.27536	0.23699	1, 8

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	1.2803	1.0000	1.2803	0.6144	1.7713	31.070	8			
AT1-862	0.7133	0.5572	0.7133	0.5033	1.0825	29.363	8			
AT1-864	1.0645	0.8315	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.1611	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.4267	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.2950	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.5858	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.4881	1.9052	1.3178	2.4750	22.161	8	-3.047	1.761	0.3612
AT1-870	1.3922	1.0874	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.5576	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.1662	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.2662	1.6211	1.3911	1.9588	11.701	8			
Control	1.1558	0.9028	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94574	0.844	-0.2693	-1.0624
F-Test indicates equal variances (p = 0.88)	1.12652	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.36123	0.28215	1.56189	0.16825	0.0087	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	1.2803	1.0000	1.2803	0.6144	1.7713	31.070	8			
AT1-862	0.7133	0.5572	0.7133	0.5033	1.0825	29.363	8			
AT1-864	1.0645	0.8315	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.1611	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.4267	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.2950	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.5858	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.4881	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.0874	1.3922	0.7025	1.7322	25.544	8	-0.593	1.761	0.3323
AT1-871	0.7139	0.5576	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.1662	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.2662	1.6211	1.3911	1.9588	11.701	8			
Control	1.1558	0.9028	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.88174	0.844	-0.8617	-0.2767
F-Test indicates equal variances (p = 0.78)	1.25118	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.33227	0.25953	0.05012	0.14235	0.56241	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	1.2803	1.0000	1.2803	0.6144	1.7713	31.070	8			
AT1-862	0.7133	0.5572	0.7133	0.5033	1.0825	29.363	8			
AT1-864	1.0645	0.8315	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.1611	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.4267	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.2950	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.5858	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.4881	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.0874	1.3922	0.7025	1.7322	25.544	8			
*AT1-871	0.7139	0.5576	0.7139	0.4713	0.9844	25.431	8	3.663	1.761	0.2723
AT1-872	1.4930	1.1662	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.2662	1.6211	1.3911	1.9588	11.701	8			
Control	1.1558	0.9028	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94556	0.844	-0.7535	0.66228
F-Test indicates equal variances (p = 0.06)	4.79993	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.27229	0.21268	1.28296	0.0956	0.00256	1, 14

Reviewed by: KSB

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	1.2803	1.0000	1.2803	0.6144	1.7713	31.070	8			
AT1-862	0.7133	0.5572	0.7133	0.5033	1.0825	29.363	8			
AT1-864	1.0645	0.8315	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.1611	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.4267	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.2950	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.5858	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.4881	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.0874	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.5576	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.1662	1.4930	0.9463	2.1129	27.421	8	-1.054	1.761	0.3555
AT1-873	1.6211	1.2662	1.6211	1.3911	1.9588	11.701	8			
Control	1.1558	0.9028	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94642	0.844	-0.2724	-0.8872
F-Test indicates equal variances (p = 0.94)	1.0592	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.35546	0.27764	0.18101	0.16292	0.30971	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	1.2803	1.0000	1.2803	0.6144	1.7713	31.070	8			
AT1-862	0.7133	0.5572	0.7133	0.5033	1.0825	29.363	8			
AT1-864	1.0645	0.8315	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.1611	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.4267	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.2950	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.5858	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.4881	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.0874	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.5576	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.1662	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.2662	1.6211	1.3911	1.9588	11.701	8	-2.187	1.761	0.2744
Control	1.1558	0.9028	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95545	0.844	-0.6677	0.5992
F-Test indicates equal variances (p = 0.07)	4.3976	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.27443	0.21435	0.46461	0.09711	0.04618	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	1.2803	1.0000	1.2803	0.6144	1.7713	31.070	8			
AT1-862	0.7133	0.5572	0.7133	0.5033	1.0825	29.363	8			
AT1-864	1.0645	0.8315	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	1.1611	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.4267	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.2950	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.5858	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.4881	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	1.0874	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.5576	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	1.1662	1.4930	0.9463	2.1129	27.421	8			
AT1-873	1.6211	1.2662	1.6211	1.3911	1.9588	11.701	8			
Control	1.1558	0.9028	1.1558	0.8767	1.4522	14.547	8	0.815	1.761	0.2689

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.93592	0.844	-0.7611	0.91206
F-Test indicates equal variances (p = 0.04)	5.59706	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.26893	0.21006	0.06196	0.09325	0.42867	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-873	0.8500	1.0000	1.1840	0.9912	1.4120	11.040	8		
*AT1-862	0.3500	0.4118	0.6322	0.5796	0.6847	8.885	8	36.00	47.00
AT1-863	0.8375	0.9853	1.1636	0.9912	1.2490	8.502	8	66.00	47.00
AT1-864	0.8875	1.0441	1.2313	1.1071	1.2490	4.074	8	77.00	47.00
AT1-865	0.8750	1.0294	1.2136	1.1071	1.2490	5.413	8	74.00	47.00
AT1-866	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8	63.00	47.00
AT1-867	0.9000	1.0588	1.2543	1.1071	1.4120	9.198	8	78.00	47.00
*AT1-868	0.0250	0.0294	0.1995	0.1588	0.3218	37.811	8	36.00	47.00
AT1-869	0.9000	1.0588	1.2517	1.1071	1.4120	6.521	8	79.00	47.00
AT1-870	0.8375	0.9853	1.1604	1.1071	1.2490	6.329	8	65.00	47.00
AT1-871	0.7875	0.9265	1.0959	0.9912	1.2490	7.399	8	55.00	47.00
AT1-872	0.7625	0.8971	1.0637	0.9912	1.1071	5.644	8	50.00	47.00
Control	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8	80.00	47.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	1.00328	1.035	0.08845	0.36405
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Rank Sum Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1840	0.9912	1.4120	11.040	8			
*AT1-862	0.3500	0.4118	0.6322	0.5796	0.6847	8.885	8	10.970	1.761	0.0886
AT1-863	0.8375	0.9853	1.1636	0.9912	1.2490	8.502	8			
AT1-864	0.8875	1.0441	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0294	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0588	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0294	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0588	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	0.9853	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9265	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.8971	1.0637	0.9912	1.1071	5.644	8			
Control	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.89865	0.844	0.34515	1.10038
F-Test indicates equal variances (p = 0.04)	5.41543	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.06718	0.07833	1.21789	0.01012	2.9E-08	1, 14

Reviewed by: JR

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1840	0.9912	1.4120	11.040	8			
AT1-862	0.3500	0.4118	0.6322	0.5796	0.6847	8.885	8			
AT1-863	0.8375	0.9853	1.1636	0.9912	1.2490	8.502	8	0.352	1.761	0.1021
AT1-864	0.8875	1.0441	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0294	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0588	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0294	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0588	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	0.9853	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9265	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.8971	1.0637	0.9912	1.1071	5.644	8			
Control	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.9169	0.844	0.05352	-0.3043
F-Test indicates equal variances (p = 0.48)	1.74583	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.07826	0.09125	0.00166	0.01344	0.73045	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1840	0.9912	1.4120	11.040	8			
AT1-862	0.3500	0.4118	0.6322	0.5796	0.6847	8.885	8			
AT1-863	0.8375	0.9853	1.1636	0.9912	1.2490	8.502	8			
AT1-864	0.8875	1.0441	1.2313	1.1071	1.2490	4.074	8	-0.956	1.761	0.0872
AT1-865	0.8750	1.0294	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0588	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0294	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0588	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	0.9853	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9265	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.8971	1.0637	0.9912	1.1071	5.644	8			
Control	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.9031	0.844	0.19884	1.62971
F-Test indicates equal variances (p = 0.02)	6.78804	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.06604	0.07699	0.00896	0.0098	0.35511	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1840	0.9912	1.4120	11.040	8			
AT1-862	0.3500	0.4118	0.6322	0.5796	0.6847	8.885	8			
AT1-863	0.8375	0.9853	1.1636	0.9912	1.2490	8.502	8			
AT1-864	0.8875	1.0441	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0294	1.2136	1.1071	1.2490	5.413	8	-0.572	1.761	0.0911
AT1-866	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0588	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0294	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0588	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	0.9853	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9265	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.8971	1.0637	0.9912	1.1071	5.644	8			
Control	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.90158	0.844	0.15387	0.79809
F-Test indicates equal variances (p = 0.09)	3.95969	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.06922	0.08071	0.00351	0.0107	0.57616	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1840	0.9912	1.4120	11.040	8			
AT1-862	0.3500	0.4118	0.6322	0.5796	0.6847	8.885	8			
AT1-863	0.8375	0.9853	1.1636	0.9912	1.2490	8.502	8			
AT1-864	0.8875	1.0441	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0294	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8	0.669	1.761	0.1003
AT1-867	0.9000	1.0588	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0294	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0588	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	0.9853	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9265	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.8971	1.0637	0.9912	1.1071	5.644	8			
Control	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94925	0.844	0.20152	-0.1912
F-Test indicates equal variances (p = 0.40)	1.93296	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.07676	0.08949	0.00581	0.01296	0.51409	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1840	0.9912	1.4120	11.040	8			
AT1-862	0.3500	0.4118	0.6322	0.5796	0.6847	8.885	8			
AT1-863	0.8375	0.9853	1.1636	0.9912	1.2490	8.502	8			
AT1-864	0.8875	1.0441	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0294	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0588	1.2543	1.1071	1.4120	9.198	8	-1.141	1.761	0.1086
AT1-868	0.0250	0.0294	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0588	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	0.9853	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9265	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.8971	1.0637	0.9912	1.1071	5.644	8			
Control	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96134	0.844	0.2538	-0.5293
F-Test indicates equal variances (p = 0.75)	1.28363	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.08366	0.09755	0.01979	0.0152	0.27291	1, 14

Reviewed by: JK

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1840	0.9912	1.4120	11.040	8			
AT1-862	0.3500	0.4118	0.6322	0.5796	0.6847	8.885	8			
AT1-863	0.8375	0.9853	1.1636	0.9912	1.2490	8.502	8			
AT1-864	0.8875	1.0441	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0294	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0588	1.2543	1.1071	1.4120	9.198	8			
*AT1-868	0.0250	0.0294	0.1995	0.1588	0.3218	37.811	8	18.450	1.761	0.0940
AT1-869	0.9000	1.0588	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	0.9853	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9265	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.8971	1.0637	0.9912	1.1071	5.644	8			
Control	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.91487	0.844	0.51484	0.44335
F-Test indicates equal variances (p = 0.17)	3.00186	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.07158	0.08346	3.87654	0.01139	3.2E-11	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1840	0.9912	1.4120	11.040	8			
AT1-862	0.3500	0.4118	0.6322	0.5796	0.6847	8.885	8			
AT1-863	0.8375	0.9853	1.1636	0.9912	1.2490	8.502	8			
AT1-864	0.8875	1.0441	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0294	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0588	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0294	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0588	1.2517	1.1071	1.4120	6.521	8	-1.243	1.761	0.0960
AT1-870	0.8375	0.9853	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9265	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.8971	1.0637	0.9912	1.1071	5.644	8			
Control	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94769	0.844	0.34358	0.62523
F-Test indicates equal variances (p = 0.24)	2.56421	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.07321	0.08536	0.01834	0.01187	0.23436	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1840	0.9912	1.4120	11.040	8			
AT1-862	0.3500	0.4118	0.6322	0.5796	0.6847	8.885	8			
AT1-863	0.8375	0.9853	1.1636	0.9912	1.2490	8.502	8			
AT1-864	0.8875	1.0441	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0294	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0588	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0294	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0588	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	0.9853	1.1604	1.1071	1.2490	6.329	8	0.445	1.761	0.0934
AT1-871	0.7875	0.9265	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.8971	1.0637	0.9912	1.1071	5.644	8			
Control	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.90365	0.844	0.38987	0.33936
F-Test indicates equal variances (p = 0.15)	3.16775	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.07108	0.08287	0.00223	0.01124	0.66284	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1840	0.9912	1.4120	11.040	8			
AT1-862	0.3500	0.4118	0.6322	0.5796	0.6847	8.885	8			
AT1-863	0.8375	0.9853	1.1636	0.9912	1.2490	8.502	8			
AT1-864	0.8875	1.0441	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0294	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0588	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0294	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0588	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	0.9853	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9265	1.0959	0.9912	1.2490	7.399	8	1.620	1.761	0.0958
AT1-872	0.7625	0.8971	1.0637	0.9912	1.1071	5.644	8			
Control	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95326	0.844	0.35859	0.40688
F-Test indicates equal variances (p = 0.23)	2.59819	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.07306	0.08519	0.03103	0.01183	0.1276	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1840	0.9912	1.4120	11.040	8			
AT1-862	0.3500	0.4118	0.6322	0.5796	0.6847	8.885	8			
AT1-863	0.8375	0.9853	1.1636	0.9912	1.2490	8.502	8			
AT1-864	0.8875	1.0441	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0294	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0588	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0294	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0588	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	0.9853	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9265	1.0959	0.9912	1.2490	7.399	8			
*AT1-872	0.7625	0.8971	1.0637	0.9912	1.1071	5.644	8	2.366	1.761	0.0896
Control	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.88538	0.844	0.27522	0.93642
F-Test indicates equal variances (p = 0.06)	4.74068	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.06798	0.07925	0.05791	0.01034	0.03294	1, 14

Growth and Survival Test-Survival

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.0000	0.9000	0.9000	0.9000	0.8000	0.8000	0.7000	0.8000
AT1-862	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000	0.4000
AT1-863	0.8000	0.9000	0.7000	0.9000	0.8000	0.8000	0.9000	0.9000
AT1-864	0.9000	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-865	0.9000	0.8000	0.9000	0.9000	0.9000	0.9000	0.9000	0.8000
AT1-866	0.8000	0.9000	0.7000	0.9000	0.9000	0.8000	0.8000	0.8000
AT1-867	1.0000	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.8000
AT1-868	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AT1-869	0.9000	0.9000	0.9000	0.8000	0.9000	1.0000	0.9000	0.9000
AT1-870	0.8000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.9000
AT1-871	0.8000	0.7000	0.8000	0.9000	0.8000	0.7000	0.8000	0.8000
AT1-872	0.7000	0.7000	0.8000	0.7000	0.8000	0.8000	0.8000	0.8000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1840	0.9912	1.4120	11.040	8			
AT1-862	0.3500	0.4118	0.6322	0.5796	0.6847	8.885	8			
AT1-863	0.8375	0.9853	1.1636	0.9912	1.2490	8.502	8			
AT1-864	0.8875	1.0441	1.2313	1.1071	1.2490	4.074	8			
AT1-865	0.8750	1.0294	1.2136	1.1071	1.2490	5.413	8			
AT1-866	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-867	0.9000	1.0588	1.2543	1.1071	1.4120	9.198	8			
AT1-868	0.0250	0.0294	0.1995	0.1588	0.3218	37.811	8			
AT1-869	0.9000	1.0588	1.2517	1.1071	1.4120	6.521	8			
AT1-870	0.8375	0.9853	1.1604	1.1071	1.2490	6.329	8			
AT1-871	0.7875	0.9265	1.0959	0.9912	1.2490	7.399	8			
AT1-872	0.7625	0.8971	1.0637	0.9912	1.1071	5.644	8			
Control	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8	-1.408	1.895	0.0876

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.87107	0.844	0.44503	2.94491
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates no significant differences	0.06633	0.07734	0.01694	0.00854	0.18089	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	1.6211	1.0000	1.6211	1.3911	1.9588	11.701	8			
*AT1-862	0.7133	0.4400	0.7133	0.5033	1.0825	29.363	8	4.852	2.701	0.5054
AT1-863	1.2803	0.7898	1.2803	0.6144	1.7713	31.070	8	1.822	2.701	0.5054
*AT1-864	1.0645	0.6567	1.0645	0.3100	1.6789	36.718	8	2.975	2.701	0.5054
AT1-865	1.4866	0.9170	1.4866	0.7589	2.3656	40.686	8	0.719	2.701	0.5054
AT1-866	1.8266	1.1268	1.8266	1.3722	2.2738	18.135	8	-1.099	2.701	0.5054
AT1-867	1.6580	1.0227	1.6580	1.0810	2.1300	22.837	8	-0.197	2.701	0.5054
*AT1-868	0.7500	0.4626	0.7500	0.0100	1.4900	139.536	2	2.945	2.701	0.7990
AT1-869	1.9052	1.1752	1.9052	1.3178	2.4750	22.161	8	-1.518	2.701	0.5054
AT1-870	1.3922	0.8588	1.3922	0.7025	1.7322	25.544	8	1.223	2.701	0.5054
*AT1-871	0.7139	0.4404	0.7139	0.4713	0.9844	25.431	8	4.849	2.701	0.5054
AT1-872	1.4930	0.9210	1.4930	0.9463	2.1129	27.421	8	0.685	2.701	0.5054
Control	1.1558	0.7130	1.1558	0.8767	1.4522	14.547	8	2.487	2.701	0.5054

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.58535	1.035	-0.0263	-0.2071
Bartlett's Test indicates equal variances (p = 0.01)	26.0406	26.217		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Bonferroni t Test indicates significant differences	0.50536	0.31174	1.17897	0.13999	2.9E-10	12, 85

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	1.6211	1.0000	1.6211	1.3911	1.9588	11.701	8			
*AT1-862	0.7133	0.4400	0.7133	0.5033	1.0825	29.363	8	9.086	1.761	0.1760
AT1-863	1.2803	0.7898	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.6567	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	0.9170	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.1268	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.0227	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.4626	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.1752	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	0.8588	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.4404	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	0.9210	1.4930	0.9463	2.1129	27.421	8			
Control	1.1558	0.7130	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.91322	0.844	0.67194	-0.6344
F-Test indicates equal variances (p = 0.80)	1.21926	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.17597	0.10855	3.29615	0.03993	3.0E-07	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	1.6211	1.0000	1.6211	1.3911	1.9588	11.701	8			
AT1-862	0.7133	0.4400	0.7133	0.5033	1.0825	29.363	8			
*AT1-863	1.2803	0.7898	1.2803	0.6144	1.7713	31.070	8	2.187	1.761	0.2744
AT1-864	1.0645	0.6567	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	0.9170	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.1268	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.0227	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.4626	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.1752	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	0.8588	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.4404	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	0.9210	1.4930	0.9463	2.1129	27.421	8			
Control	1.1558	0.7130	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95545	0.844	-0.6677	0.5992
F-Test indicates equal variances (p = 0.07)	4.3976	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.27443	0.16929	0.46461	0.09711	0.04618	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	1.6211	1.0000	1.6211	1.3911	1.9588	11.701	8			
AT1-862	0.7133	0.4400	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	0.7898	1.2803	0.6144	1.7713	31.070	8			
*AT1-864	1.0645	0.6567	1.0645	0.3100	1.6789	36.718	8	3.623	1.761	0.2706
AT1-865	1.4866	0.9170	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.1268	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.0227	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.4626	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.1752	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	0.8588	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.4404	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	0.9210	1.4930	0.9463	2.1129	27.421	8			
Control	1.1558	0.7130	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.92894	0.844	-0.5327	2.56475
F-Test indicates equal variances (p = 0.08)	4.24605	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.27055	0.1669	1.23907	0.09438	0.00277	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	1.6211	1.0000	1.6211	1.3911	1.9588	11.701	8			
AT1-862	0.7133	0.4400	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	0.7898	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.6567	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	0.9170	1.4866	0.7589	2.3656	40.686	8	0.600	1.860	0.4167
AT1-866	1.8266	1.1268	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.0227	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.4626	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.1752	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	0.8588	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.4404	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	0.9210	1.4930	0.9463	2.1129	27.421	8			
Control	1.1558	0.7130	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95887	0.844	0.55107	-0.14
F-Test indicates unequal variances (p = 6.69E-03)	10.1666	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates no significant differences	0.41674	0.25707	0.07236	0.2009	0.55799	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	1.6211	1.0000	1.6211	1.3911	1.9588	11.701	8			
AT1-862	0.7133	0.4400	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	0.7898	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.6567	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	0.9170	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.1268	1.8266	1.3722	2.2738	18.135	8	-1.523	1.761	0.2377
AT1-867	1.6580	1.0227	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.4626	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.1752	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	0.8588	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.4404	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	0.9210	1.4930	0.9463	2.1129	27.421	8			
Control	1.1558	0.7130	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96816	0.844	0.20026	-0.6115
F-Test indicates equal variances (p = 0.16)	3.04964	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.23771	0.14663	0.169	0.07286	0.15002	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	1.6211	1.0000	1.6211	1.3911	1.9588	11.701	8			
AT1-862	0.7133	0.4400	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	0.7898	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.6567	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	0.9170	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.1268	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.0227	1.6580	1.0810	2.1300	22.837	8	-0.246	1.761	0.2637
AT1-868	0.7500	0.4626	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.1752	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	0.8588	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.4404	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	0.9210	1.4930	0.9463	2.1129	27.421	8			
Control	1.1558	0.7130	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.98346	0.844	-0.2477	-0.4312
F-Test indicates equal variances (p = 0.09)	3.98422	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.26372	0.16268	0.00543	0.08967	0.80912	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	1.6211	1.0000	1.6211	1.3911	1.9588	11.701	8			
AT1-862	0.7133	0.4400	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	0.7898	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.6567	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	0.9170	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.1268	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.0227	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.4626	0.7500	0.0100	1.4900	139.536	2	1.172	6.314	4.6913
AT1-869	1.9052	1.1752	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	0.8588	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.4404	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	0.9210	1.4930	0.9463	2.1129	27.421	8			
Control	1.1558	0.7130	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95866	0.781	0.04795	1.67988
F-Test indicates unequal variances (p = 1.78E-03)	30.4368	16.2356		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates no significant differences	4.69132	2.89392	1.2141	0.16838	0.0277	1, 8

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	1.6211	1.0000	1.6211	1.3911	1.9588	11.701	8			
AT1-862	0.7133	0.4400	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	0.7898	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.6567	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	0.9170	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.1268	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.0227	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.4626	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.1752	1.9052	1.3178	2.4750	22.161	8	-1.736	1.761	0.2882
AT1-870	1.3922	0.8588	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.4404	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	0.9210	1.4930	0.9463	2.1129	27.421	8			
Control	1.1558	0.7130	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96637	0.844	0.14248	-0.3598
F-Test indicates equal variances (p = 0.05)	4.95398	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.28823	0.1778	0.32278	0.10712	0.10453	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	1.6211	1.0000	1.6211	1.3911	1.9588	11.701	8			
AT1-862	0.7133	0.4400	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	0.7898	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.6567	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	0.9170	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.1268	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.0227	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.4626	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.1752	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	0.8588	1.3922	0.7025	1.7322	25.544	8	1.606	1.761	0.2510
AT1-871	0.7139	0.4404	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	0.9210	1.4930	0.9463	2.1129	27.421	8			
Control	1.1558	0.7130	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.92476	0.844	-0.9805	1.30293
F-Test indicates equal variances (p = 0.12)	3.51476	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.25099	0.15483	0.20954	0.08123	0.13056	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	1.6211	1.0000	1.6211	1.3911	1.9588	11.701	8			
AT1-862	0.7133	0.4400	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	0.7898	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.6567	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	0.9170	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.1268	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.0227	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.4626	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.1752	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	0.8588	1.3922	0.7025	1.7322	25.544	8			
*AT1-871	0.7139	0.4404	0.7139	0.4713	0.9844	25.431	8	9.771	1.761	0.1635
AT1-872	1.4930	0.9210	1.4930	0.9463	2.1129	27.421	8			
Control	1.1558	0.7130	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94169	0.844	0.20481	-0.7921
F-Test indicates equal variances (p = 0.91)	1.09149	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.16351	0.10087	3.29169	0.03447	1.2E-07	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID: TN-21-771	Sample ID: Swan Creek
End Date:	12/13/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: CT-Chironomus dilutus
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	1.6211	1.0000	1.6211	1.3911	1.9588	11.701	8			
AT1-862	0.7133	0.4400	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	0.7898	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.6567	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	0.9170	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.1268	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.0227	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.4626	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.1752	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	0.8588	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.4404	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	0.9210	1.4930	0.9463	2.1129	27.421	8	0.803	1.761	0.2810
Control	1.1558	0.7130	1.1558	0.8767	1.4522	14.547	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.98566	0.844	0.17464	-0.002
F-Test indicates equal variances (p = 0.06)	4.65795	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.28097	0.17332	0.06562	0.10179	0.43545	1, 14

Growth and Survival Test-Growth

Start Date:	12/3/2021	Test ID:	TN-21-771	Sample ID:	Swan Creek
End Date:	12/13/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	CT-Chironomus dilutus
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	1.6600	1.5422	1.7078	1.3911	1.5313	1.9588	1.7614	1.4163
AT1-862	0.6467	0.5033	0.6000	0.5267	0.5950	0.9375	0.8150	1.0825
AT1-863	1.4525	1.3189	1.2929	0.6144	1.7713	1.3913	1.6289	0.7722
AT1-864	1.1767	1.2244	0.8363	1.1389	1.6789	1.1911	0.3100	0.9600
AT1-865	1.0156	1.2300	0.7589	1.1833	2.1178	1.1367	2.3656	2.0850
AT1-866	1.8975	1.3722	1.7543	1.5733	1.5233	2.2738	1.9763	2.2425
AT1-867	1.0810	1.6867	1.7767	1.3744	2.1300	1.9189	1.2710	2.0250
AT1-868	1.4900	0.0100						
AT1-869	2.3233	1.8200	2.3156	2.4750	1.3178	1.7430	1.7689	1.4778
AT1-870	0.7025	1.4950	1.4663	1.4038	1.5733	1.7322	1.0325	1.7322
AT1-871	0.8275	0.8043	0.7088	0.9844	0.4713	0.4829	0.8263	0.6063
AT1-872	1.2171	1.4929	1.9225	2.1129	0.9463	1.0450	1.5575	1.6500
Control	1.1178	1.2533	0.8767	1.0178	1.4522	1.1567	1.1744	1.1978

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	1.6211	1.0000	1.6211	1.3911	1.9588	11.701	8			
AT1-862	0.7133	0.4400	0.7133	0.5033	1.0825	29.363	8			
AT1-863	1.2803	0.7898	1.2803	0.6144	1.7713	31.070	8			
AT1-864	1.0645	0.6567	1.0645	0.3100	1.6789	36.718	8			
AT1-865	1.4866	0.9170	1.4866	0.7589	2.3656	40.686	8			
AT1-866	1.8266	1.1268	1.8266	1.3722	2.2738	18.135	8			
AT1-867	1.6580	1.0227	1.6580	1.0810	2.1300	22.837	8			
AT1-868	0.7500	0.4626	0.7500	0.0100	1.4900	139.536	2			
AT1-869	1.9052	1.1752	1.9052	1.3178	2.4750	22.161	8			
AT1-870	1.3922	0.8588	1.3922	0.7025	1.7322	25.544	8			
AT1-871	0.7139	0.4404	0.7139	0.4713	0.9844	25.431	8			
AT1-872	1.4930	0.9210	1.4930	0.9463	2.1129	27.421	8			
*Control	1.1558	0.7130	1.1558	0.8767	1.4522	14.547	8	5.192	1.761	0.1578

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96945	0.844	0.33151	-0.1233
F-Test indicates equal variances (p = 0.76)	1.27276	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.15785	0.09737	0.86589	0.03213	1.4E-04	1, 14

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ATTACHMENT V

Data Sheets and Statistical Analyses
from *Hyalella azteca* Toxicity Tests
(100 pages)

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SEDIMENT TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

TEST ORGANISM INFORMATION

Common Name: Amphipod

Scientific Name: *H. azteca*

Lot Number: HA-054

Source: ARO

Adults Isolated (Time, Date): _____

Neonates Pulled (Time, Date): ___

Acclimation: 24hrs Age: 9 days

Culture Water (T/S): 22.5 °C 0 ppt

TEST INITIATION

Date	Time	Initials	Activity
12/8/21	1500	AJ/LMO	Sediment Added to Chambers
↓	1600	mc	Overlying Water Added to Chambers
12/10/21	1255	AP	Organisms Transferred

TEST SET-UP

Sample Number(s): AT1-697, AT1-862 → 873

Overlying Water Number: Dechlor

Treatment	Volume Test Sediment	Volume Overlying Water
Pretty Boy Control (AT1-697)	100 ml	175 ml
AT1-862 ↓	↓	↓
AT1-873		

TOXICOLOGY LABORATORY BENCH SHEET - ORGANISM RECOVERY RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Organisms Recovered (date, time, initials): 12/20/21 1300 [illegible]

TEST ORGANISM

Common Name: Amphipod

Scientific Name: *H. azteca*

Treatment	Replicate	Number of Organisms Loaded	Number of Organisms Recovered
AT1-697	A	10	9
(Lab Control)	B	10	9
	C	10	9
	D	10	9
	E	10	9
	F	10	9
	G	10	10
	H	10	9
AT1-862	A	10	6
	B	10	6
	C	10	6
	D	10	6
	E	10	6
	F	10	5
	G	10	5
	H	10	5
AT1-863	A	10	9
	B	10	9
	C	10	9
	D	10	9
	E	10	9
	F	10	9
	G	10	9
	H	10	9

TOXICOLOGY LABORATORY BENCH SHEET - ORGANISM RECOVERY RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Organisms Recovered (date, time, initials): 12/20/21 1300

TEST ORGANISM

Common Name: Amphipod

Scientific Name: *H. azteca*

Treatment	Replicate	Number of Organisms Loaded	Number of Organisms Recovered
AT1-864	A	10	8
	B	10	9
	C	10	7
	D	10	8
	E	10	9
	F	10	8
	G	10	8
	H	10	8
AT1-865	A	10	4
	B	10	4
	C	10	4
	D	10	4
	E	10	3
	F	10	4
	G	10	3
	H	10	3
AT1-866	A	10	5
	B	10	5
	C	10	6
	D	10	4
	E	10	5
	F	10	4
	G	10	5
	H	10	5

TOXICOLOGY LABORATORY BENCH SHEET - ORGANISM RECOVERY RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Organisms Recovered (date, time, initials): 12/20/21 1300 MM

TEST ORGANISM

Common Name: Amphipod

Scientific Name: *H. azteca*

Treatment	Replicate	Number of Organisms Loaded	Number of Organisms Recovered
AT1-867	A	10	~~6~~ 6
	B	10	~~6~~ 6
	C	10	5
	D	10	6
	E	10	7
	F	10	5
	G	10	4
	H	10	5
AT1-868	A	10	6
	B	10	6
	C	10	6
	D	10	5
	E	10	6
	F	10	6
	G	10	6
	H	10	6
AT1-869	A	10	8
	B	10	7
	C	10	8
	D	10	7
	E	10	8
	F	10	6
	G	10	7
	H	10	8

(D) MM 12/20/21

TOXICOLOGY LABORATORY BENCH SHEET - ORGANISM RECOVERY RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Organisms Recovered (date, time, initials): 12/20/21 1300

TEST ORGANISM

Common Name: Amphipod

Scientific Name: *H. azteca*

Treatment	Replicate	Number of Organisms Loaded	Number of Organisms Recovered
AT1-870	A	10	7
	B	10	8
	C	10	8
	D	10	7
	E	10	8
	F	10	7
	G	10	7
	H	10	7
AT1-871	A	10	9
	B	10	8
	C	10	7
	D	10	9
	E	10	9
	F	10	8
	G	10	9
	H	10	8
AT1-872	A	10	8
	B	10	7
	C	10	9
	D	10	8
	E	10	7
	F	10	6
	G	10	7
	H	10	7

TOXICOLOGY LABORATORY BENCH SHEET - ORGANISM RECOVERY RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Organisms Recovered (date, time, initials): 12/20/21 1300 —

TEST ORGANISM

Common Name: Amphipod

Scientific Name: *H. azteca*

Treatment	Replicate	Number of Organisms Loaded	Number of Organisms Recovered
AT1-873	A	10	9
	B	10	8
	C	10	9
	D	10	7
	E	10	8
	F	10	9
	G	10	9
	H	10	9

WEIGHT DATA (Test Species: *H. azteca*)

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Tin Lot: Red 270

Oven Temp (°C): Start: 100 End: 95

	Date	Time	Initials
Loaded tins placed in oven:	12/20/2021	1449	JR
Loaded tins removed from oven:	1/20/2022	1203	JR
Loaded tins weighed:	1/20/2022	1349	JR

Oven Number: BLM-01 / G4-009646 Balance Number: TS-L-225.C / P0115825

Test Concentration	Rep	Tin #	A Weight of Tin (mg)	B Weight of Tin and Dried Organisms (mg)	B-A Total Dry Organism Weight (mg)	C Number of Organisms Weighed	(B-A)/C Mean Dry Organism Weight (mg)	(if applicable) Mean Biomass (mg/exposed org.)
Control	A	28	29.68	31.07	1.39	9	0.154	
(AT1-697)	B	115	29.37	30.50	1.13	9	0.126	
	C	111	29.82	31.04	1.22	9	0.136	
	D	45	29.79	31.01	1.22	9	0.136	
	E	72	27.99	29.24	1.25	9	0.139	
	F	68	28.14	29.07	0.93	9	0.103	
	G	33	28.99	30.03	1.04	10	0.104	
	H	144	28.60	29.52	0.92	9	0.102	
AT1-862	A	90	29.88	30.27	0.39	6	0.065	
	B	53	30.48	30.92	0.44	6	0.073	
	C	100	29.64	30.04	0.40	6	0.067	
	D	22	29.98	30.42	0.44	6	0.073	
	E	156	28.43	28.68	0.25	6	0.042	
	F	125	28.95	29.40	0.45	5	0.090	
	G	96	28.02	28.31	0.29	5	0.058	
	H	121	29.69	30.00	0.31	5	0.062	

Dry wt. calculations checked (date, initials): 2/2/22, RSB

Biomass calculations checked (date, initials): N/A

WEIGHT DATA (Test Species: *H. azteca*)

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Tin Lot: Red 270

Oven Temp (°C): Start: 100 End: 95

	Date	Time	Initials
Loaded tins placed in oven:	12/20/2021	1449	JR
Loaded tins removed from oven:	1/20/2022	1203	JR
Loaded tins weighed:	1/20/2022	1249	JR

Oven Number: BLM-01 / 84-009646 Balance Number: TS-L-225.C / P0115825

Test Concentration	Rep	Tin #	A Weight of Tin (mg)	B Weight of Tin and Dried Organisms (mg)	B-A Total Dry Organism Weight (mg)	C Number of Organisms Weighed	(B-A)/C Mean Dry Organism Weight (mg)	(if applicable) Mean Biomass (mg/exposed org.)
AT1-863	A	48	30.05	30.88	0.83	9	0.092	
	B	35	30.49	31.35	0.86	9	0.096	
	C	16	28.00	28.97	0.97	9	0.108	
	D	47	28.53	29.46	0.93	9	0.103	
	E	39	29.71	30.56	0.85	9	0.094	
	F	142	30.73	31.71	0.98	9	0.109	
	G	44	28.67	29.53	0.85	9	0.094	
	H	155	30.94	31.80	0.86	9	0.096	
AT1-864	A	148	28.31	29.05	0.74	8	0.093	
	B	70	26.68	27.24	0.56	8	0.070	
	C	62	28.35	29.16	0.81	7	0.116	
	D	151	29.63	30.22	0.59	8	0.074	
	E	122	28.22	28.88	0.66	9	0.073	
	F	95	30.84	31.30	0.46	8	0.058	
	G	135	28.14	28.72	0.58	8	0.073	
	H	78	27.46	28.08	0.62	8	0.078	

Dry wt. calculations checked (date, initials): 2/2/22, RJB

Biomass calculations checked (date, initials): N/A

(9) RJB 2/2/22

WEIGHT DATA (Test Species: *H. azteca*)

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Tin Lot: Red 270

Oven Temp (°C): Start: 100 End: 95

	Date	Time	Initials
Loaded tins placed in oven:	12/20/2021	1449	JR
Loaded tins removed from oven:	1/20/2022	1203	JR
Loaded tins weighed:	1/21/2022	1349	JR

Oven Number: BLM-01 / G4-009646 Balance Number: TS-L-225.C / P0115825

Test Concentration	Rep	Tin #	A Weight of Tin (mg)	B Weight of Tin and Dried Organisms (mg)	B-A Total Dry Organism Weight (mg)	C Number of Organisms Weighed	(B-A)/C Mean Dry Organism Weight (mg)	(if applicable) Mean Biomass (mg/exposed org.)
AT1-865	A	31	26.47	26.66	0.19	4	0.048	
	B	8	28.47	28.68	0.21	4	0.053	
	C	75	28.41	28.60	0.19	4	0048	
	D	54	29.92	30.21	0.29	4	0.073	
	E	67	28.46	28.69	0.23	3	0.077	
	F	55	28.47	28.66	0.19	4	0.048	
	G	79	30.00	30.23	0.23	3	0.077	
	H	88	28.08	28.41	0.33	3	0.110	
AT1-866	A	152	29.76	30.07	0.31	5	0.062	
	B	77	29.15	29.59	0.44	5	0.088	
	C	51	29.10	29.30	0.20	6	0.033	
	D	116	30.27	30.64	0.37	4	0.093	
	E	1	28.94	29.25	0.31	5	0.062	
	F	83	28.88	29.05	0.17	4	0.043	
	G	65	29.52	29.75	0.23	5	0.046	
	H	5	27.41	27.84	0.43	5	0.086	

Dry wt. calculations checked (date, initials): 2/2/22, RSB

Biomass calculations checked (date, initials): N/A

WEIGHT DATA (Test Species: *H. azteca*)

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Tin Lot: Red 270

Oven Temp (°C): Start: 100 End: 95

	Date	Time	Initials
Loaded tins placed in oven:	12/20/2021	1449	JR
Loaded tins removed from oven:	1/20/2022	1203	JR
Loaded tins weighed:	1/20/2022	1349	JR

Oven Number: BLM-01 / G4-009646 Balance Number: TS-L-225.C / P0115825

Test Concentration	Rep	Tin #	A Weight of Tin (mg)	B Weight of Tin and Dried Organisms (mg)	B-A Total Dry Organism Weight (mg)	C Number of Organisms Weighed	(B-A)/C Mean Dry Organism Weight (mg)	(if applicable) Mean Biomass (mg/exposed org.)
AT1-867	A	130	27.25	27.37	0.12	6	0.020	
	B	32	29.68	29.94	0.26	6	0.043	
	C	87	29.56	29.75	0.19	5	0.038	
	D	105	29.73	30.04	0.31	6	0.052	
	E	52	28.05	28.42	0.37	7	0.053	
	F	60	28.74	28.94	0.20	5	0.040	
	G	63	29.21	29.75	0.54	4	0.135	
	H	74	28.49	28.81	0.32	5	0.064	
AT1-868	A	123	28.87	29.17	0.30	6	0.050	
	B	41	28.50	28.81	0.31	6	0.052	
	C	107	29.54	29.93	0.39	6	0.065	
	D	30	30.10	30.30	0.20	5	0.040	
	E	93	29.33	29.63	0.30	6	0.050	
	F	71	29.30	29.55	0.25	6	0.042	
	G	9	30.19	30.48	0.29	6	0.048	
	H	118	28.76	29.15	0.39	6	0.065	

Dry wt. calculations checked (date, initials): 2/2/22, RSR

Biomass calculations checked (date, initials): N/A

WEIGHT DATA (Test Species: *H. azteca*)

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Tin Lot: Red 270

Oven Temp (°C): Start: 100 End: 95

	Date	Time	Initials
Loaded tins placed in oven:	12/20/2021	1449	JR
Loaded tins removed from oven:	1/20/2022	1203	JR
Loaded tins weighed:	1/20/2022	1349	JR

Oven Number: BLM-01 / G4-009646 Balance Number: TS-L-225.C / P0115825

Test Concentration	Rep	Tin #	A Weight of Tin (mg)	B Weight of Tin and Dried Organisms (mg)	B-A Total Dry Organism Weight (mg)	C Number of Organisms Weighed	(B-A)/C Mean Dry Organism Weight (mg)	(if applicable) Mean Biomass (mg/exposed org.)
AT1-869	A	139	30.01	30.13	0.12	8	0.015	
	B	120	27.22	27.53	0.31	7	0.044	
	C	124	27.50	27.66	0.16	8	0.020	
	D	109	28.25	28.46	0.21	7	0.030	
	E	19	29.40	29.51	0.11	8	0.014	
	F	4	29.39	29.56	0.17	6	0.028	
	G	127	27.13	27.47	0.34	7	0.049	
	H	23	28.97	29.23	0.26	8	0.033	
AT1-870	A	76	28.63	28.84	0.21	7	0.030	
	B	126	27.89	28.21	0.32	8	0.040	
	C	24	28.65	28.92	0.27	8	0.034	
	D	112	29.48	29.71	0.23	7	0.033	
	E	73	29.13	29.36	0.23	8	0.029	
	F	102	28.91	29.06	0.15	7	0.021	
	G	37	28.94	29.05	0.11	7	0.016	
	H	110	30.19	30.53	0.34	7	0.049	

Dry wt. calculations checked (date, initials): 2/2/22, RSB

Biomass calculations checked (date, initials): N/A

WEIGHT DATA (Test Species: *H. azteca*)

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Tin Lot: Red 270

Oven Temp (°C): Start: 100 End: 95

	Date	Time	Initials
Loaded tins placed in oven:	12/20/2021	1449	JR
Loaded tins removed from oven:	1/20/2022	1203	JR
Loaded tins weighed:	1/20/2022	1349	JR

Oven Number: BLM-01 / G4-009646 Balance Number: TS-L-225.C / P0115825

Test Concentration	Rep	Tin #	A Weight of Tin (mg)	B Weight of Tin and Dried Organisms (mg)	B-A Total Dry Organism Weight (mg)	C Number of Organisms Weighed	(B-A)/C Mean Dry Organism Weight (mg)	(if applicable) Mean Biomass (mg/exposed org.)
AT1-871	A	143	28.37	28.89	0.52	9	0.058	
	B	64	30.52	30.85	0.33	8	0.041	
	C	21	29.08	29.38	0.30	7	0.043	
	D	132	29.11	29.45	0.34	8	0.043	
	E	42	28.78	29.15	0.37	9	0.041	
	F	46	28.90	29.14	0.24	8	0.030	
	G	-2	28.33	28.73	0.40	9	0.044	
	H	38	29.20	29.53	0.33	8	0.041	
AT1-872	A	153	28.17	28.69	0.52	8	0.065	
	B	150	27.89	28.39	0.50	7	0.071	
	C	128	27.50	27.86	0.36	9	0.040	
	D	49	27.92	28.15	0.23	8	0.029	
	E	100	30.53	30.90	0.37	7	0.053	
	F	138	29.52	29.85	0.33	6	0.055	
	G	114	28.27	28.62	0.35	7	0.050	
	H	91	29.54	29.95	0.41	7	0.059	

Dry wt. calculations checked (date, initials): 2/4/22, RSB

Biomass calculations checked (date, initials): N/A

WEIGHT DATA (Test Species: *H. azteca*)

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Tin Lot: Red 270

Oven Temp (°C): Start: 100 End: 95

	Date	Time	Initials
Loaded tins placed in oven:	12/20/2021	1449	JR
Loaded tins removed from oven:	1/20/2022	1203	JR
Loaded tins weighed:	1/20/2022	1349	JR

Oven Number: BLM-01 / G4-009646 Balance Number: TS-L-225.C / P0115825

Test Concentration	Rep	Tin #	A Weight of Tin (mg)	B Weight of Tin and Dried Organisms (mg)	B-A Total Dry Organism Weight (mg)	C Number of Organisms Weighed	(B-A)/C Mean Dry Organism Weight (mg)	(if applicable) Mean Biomass (mg/exposed org.)
AT1-873	A	97	29.45	30.11	0.66	9	0.073	
	B	117	29.64	30.11	0.47	8	0.059	
	C	12	29.85	30.36	0.51	9	0.057	
	D	94	27.68	28.43	0.75	7	0.107	
	E	50	28.12	28.46	0.34	8	0.043	
	F	13	29.27	29.95	0.68	9	0.076	
	G	66	28.18	28.53	0.35	9	0.039	
	H	131	29.81	30.38	0.57	9	0.063	

Dry wt. calculations checked (date, initials): 2/2/22, NSI

Biomass calculations checked (date, initials): N/A

TOXICITY TEST WATER QUALITY DATA SHEET - NEW SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-788

TEST ORGANISM
Common Name: Amphipod
Scientific Name: *H. azteca*

Beginning Date: 12/10/21 Time: 1255
Ending Date: 12/20/21 Time: 1300

TARGET VALUES: Temp: 23±1 °C pH: 6.0 - 9.0 DO: >4.0 mg/L Salinity: 0 ppt Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Test Conc	Rep	Temperature (°C)							pH							Dissolved Oxygen (mg/L)							Conductivity (µS/cm)						
		0	1	2	3	4	5	6	0	1	2	3	4	5	6	0	1	2	3	4	5	6	0	1	2	3	4	5	6
Control (AT1-697)		22.0							7.5							7.4							327						
AT1-862		22.0							7.4							7.4							342						
AT1-863		22.0							7.4							7.2							335						
AT1-864		22.0							7.4							7.3							330						
AT1-865		22.3							7.4							7.5							345						
AT1-866		22.2							7.4							7.3							359						
AT1-867		22.2							7.5							7.3							360						
AT1-868		22.1							7.5							7.2							339						
AT1-869		22.2							7.5							7.2							339						
AT1-870		22.0							7.5							7.2							338						
AT1-871		22.1							7.5							7.3							343						
AT1-872		22.3							7.5							7.4							346						
AT1-873		22.1							7.5							7.3							337						
Meter Number		681							681							681							681						
Time		1115							1115							1115							1115						
Initials		MT							MT							MT							MT						

TOXICITY TEST WATER QUALITY DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-788

TEST ORGANISM
Common Name: Amphipod
Scientific Name: *H. azteca*

Beginning Date: 12/10/21 Time: 1255
Ending Date: 12/20/21 Time: 1300

TARGET VALUES Temp: 23±1 °C pH: 6.0 - 9.0 DO: ≥4.0 mg/L Salinity: 0 ppt Photoperiod: 16 l, 8 d Light Intensity: 50 - 100 fc

Test Conc	Rep	Temperature (°C)							pH							Dissolved Oxygen (mg/L)							Conductivity (µS/cm)						
		1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Control (AT1-697)		22.4	22.0	22.0	22.0	22.0	22.0	22.0	7.9	8.0	7.7	7.9	7.5	7.6	8.0	6.4	8.5	9.2	8.4	8.0	7.8	8.5	345	346	352	345	341	347	347
AT1-862		22.2	22.0	22.0	22.0	22.0	22.0	22.0	7.8	7.9	7.6	7.9	7.5	7.6	8.0	6.9	8.3	8.8	8.4	8.1	8.0	7.9	362	352	360	355	357	353	358
AT1-863		22.2	22.0	22.0	22.0	22.0	22.0	22.0	7.8	7.9	7.6	7.8	7.5	7.6	8.0	7.1	8.1	8.5	8.5	8.0	8.5	7.9	356	346	353	347	347	349	351
AT1-864		22.1	22.0	22.0	22.0	22.0	22.0	22.0	7.9	7.9	7.6	7.8	7.5	7.6	8.0	7.4	8.2	8.6	8.7	8.6	8.6	8.2	351	347	350	344	346	348	350
AT1-865		22.0	22.0	22.0	22.0	22.0	22.0	22.0	7.9	7.9	7.6	7.8	7.5	7.6	8.0	8.0	8.4	8.5	8.6	8.6	8.5	8.3	359	353	357	345	347	348	351
AT1-866		22.1	22.0	22.0	22.0	22.0	22.0	22.0	7.8	7.9	7.6	7.7	7.5	7.6	8.0	8.0	8.2	8.4	8.7	8.3	8.5	8.3	365	357	363	351	351	354	355
AT1-867		22.1	22.0	22.0	22.0	22.0	22.0	22.0	7.8	7.9	7.6	7.7	7.5	7.6	8.0	8.0	8.3	8.2	8.6	8.4	8.3	8.2	366	371	382	359	358	354	354
AT1-868		22.1	22.0	22.0	22.0	22.0	22.0	22.0	7.8	7.9	7.6	7.7	7.5	7.6	8.0	8.1	8.1	8.1	8.7	8.4	8.4	8.1	369	367	366	359	357	357	358
AT1-869		22.2	22.0	22.0	22.0	22.0	22.0	22.0	7.8	7.8	7.6	7.7	7.5	7.6	8.0	7.9	8.0	8.1	8.5	8.4	8.2	8.1	378	376	368	359	358	360	360
AT1-870		22.1	22.0	22.0	22.0	22.0	22.0	22.0	7.8	7.8	7.6	7.7	7.5	7.6	8.0	7.9	7.9	6.7	8.4	8.4	8.0	8.0	361	355	352	355	351	358	360
AT1-871		22.1	22.0	22.0	22.0	22.0	22.0	22.0	7.8	7.8	7.6	7.7	7.5	7.6	7.9	8.0	8.1	7.3	8.3	8.6	8.0	7.9	371	369	369	359	357	359	362
AT1-872		22.1	22.0	22.0	22.0	22.0	22.0	22.0	7.8	7.8	7.6	7.7	7.5	7.6	7.9	8.0	7.9	7.3	8.4	8.5	8.2	7.9	367	363	369	353	353	353	355
AT1-873		22.1	22.0	22.0	22.0	22.0	22.0	22.0	7.8	7.8	7.6	7.7	7.5	7.6	7.9	7.9	8.9	7.6	8.3	8.2	8.0	8.1	367	364	371	364	374	381	390
Meter Number		680	681	680	680	681	681	681	680	681	680	680	681	681	681	680	681	680	680	681	681	681	680	681	680	680	681	681	681
Time		0905	1017	0826	0937	0818	0837	0814	0905	1017	0826	0937	0818	0837	0814	0905	1017	0826	0937	0818	0837	0814	0905	1017	0826	0937	0818	0837	0814
Initials		MT	SL	SL	MT	AY	AY	TP	MT	SL	SL	MT	AY	AY	TP	MT	SL	SL	MT	AY	AY	TP	MT	SL	SL	MT	AY	AY	TP

TOXICITY TEST WATER QUALITY DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-788

TEST ORGANISM
Common Name: Amphipod
Scientific Name: *H. azteca*

Beginning Date: 12/16/21 Time: 1255
Ending Date: 12/20/21 Time: 1300

TARGET VALUES Temp: 23±1 °C pH: 6.0 - 9.0 DO: ≥4.0 mg/L Salinity: 0 ppt Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Test Conc	Rep	Temperature (°C)							pH							Dissolved Oxygen (mg/L)							Conductivity (µS/cm)						
		8	9	10	11	12	13	14	8	9	10	11	12	13	14	8	9	10	11	12	13	14	8	9	10	11	12	13	14
Control (AT1-697)		22.0	22.0	22.0					8.1	7.7	7.6					7.7	8.5	8.7					347	352	362				
AT1-862		22.0	22.0	22.0					8.0	7.7	7.6					7.6	8.2	8.5					360	365	371				
AT1-863		22.0	22.0	22.0					8.0	7.6	7.6					7.9	8.0	8.2					351	357	372				
AT1-864		22.0	22.0	22.0					7.9	7.8	7.6					8.1	8.2	8.0					352	357	370				
AT1-865		22.0	22.0	22.0					7.9	7.8	7.6					8.3	8.4	8.5					352	356	370				
AT1-866		22.0	22.0	22.0					7.8	7.8	7.6					8.4	8.4	8.3					356	360	371				
AT1-867		22.0	22.0	22.0					7.8	7.8	7.6					8.4	8.1	8.3					362	363	375				
AT1-868		22.0	22.0	22.0					7.8	7.8	7.6					8.3	8.0	8.3					359	361	376				
AT1-869		22.0	22.0	22.0					7.8	7.8	7.6					8.2	8.0	8.1					361	367	375				
AT1-870		22.0	22.0	22.0					7.7	7.8	7.6					8.2	8.0	8.0					362	360	372				
AT1-871		22.0	22.0	22.0					7.7	7.8	7.6					8.2	8.1	8.2					364	367	378				
AT1-872		22.0	22.0	22.0					7.7	7.8	7.6					8.1	8.1	8.1					357	360	374				
AT1-873		22.0	22.0	22.0					7.7	7.8	7.7					8.1	8.2	8.3					388	365	372				
Meter Number		680	650	681					680	680	681					680	680	681					680	650	681				
Time		0811	1140	1011					0811	1140	1011					0811	1140	1011					0811	1140	1011				
Initials		TP	SL	SL					TP	SL	SL					TP	SL	SL					TP	SL	SL				

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Day	Testing Location	Date	Time	Initials
0	55A	12/10/21	1620	ASB
1	55A	12/11/21	1600	
2	55A	12/12/21	1004	SC
3	55A	12/13/21	0815	SC
4	55A	12/14/21	1435	JR
5	55A	12/15/21	0810	AH
6	55A	12/16/21	0835	MH
7	55A	12/17/21	0803	JR
8	55A	12/18/21	1555	
9	55A	12/19/21	1150	SC
10	55A	12/20/21	1012	SC
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOXICOLOGY LABORATORY BENCH SHEET - RENEWAL RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Day	Date	Time		Initials
0	12/10/21	AM	0910	TP
		PM	1620	NB
1	12/11/21	AM	0830	TP
		PM	1550	TP
2	12/12/21	AM	0958	SL
		PM	1440	AM
3	12/13/21	AM	0815	SL
		PM	1601	LAD
4	12/14/21	AM	0910	TP
		PM	1435	JR
5	12/15/21	AM	0810	AM
		PM	1500	TP
6	12/16/21	AM	0830	AM
		PM	1527	AM
7	12/17/2021	AM	0802	JR
		PM	1418	LAD
8	12/18/21	AM	0800	TP
		PM	1545	TP
9	12/19/21	AM	1125	SL
		PM	1553	SL
10	12/20/21	AM	0836	LAD
		PM		

TOXICOLOGY LABORATORY BENCH SHEET - FEEDING RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Food: 1 ml YCT per beaker daily

Day	Date	Time	Initials
0	12|10|21	1631	NJB
1	12|11|21	1625	[illegible]
2	12|12|21	1508	[illegible]
3	12|13|21	1724	[illegible]
4	12|14|21	1453	JR
5	12|15|21	1515	[illegible]
6	12|16|21	1540	[illegible]
7	12|17|21	1437	[illegible]
8	12|18|21	1555	[illegible]
9	12|19|21	1601	SL
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Date/Time/Initials	Comments/Activity

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-788

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9125	1.0000	1.2694	1.2490	1.4120	4.539	8		
*AT1-862	0.5625	0.6164	0.8483	0.7854	0.8861	6.142	8	36.00	47.00
AT1-863	0.9000	0.9863	1.2490	1.2490	1.2490	0.000	8	64.00	47.00
*AT1-864	0.8000	0.8767	1.1104	0.9912	1.2490	6.231	8	39.50	47.00
*AT1-865	0.3625	0.3973	0.6453	0.5796	0.6847	8.427	8	36.00	47.00
*AT1-866	0.4875	0.5342	0.7728	0.6847	0.8861	8.349	8	36.00	47.00
*AT1-867	0.5500	0.6027	0.8363	0.6847	0.9912	11.268	8	36.00	47.00
*AT1-868	0.5875	0.6438	0.8735	0.7854	0.8861	4.075	8	36.00	47.00
*AT1-869	0.7375	0.8082	1.0360	0.8861	1.1071	8.056	8	36.00	47.00
*AT1-870	0.7375	0.8082	1.0347	0.9912	1.1071	5.802	8	36.00	47.00
*AT1-871	0.8250	0.9041	1.1459	0.9912	1.2490	8.205	8	46.50	47.00
*AT1-872	0.7375	0.8082	1.0393	0.8861	1.2490	10.662	8	39.50	47.00
AT1-873	0.8500	0.9315	1.1813	0.9912	1.2490	8.471	8	53.50	47.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.93433	1.035	-0.0003	0.69225
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Rank Sum Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9125	1.0000	1.2694	1.2490	1.4120	4.539	8		
*AT1-862	0.5625	0.6164	0.8483	0.7854	0.8861	6.142	8	36.00	51.00
AT1-863	0.9000	0.9863	1.2490	1.2490	1.2490	0.000	8		
AT1-864	0.8000	0.8767	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.3973	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5342	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6027	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6438	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8082	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8082	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9041	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8082	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9315	1.1813	0.9912	1.2490	8.471	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.83611	0.844	1.20415	2.21882
F-Test indicates equal variances (p = 0.80)	1.22277	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9125	1.0000	1.2694	1.2490	1.4120	4.539	8		
AT1-862	0.5625	0.6164	0.8483	0.7854	0.8861	6.142	8		
AT1-863	0.9000	0.9863	1.2490	1.2490	1.2490	0.000	8	64.00	51.00
AT1-864	0.8000	0.8767	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.3973	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5342	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6027	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6438	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8082	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8082	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9041	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8082	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9315	1.1813	0.9912	1.2490	8.471	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.4689	0.844	3.54891	13.5047
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9125	1.0000	1.2694	1.2490	1.4120	4.539	8		
AT1-862	0.5625	0.6164	0.8483	0.7854	0.8861	6.142	8		
AT1-863	0.9000	0.9863	1.2490	1.2490	1.2490	0.000	8		
*AT1-864	0.8000	0.8767	1.1104	0.9912	1.2490	6.231	8	39.50	51.00
AT1-865	0.3625	0.3973	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5342	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6027	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6438	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8082	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8082	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9041	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8082	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9315	1.1813	0.9912	1.2490	8.471	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.69016	0.844	1.24801	3.15891
F-Test indicates equal variances (p = 0.64)	1.44173	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Reviewed by: OR

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.9125	1.0000	1.2694	1.2490	1.4120	4.539	8			
AT1-862	0.5625	0.6164	0.8483	0.7854	0.8861	6.142	8			
AT1-863	0.9000	0.9863	1.2490	1.2490	1.2490	0.000	8			
AT1-864	0.8000	0.8767	1.1104	0.9912	1.2490	6.231	8			
*AT1-865	0.3625	0.3973	0.6453	0.5796	0.6847	8.427	8	22.280	1.761	0.0493
AT1-866	0.4875	0.5342	0.7728	0.6847	0.8861	8.349	8			
AT1-867	0.5500	0.6027	0.8363	0.6847	0.9912	11.268	8			
AT1-868	0.5875	0.6438	0.8735	0.7854	0.8861	4.075	8			
AT1-869	0.7375	0.8082	1.0360	0.8861	1.1071	8.056	8			
AT1-870	0.7375	0.8082	1.0347	0.9912	1.1071	5.802	8			
AT1-871	0.8250	0.9041	1.1459	0.9912	1.2490	8.205	8			
AT1-872	0.7375	0.8082	1.0393	0.8861	1.2490	10.662	8			
AT1-873	0.8500	0.9315	1.1813	0.9912	1.2490	8.471	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.84427	0.844	1.10357	1.89356
F-Test indicates equal variances (p = 0.88)	1.1225	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.02993	0.03282	1.55802	0.00314	2.5E-12	1, 14

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9125	1.0000	1.2694	1.2490	1.4120	4.539	8		
AT1-862	0.5625	0.6164	0.8483	0.7854	0.8861	6.142	8		
AT1-863	0.9000	0.9863	1.2490	1.2490	1.2490	0.000	8		
AT1-864	0.8000	0.8767	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.3973	0.6453	0.5796	0.6847	8.427	8		
*AT1-866	0.4875	0.5342	0.7728	0.6847	0.8861	8.349	8	36.00	51.00
AT1-867	0.5500	0.6027	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6438	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8082	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8082	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9041	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8082	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9315	1.1813	0.9912	1.2490	8.471	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.82292	0.844	1.08407	2.00921
F-Test indicates equal variances (p = 0.77)	1.25398	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Reviewed by: ok

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.9125	1.0000	1.2694	1.2490	1.4120	4.539	8			
AT1-862	0.5625	0.6164	0.8483	0.7854	0.8861	6.142	8			
AT1-863	0.9000	0.9863	1.2490	1.2490	1.2490	0.000	8			
AT1-864	0.8000	0.8767	1.1104	0.9912	1.2490	6.231	8			
AT1-865	0.3625	0.3973	0.6453	0.5796	0.6847	8.427	8			
AT1-866	0.4875	0.5342	0.7728	0.6847	0.8861	8.349	8			
*AT1-867	0.5500	0.6027	0.8363	0.6847	0.9912	11.268	8	11.091	1.761	0.0688
AT1-868	0.5875	0.6438	0.8735	0.7854	0.8861	4.075	8			
AT1-869	0.7375	0.8082	1.0360	0.8861	1.1071	8.056	8			
AT1-870	0.7375	0.8082	1.0347	0.9912	1.1071	5.802	8			
AT1-871	0.8250	0.9041	1.1459	0.9912	1.2490	8.205	8			
AT1-872	0.7375	0.8082	1.0393	0.8861	1.2490	10.662	8			
AT1-873	0.8500	0.9315	1.1813	0.9912	1.2490	8.471	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.87682	0.844	0.54053	1.07449
F-Test indicates equal variances (p = 0.22)	2.67492	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.04276	0.04689	0.7504	0.0061	2.6E-08	1, 14

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

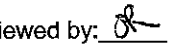
Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9125	1.0000	1.2694	1.2490	1.4120	4.539	8		
AT1-862	0.5625	0.6164	0.8483	0.7854	0.8861	6.142	8		
AT1-863	0.9000	0.9863	1.2490	1.2490	1.2490	0.000	8		
AT1-864	0.8000	0.8767	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.3973	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5342	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6027	0.8363	0.6847	0.9912	11.268	8		
*AT1-868	0.5875	0.6438	0.8735	0.7854	0.8861	4.075	8	36.00	51.00
AT1-869	0.7375	0.8082	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8082	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9041	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8082	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9315	1.1813	0.9912	1.2490	8.471	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.72773	0.844	1.67003	6.62189
F-Test indicates equal variances (p = 0.23)	2.62023	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Reviewed by: 

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.9125	1.0000	1.2694	1.2490	1.4120	4.539	8			
AT1-862	0.5625	0.6164	0.8483	0.7854	0.8861	6.142	8			
AT1-863	0.9000	0.9863	1.2490	1.2490	1.2490	0.000	8			
AT1-864	0.8000	0.8767	1.1104	0.9912	1.2490	6.231	8			
AT1-865	0.3625	0.3973	0.6453	0.5796	0.6847	8.427	8			
AT1-866	0.4875	0.5342	0.7728	0.6847	0.8861	8.349	8			
AT1-867	0.5500	0.6027	0.8363	0.6847	0.9912	11.268	8			
AT1-868	0.5875	0.6438	0.8735	0.7854	0.8861	4.075	8			
*AT1-869	0.7375	0.8082	1.0360	0.8861	1.1071	8.056	8	6.509	1.761	0.0632
AT1-870	0.7375	0.8082	1.0347	0.9912	1.1071	5.802	8			
AT1-871	0.8250	0.9041	1.1459	0.9912	1.2490	8.205	8			
AT1-872	0.7375	0.8082	1.0393	0.8861	1.2490	10.662	8			
AT1-873	0.8500	0.9315	1.1813	0.9912	1.2490	8.471	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.87534	0.844	0.14623	0.76592
F-Test indicates equal variances (p = 0.35)	2.09808	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.03899	0.04276	0.2179	0.00514	1.4E-05	1, 14

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9125	1.0000	1.2694	1.2490	1.4120	4.539	8		
AT1-862	0.5625	0.6164	0.8483	0.7854	0.8861	6.142	8		
AT1-863	0.9000	0.9863	1.2490	1.2490	1.2490	0.000	8		
AT1-864	0.8000	0.8767	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.3973	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5342	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6027	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6438	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8082	1.0360	0.8861	1.1071	8.056	8		
*AT1-870	0.7375	0.8082	1.0347	0.9912	1.1071	5.802	8	36.00	51.00
AT1-871	0.8250	0.9041	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8082	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9315	1.1813	0.9912	1.2490	8.471	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.72407	0.844	1.48182	1.21055
F-Test indicates equal variances (p = 0.92)	1.08551	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9125	1.0000	1.2694	1.2490	1.4120	4.539	8		
AT1-862	0.5625	0.6164	0.8483	0.7854	0.8861	6.142	8		
AT1-863	0.9000	0.9863	1.2490	1.2490	1.2490	0.000	8		
AT1-864	0.8000	0.8767	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.3973	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5342	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6027	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6438	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8082	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8082	1.0347	0.9912	1.1071	5.802	8		
*AT1-871	0.8250	0.9041	1.1459	0.9912	1.2490	8.205	8	46.50	51.00
AT1-872	0.7375	0.8082	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9315	1.1813	0.9912	1.2490	8.471	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.81235	0.844	0.39249	0.42771
F-Test indicates equal variances (p = 0.22)	2.66226	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9125	1.0000	1.2694	1.2490	1.4120	4.539	8		
AT1-862	0.5625	0.6164	0.8483	0.7854	0.8861	6.142	8		
AT1-863	0.9000	0.9863	1.2490	1.2490	1.2490	0.000	8		
AT1-864	0.8000	0.8767	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.3973	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5342	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6027	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6438	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8082	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8082	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9041	1.1459	0.9912	1.2490	8.205	8		
*AT1-872	0.7375	0.8082	1.0393	0.8861	1.2490	10.662	8	39.50	51.00
AT1-873	0.8500	0.9315	1.1813	0.9912	1.2490	8.471	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.8353	0.844	1.06246	1.86868
F-Test indicates equal variances (p = 0.11)	3.6984	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.9125	1.0000	1.2694	1.2490	1.4120	4.539	8			
AT1-862	0.5625	0.6164	0.8483	0.7854	0.8861	6.142	8			
AT1-863	0.9000	0.9863	1.2490	1.2490	1.2490	0.000	8			
AT1-864	0.8000	0.8767	1.1104	0.9912	1.2490	6.231	8			
AT1-865	0.3625	0.3973	0.6453	0.5796	0.6847	8.427	8			
AT1-866	0.4875	0.5342	0.7728	0.6847	0.8861	8.349	8			
AT1-867	0.5500	0.6027	0.8363	0.6847	0.9912	11.268	8			
AT1-868	0.5875	0.6438	0.8735	0.7854	0.8861	4.075	8			
AT1-869	0.7375	0.8082	1.0360	0.8861	1.1071	8.056	8			
AT1-870	0.7375	0.8082	1.0347	0.9912	1.1071	5.802	8			
AT1-871	0.8250	0.9041	1.1459	0.9912	1.2490	8.205	8			
AT1-872	0.7375	0.8082	1.0393	0.8861	1.2490	10.662	8			
*AT1-873	0.8500	0.9315	1.1813	0.9912	1.2490	8.471	8	2.157	1.761	0.0719

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.89721	0.844	-0.5126	1.15065
F-Test indicates equal variances (p = 0.17)	3.01637	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.04488	0.04921	0.03103	0.00667	0.04883	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8	S.D.
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022	0.01968
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620	0.01392
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956	0.0066
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775	0.01764
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100	0.02208
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860	0.0227
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640	0.03458
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650	0.00932
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325	0.01276
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486	0.01022
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413	0.00754
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586	0.01354
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633	0.02156

			Transform: Untransformed					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.1249	1.0000	0.1249	0.1022	0.1544	15.754	8		
*AT1-862	0.0663	0.5302	0.0663	0.0417	0.0900	21.013	8	36.00	47.00
*AT1-863	0.0990	0.7926	0.0990	0.0922	0.1089	6.663	8	43.50	47.00
*AT1-864	0.0791	0.6331	0.0791	0.0575	0.1157	22.298	8	39.00	47.00
*AT1-865	0.0664	0.5311	0.0664	0.0475	0.1100	33.281	8	39.00	47.00
*AT1-866	0.0640	0.5126	0.0640	0.0333	0.0925	35.445	8	36.00	47.00
*AT1-867	0.0556	0.4451	0.0556	0.0200	0.1350	62.180	8	40.00	47.00
*AT1-868	0.0515	0.4118	0.0515	0.0400	0.0650	18.111	8	36.00	47.00
*AT1-869	0.0291	0.2325	0.0291	0.0138	0.0486	43.921	8	36.00	47.00
*AT1-870	0.0314	0.2512	0.0314	0.0157	0.0486	32.559	8	36.00	47.00
*AT1-871	0.0426	0.3413	0.0426	0.0300	0.0578	17.690	8	36.00	47.00
*AT1-872	0.0527	0.4218	0.0527	0.0288	0.0714	25.699	8	36.00	47.00
*AT1-873	0.0645	0.5164	0.0645	0.0389	0.1071	33.418	8	39.00	47.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.10656	1.035	1.23919	4.18444
Bartlett's Test indicates unequal variances (p = 4.98E-04)	34.8347	26.217		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Rank Sum Test indicates significant differences

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.1249	1.0000	0.1249	0.1022	0.1544	15.754	8			
*AT1-862	0.0663	0.5302	0.0663	0.0417	0.0900	21.013	8	6.886	1.761	0.0150
AT1-863	0.0990	0.7926	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	0.6331	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.5311	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.5126	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.4451	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.4118	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2325	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.2512	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.3413	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.4218	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.5164	0.0645	0.0389	0.1071	33.418	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94724	0.844	-0.0278	-0.742
F-Test indicates equal variances (p = 0.38)	1.9993	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.01501	0.12016	0.01378	0.00029	7.5E-06	1, 14

Reviewed by: RSB

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.1249	1.0000	0.1249	0.1022	0.1544	15.754	8			
AT1-862	0.0663	0.5302	0.0663	0.0417	0.0900	21.013	8			
*AT1-863	0.0990	0.7926	0.0990	0.0922	0.1089	6.663	8	3.531	1.860	0.0136
AT1-864	0.0791	0.6331	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.5311	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.5126	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.4451	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.4118	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2325	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.2512	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.3413	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.4218	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.5164	0.0645	0.0389	0.1071	33.418	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94532	0.844	0.02346	0.02624
F-Test indicates unequal variances (p = 9.95E-03)	8.899	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates significant differences	0.01365	0.10924	0.00269	0.00022	0.00332	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.1249	1.0000	0.1249	0.1022	0.1544	15.754	8			
AT1-862	0.0663	0.5302	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	0.7926	0.0990	0.0922	0.1089	6.663	8			
*AT1-864	0.0791	0.6331	0.0791	0.0575	0.1157	22.298	8	4.906	1.761	0.0165
AT1-865	0.0664	0.5311	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.5126	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.4451	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.4118	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2325	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.2512	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.3413	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.4218	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.5164	0.0645	0.0389	0.1071	33.418	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.93095	0.844	0.51504	-0.3752
F-Test indicates equal variances (p = 0.78)	1.24557	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.01646	0.13173	0.00841	0.00035	2.3E-04	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.1249	1.0000	0.1249	0.1022	0.1544	15.754	8			
AT1-862	0.0663	0.5302	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	0.7926	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	0.6331	0.0791	0.0575	0.1157	22.298	8			
*AT1-865	0.0664	0.5311	0.0664	0.0475	0.1100	33.281	8	5.602	1.761	0.0184
AT1-866	0.0640	0.5126	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.4451	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.4118	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2325	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.2512	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.3413	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.4218	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.5164	0.0645	0.0389	0.1071	33.418	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.88464	0.844	0.57755	-0.3837
F-Test indicates equal variances (p = 0.77)	1.25865	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.01842	0.14744	0.01373	0.00044	6.5E-05	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.1249	1.0000	0.1249	0.1022	0.1544	15.754	8			
AT1-862	0.0663	0.5302	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	0.7926	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	0.6331	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.5311	0.0664	0.0475	0.1100	33.281	8			
*AT1-866	0.0640	0.5126	0.0640	0.0333	0.0925	35.445	8	5.733	1.761	0.0187
AT1-867	0.0556	0.4451	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.4118	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2325	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.2512	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.3413	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.4218	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.5164	0.0645	0.0389	0.1071	33.418	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.91242	0.844	0.02031	-1.5047
F-Test indicates equal variances (p = 0.72)	1.32986	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.01871	0.14975	0.01484	0.00045	5.2E-05	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.1249	1.0000	0.1249	0.1022	0.1544	15.754	8			
AT1-862	0.0663	0.5302	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	0.7926	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	0.6331	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.5311	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.5126	0.0640	0.0333	0.0925	35.445	8			
*AT1-867	0.0556	0.4451	0.0556	0.0200	0.1350	62.180	8	4.929	1.761	0.0248
AT1-868	0.0515	0.4118	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2325	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.2512	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.3413	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.4218	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.5164	0.0645	0.0389	0.1071	33.418	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.86122	0.844	1.68648	4.14505
F-Test indicates equal variances (p = 0.16)	3.08556	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.02478	0.1983	0.01923	0.00079	2.2E-04	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.1249	1.0000	0.1249	0.1022	0.1544	15.754	8			
AT1-862	0.0663	0.5302	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	0.7926	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	0.6331	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.5311	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.5126	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.4451	0.0556	0.0200	0.1350	62.180	8			
*AT1-868	0.0515	0.4118	0.0515	0.0400	0.0650	18.111	8	9.544	1.761	0.0136
AT1-869	0.0291	0.2325	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.2512	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.3413	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.4218	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.5164	0.0645	0.0389	0.1071	33.418	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94893	0.844	0.052	-0.4726
F-Test indicates equal variances (p = 0.07)	4.46107	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.01356	0.10855	0.0216	0.00024	1.7E-07	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.1249	1.0000	0.1249	0.1022	0.1544	15.754	8			
AT1-862	0.0663	0.5302	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	0.7926	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	0.6331	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.5311	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.5126	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.4451	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.4118	0.0515	0.0400	0.0650	18.111	8			
*AT1-869	0.0291	0.2325	0.0291	0.0138	0.0486	43.921	8	11.561	1.761	0.0146
AT1-870	0.0314	0.2512	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.3413	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.4218	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.5164	0.0645	0.0389	0.1071	33.418	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95096	0.844	0.06785	-0.9937
F-Test indicates equal variances (p = 0.28)	2.37934	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.01461	0.11692	0.03678	0.00028	1.5E-08	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.1249	1.0000	0.1249	0.1022	0.1544	15.754	8			
AT1-862	0.0663	0.5302	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	0.7926	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	0.6331	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.5311	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.5126	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.4451	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.4118	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2325	0.0291	0.0138	0.0486	43.921	8			
*AT1-870	0.0314	0.2512	0.0314	0.0157	0.0486	32.559	8	11.932	1.761	0.0138
AT1-871	0.0426	0.3413	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.4218	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.5164	0.0645	0.0389	0.1071	33.418	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95708	0.844	0.01401	-0.5688
F-Test indicates equal variances (p = 0.10)	3.71079	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.01381	0.11054	0.03501	0.00025	1.0E-08	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.1249	1.0000	0.1249	0.1022	0.1544	15.754	8			
AT1-862	0.0663	0.5302	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	0.7926	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	0.6331	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.5311	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.5126	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.4451	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.4118	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2325	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.2512	0.0314	0.0157	0.0486	32.559	8			
*AT1-871	0.0426	0.3413	0.0426	0.0300	0.0578	17.690	8	11.042	1.761	0.0131
AT1-872	0.0527	0.4218	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.5164	0.0645	0.0389	0.1071	33.418	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.93747	0.844	0.03054	-0.0585
F-Test indicates equal variances (p = 0.02)	6.80713	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.01313	0.10506	0.02709	0.00022	2.7E-08	1, 14

Reviewed by: NSB

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.1249	1.0000	0.1249	0.1022	0.1544	15.754	8			
AT1-862	0.0663	0.5302	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	0.7926	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	0.6331	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.5311	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.5126	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.4451	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.4118	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2325	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.2512	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.3413	0.0426	0.0300	0.0578	17.690	8			
*AT1-872	0.0527	0.4218	0.0527	0.0288	0.0714	25.699	8	8.552	1.761	0.0149
AT1-873	0.0645	0.5164	0.0645	0.0389	0.1071	33.418	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.93583	0.844	-0.1297	-0.9016
F-Test indicates equal variances (p = 0.35)	2.11233	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.01488	0.11908	0.02088	0.00029	6.2E-07	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.1249	1.0000	0.1249	0.1022	0.1544	15.754	8			
AT1-862	0.0663	0.5302	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	0.7926	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	0.6331	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.5311	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.5126	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.4451	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.4118	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2325	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.2512	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.3413	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.4218	0.0527	0.0288	0.0714	25.699	8			
*AT1-873	0.0645	0.5164	0.0645	0.0389	0.1071	33.418	8	5.854	1.761	0.0182

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.92795	0.844	0.48995	-0.2516
F-Test indicates equal variances (p = 0.82)	1.19987	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.01818	0.14551	0.0146	0.00043	4.2E-05	1, 14

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID: TN-21-788	Sample ID: Swan Creek
End Date:	12/20/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: HA-Hyalella azteca
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
*AT1-862	0.5625	0.6250	0.8483	0.7854	0.8861	6.142	8	36.00	47.00
*AT1-864	0.8000	0.8889	1.1104	0.9912	1.2490	6.231	8	40.00	47.00
*AT1-865	0.3625	0.4028	0.6453	0.5796	0.6847	8.427	8	36.00	47.00
*AT1-866	0.4875	0.5417	0.7728	0.6847	0.8861	8.349	8	36.00	47.00
*AT1-867	0.5500	0.6111	0.8363	0.6847	0.9912	11.268	8	36.00	47.00
*AT1-868	0.5875	0.6528	0.8735	0.7854	0.8861	4.075	8	36.00	47.00
*AT1-869	0.7375	0.8194	1.0360	0.8861	1.1071	8.056	8	36.00	47.00
*AT1-870	0.7375	0.8194	1.0347	0.9912	1.1071	5.802	8	36.00	47.00
AT1-871	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8	48.00	47.00
*AT1-872	0.7375	0.8194	1.0393	0.8861	1.2490	10.662	8	40.00	47.00
AT1-873	0.8500	0.9444	1.1813	0.9912	1.2490	8.471	8	56.00	47.00
Control	0.9125	1.0139	1.2694	1.2490	1.4120	4.539	8	72.00	47.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.93433	1.035	-0.0003	0.69225
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Rank Sum Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
*AT1-862	0.5625	0.6250	0.8483	0.7854	0.8861	6.142	8	36.00	51.00
AT1-864	0.8000	0.8889	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4028	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5417	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6111	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6528	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8194	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8194	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8194	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9444	1.1813	0.9912	1.2490	8.471	8		
Control	0.9125	1.0139	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.7856	0.844	-0.8081	-0.1593
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.5625	0.6250	0.8483	0.7854	0.8861	6.142	8		
*AT1-864	0.8000	0.8889	1.1104	0.9912	1.2490	6.231	8	40.00	51.00
AT1-865	0.3625	0.4028	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5417	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6111	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6528	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8194	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8194	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8194	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9444	1.1813	0.9912	1.2490	8.471	8		
Control	0.9125	1.0139	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.53499	0.844	0.7006	7.70862
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.5625	0.6250	0.8483	0.7854	0.8861	6.142	8		
AT1-864	0.8000	0.8889	1.1104	0.9912	1.2490	6.231	8		
*AT1-865	0.3625	0.4028	0.6453	0.5796	0.6847	8.427	8	36.00	51.00
AT1-866	0.4875	0.5417	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6111	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6528	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8194	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8194	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8194	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9444	1.1813	0.9912	1.2490	8.471	8		
Control	0.9125	1.0139	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.7856	0.844	-0.8081	-0.1593
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.5625	0.6250	0.8483	0.7854	0.8861	6.142	8		
AT1-864	0.8000	0.8889	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4028	0.6453	0.5796	0.6847	8.427	8		
*AT1-866	0.4875	0.5417	0.7728	0.6847	0.8861	8.349	8	36.00	51.00
AT1-867	0.5500	0.6111	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6528	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8194	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8194	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8194	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9444	1.1813	0.9912	1.2490	8.471	8		
Control	0.9125	1.0139	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.70789	0.844	0.08512	3.81847
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8			
AT1-862	0.5625	0.6250	0.8483	0.7854	0.8861	6.142	8			
AT1-864	0.8000	0.8889	1.1104	0.9912	1.2490	6.231	8			
AT1-865	0.3625	0.4028	0.6453	0.5796	0.6847	8.427	8			
AT1-866	0.4875	0.5417	0.7728	0.6847	0.8861	8.349	8			
*AT1-867	0.5500	0.6111	0.8363	0.6847	0.9912	11.268	8	12.389	1.895	0.0631
AT1-868	0.5875	0.6528	0.8735	0.7854	0.8861	4.075	8			
AT1-869	0.7375	0.8194	1.0360	0.8861	1.1071	8.056	8			
AT1-870	0.7375	0.8194	1.0347	0.9912	1.1071	5.802	8			
AT1-871	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8			
AT1-872	0.7375	0.8194	1.0393	0.8861	1.2490	10.662	8			
AT1-873	0.8500	0.9444	1.1813	0.9912	1.2490	8.471	8			
Control	0.9125	1.0139	1.2694	1.2490	1.4120	4.539	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.87303	0.844	0.05922	2.91364
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates significant differences	0.04096	0.04551	0.68148	0.00444	6.2E-09	1, 14

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.5625	0.6250	0.8483	0.7854	0.8861	6.142	8		
AT1-864	0.8000	0.8889	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4028	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5417	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6111	0.8363	0.6847	0.9912	11.268	8		
*AT1-868	0.5875	0.6528	0.8735	0.7854	0.8861	4.075	8	36.00	51.00
AT1-869	0.7375	0.8194	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8194	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8194	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9444	1.1813	0.9912	1.2490	8.471	8		
Control	0.9125	1.0139	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.4689	0.844	-3.5489	13.5047
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.5625	0.6250	0.8483	0.7854	0.8861	6.142	8		
AT1-864	0.8000	0.8889	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4028	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5417	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6111	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6528	0.8735	0.7854	0.8861	4.075	8		
*AT1-869	0.7375	0.8194	1.0360	0.8861	1.1071	8.056	8	36.00	51.00
AT1-870	0.7375	0.8194	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8194	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9444	1.1813	0.9912	1.2490	8.471	8		
Control	0.9125	1.0139	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.83411	0.844	-0.9054	2.13754
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.5625	0.6250	0.8483	0.7854	0.8861	6.142	8		
AT1-864	0.8000	0.8889	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4028	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5417	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6111	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6528	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8194	1.0360	0.8861	1.1071	8.056	8		
*AT1-870	0.7375	0.8194	1.0347	0.9912	1.1071	5.802	8	36.00	51.00
AT1-871	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8194	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9444	1.1813	0.9912	1.2490	8.471	8		
Control	0.9125	1.0139	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.7856	0.844	0.80812	-0.1593
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.5625	0.6250	0.8483	0.7854	0.8861	6.142	8		
AT1-864	0.8000	0.8889	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4028	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5417	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6111	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6528	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8194	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8194	1.0347	0.9912	1.1071	5.802	8		
*AT1-871	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8	48.00	51.00
AT1-872	0.7375	0.8194	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9444	1.1813	0.9912	1.2490	8.471	8		
Control	0.9125	1.0139	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.8252	0.844	-0.1837	1.69018
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.5625	0.6250	0.8483	0.7854	0.8861	6.142	8		
AT1-864	0.8000	0.8889	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4028	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5417	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6111	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6528	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8194	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8194	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
*AT1-872	0.7375	0.8194	1.0393	0.8861	1.2490	10.662	8	40.00	51.00
AT1-873	0.8500	0.9444	1.1813	0.9912	1.2490	8.471	8		
Control	0.9125	1.0139	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.83072	0.844	1.02233	4.03414
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.5625	0.6250	0.8483	0.7854	0.8861	6.142	8		
AT1-864	0.8000	0.8889	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4028	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5417	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6111	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6528	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8194	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8194	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8194	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9444	1.1813	0.9912	1.2490	8.471	8	56.00	51.00
Control	0.9125	1.0139	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.793	0.844	-1.465	3.01488
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.9000	1.0000	1.2490	1.2490	1.2490	0.000	8		
AT1-862	0.5625	0.6250	0.8483	0.7854	0.8861	6.142	8		
AT1-864	0.8000	0.8889	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4028	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5417	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6111	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6528	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8194	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8194	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9167	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8194	1.0393	0.8861	1.2490	10.662	8		
AT1-873	0.8500	0.9444	1.1813	0.9912	1.2490	8.471	8		
Control	0.9125	1.0139	1.2694	1.2490	1.4120	4.539	8	72.00	51.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.4689	0.844	3.54891	13.5047
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.0990	1.0000	0.0990	0.0922	0.1089	6.663	8		
*AT1-862	0.0663	0.6690	0.0663	0.0417	0.0900	21.013	8	36.00	47.00
*AT1-864	0.0791	0.7988	0.0791	0.0575	0.1157	22.298	8	45.00	47.00
*AT1-865	0.0664	0.6701	0.0664	0.0475	0.1100	33.281	8	44.00	47.00
*AT1-866	0.0640	0.6467	0.0640	0.0333	0.0925	35.445	8	37.00	47.00
*AT1-867	0.0556	0.5615	0.0556	0.0200	0.1350	62.180	8	44.00	47.00
*AT1-868	0.0515	0.5196	0.0515	0.0400	0.0650	18.111	8	36.00	47.00
*AT1-869	0.0291	0.2934	0.0291	0.0138	0.0486	43.921	8	36.00	47.00
*AT1-870	0.0314	0.3169	0.0314	0.0157	0.0486	32.559	8	36.00	47.00
*AT1-871	0.0426	0.4307	0.0426	0.0300	0.0578	17.690	8	36.00	47.00
*AT1-872	0.0527	0.5322	0.0527	0.0288	0.0714	25.699	8	36.00	47.00
*AT1-873	0.0645	0.6515	0.0645	0.0389	0.1071	33.418	8	42.00	47.00
Control	0.1249	1.2617	0.1249	0.1022	0.1544	15.754	8	92.50	47.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.10656	1.035	1.23919	4.18444
Bartlett's Test indicates unequal variances (p = 4.98E-04)	34.8347	26.217		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Rank Sum Test indicates significant differences

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.0990	1.0000	0.0990	0.0922	0.1089	6.663	8			
*AT1-862	0.0663	0.6690	0.0663	0.0417	0.0900	21.013	8	6.018	1.761	0.0096
AT1-864	0.0791	0.7988	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.6701	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.6467	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.5615	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.5196	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2934	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.3169	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.4307	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.5322	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.6515	0.0645	0.0389	0.1071	33.418	8			
Control	0.1249	1.2617	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.93446	0.844	-0.0178	2.07681
F-Test indicates equal variances (p = 0.07)	4.45106	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.00959	0.09688	0.0043	0.00012	3.2E-05	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.0990	1.0000	0.0990	0.0922	0.1089	6.663	8			
AT1-862	0.0663	0.6690	0.0663	0.0417	0.0900	21.013	8			
*AT1-864	0.0791	0.7988	0.0791	0.0575	0.1157	22.298	8	2.993	1.761	0.0117
AT1-865	0.0664	0.6701	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.6467	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.5615	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.5196	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2934	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.3169	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.4307	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.5322	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.6515	0.0645	0.0389	0.1071	33.418	8			
Control	0.1249	1.2617	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.85004	0.844	1.47247	3.84702
F-Test indicates equal variances (p = 0.02)	7.14451	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.01173	0.11842	0.00159	0.00018	0.00968	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.0990	1.0000	0.0990	0.0922	0.1089	6.663	8			
AT1-862	0.0663	0.6690	0.0663	0.0417	0.0900	21.013	8			
AT1-864	0.0791	0.7988	0.0791	0.0575	0.1157	22.298	8			
*AT1-865	0.0664	0.6701	0.0664	0.0475	0.1100	33.281	8	4.010	1.860	0.0152
AT1-866	0.0640	0.6467	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.5615	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.5196	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2934	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.3169	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.4307	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.5322	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.6515	0.0645	0.0389	0.1071	33.418	8			
Control	0.1249	1.2617	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.87382	0.844	1.2477	2.91835
F-Test indicates unequal variances (p = 4.98E-03)	11.2007	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates significant differences	0.01515	0.15302	0.00427	0.00027	0.00129	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.0990	1.0000	0.0990	0.0922	0.1089	6.663	8			
AT1-862	0.0663	0.6690	0.0663	0.0417	0.0900	21.013	8			
AT1-864	0.0791	0.7988	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.6701	0.0664	0.0475	0.1100	33.281	8			
*AT1-866	0.0640	0.6467	0.0640	0.0333	0.0925	35.445	8	4.186	1.860	0.0155
AT1-867	0.0556	0.5615	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.5196	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2934	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.3169	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.4307	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.5322	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.6515	0.0645	0.0389	0.1071	33.418	8			
Control	0.1249	1.2617	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95547	0.844	0.06623	-0.1232
F-Test indicates unequal variances (p = 4.21E-03)	11.8344	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates significant differences	0.01554	0.15694	0.0049	0.00028	9.2E-04	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-863	0.0990	1.0000	0.0990	0.0922	0.1089	6.663	8		
AT1-862	0.0663	0.6690	0.0663	0.0417	0.0900	21.013	8		
AT1-864	0.0791	0.7988	0.0791	0.0575	0.1157	22.298	8		
AT1-865	0.0664	0.6701	0.0664	0.0475	0.1100	33.281	8		
AT1-866	0.0640	0.6467	0.0640	0.0333	0.0925	35.445	8		
*AT1-867	0.0556	0.5615	0.0556	0.0200	0.1350	62.180	8	44.00	51.00
AT1-868	0.0515	0.5196	0.0515	0.0400	0.0650	18.111	8		
AT1-869	0.0291	0.2934	0.0291	0.0138	0.0486	43.921	8		
AT1-870	0.0314	0.3169	0.0314	0.0157	0.0486	32.559	8		
AT1-871	0.0426	0.4307	0.0426	0.0300	0.0578	17.690	8		
AT1-872	0.0527	0.5322	0.0527	0.0288	0.0714	25.699	8		
AT1-873	0.0645	0.6515	0.0645	0.0389	0.1071	33.418	8		
Control	0.1249	1.2617	0.1249	0.1022	0.1544	15.754	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.72311	0.844	2.44274	8.6694
F-Test indicates unequal variances (p = 2.83E-04)	27.4584	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.0990	1.0000	0.0990	0.0922	0.1089	6.663	8			
AT1-862	0.0663	0.6690	0.0663	0.0417	0.0900	21.013	8			
AT1-864	0.0791	0.7988	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.6701	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.6467	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.5615	0.0556	0.0200	0.1350	62.180	8			
*AT1-868	0.0515	0.5196	0.0515	0.0400	0.0650	18.111	8	11.783	1.761	0.0071
AT1-869	0.0291	0.2934	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.3169	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.4307	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.5322	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.6515	0.0645	0.0389	0.1071	33.418	8			
Control	0.1249	1.2617	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.91578	0.844	0.57842	-0.6745
F-Test indicates equal variances (p = 0.38)	1.99481	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.00711	0.07181	0.00905	6.5E-05	1.2E-08	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID: TN-21-788	Sample ID: Swan Creek
End Date:	12/20/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: HA-Hyalella azteca
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.0990	1.0000	0.0990	0.0922	0.1089	6.663	8			
AT1-862	0.0663	0.6690	0.0663	0.0417	0.0900	21.013	8			
AT1-864	0.0791	0.7988	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.6701	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.6467	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.5615	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.5196	0.0515	0.0400	0.0650	18.111	8			
*AT1-869	0.0291	0.2934	0.0291	0.0138	0.0486	43.921	8	13.776	1.761	0.0089
AT1-870	0.0314	0.3169	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.4307	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.5322	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.6515	0.0645	0.0389	0.1071	33.418	8			
Control	0.1249	1.2617	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96999	0.844	0.40473	-0.2866
F-Test indicates equal variances (p = 0.10)	3.74011	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.00895	0.09034	0.01958	0.0001	1.6E-09	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.0990	1.0000	0.0990	0.0922	0.1089	6.663	8			
AT1-862	0.0663	0.6690	0.0663	0.0417	0.0900	21.013	8			
AT1-864	0.0791	0.7988	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.6701	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.6467	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.5615	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.5196	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2934	0.0291	0.0138	0.0486	43.921	8			
*AT1-870	0.0314	0.3169	0.0314	0.0157	0.0486	32.559	8	15.729	1.761	0.0076
AT1-871	0.0426	0.4307	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.5322	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.6515	0.0645	0.0389	0.1071	33.418	8			
Control	0.1249	1.2617	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.97662	0.844	0.265	0.0939
F-Test indicates equal variances (p = 0.27)	2.39814	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.00757	0.07649	0.0183	7.4E-05	2.7E-10	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.0990	1.0000	0.0990	0.0922	0.1089	6.663	8			
AT1-862	0.0663	0.6690	0.0663	0.0417	0.0900	21.013	8			
AT1-864	0.0791	0.7988	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.6701	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.6467	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.5615	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.5196	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2934	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.3169	0.0314	0.0157	0.0486	32.559	8			
*AT1-871	0.0426	0.4307	0.0426	0.0300	0.0578	17.690	8	15.910	1.761	0.0062
AT1-872	0.0527	0.5322	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.6515	0.0645	0.0389	0.1071	33.418	8			
Control	0.1249	1.2617	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94854	0.844	0.60594	0.68784
F-Test indicates equal variances (p = 0.73)	1.30731	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.00624	0.06303	0.01271	5E-05	2.3E-10	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.0990	1.0000	0.0990	0.0922	0.1089	6.663	8			
AT1-862	0.0663	0.6690	0.0663	0.0417	0.0900	21.013	8			
AT1-864	0.0791	0.7988	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.6701	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.6467	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.5615	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.5196	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2934	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.3169	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.4307	0.0426	0.0300	0.0578	17.690	8			
*AT1-872	0.0527	0.5322	0.0527	0.0288	0.0714	25.699	8	8.697	1.761	0.0094
AT1-873	0.0645	0.6515	0.0645	0.0389	0.1071	33.418	8			
Control	0.1249	1.2617	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.97126	0.844	-0.4227	0.92011
F-Test indicates equal variances (p = 0.08)	4.21289	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.00938	0.09474	0.00858	0.00011	5.1E-07	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.0990	1.0000	0.0990	0.0922	0.1089	6.663	8			
AT1-862	0.0663	0.6690	0.0663	0.0417	0.0900	21.013	8			
AT1-864	0.0791	0.7988	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.6701	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.6467	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.5615	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.5196	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2934	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.3169	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.4307	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.5322	0.0527	0.0288	0.0714	25.699	8			
*AT1-873	0.0645	0.6515	0.0645	0.0389	0.1071	33.418	8	4.328	1.860	0.0148
Control	0.1249	1.2617	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.88346	0.844	1.09174	3.39046
F-Test indicates unequal variances (p = 5.76E-03)	10.6777	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates significant differences	0.01482	0.1497	0.00476	0.00025	6.9E-04	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-863	0.0990	1.0000	0.0990	0.0922	0.1089	6.663	8			
AT1-862	0.0663	0.6690	0.0663	0.0417	0.0900	21.013	8			
AT1-864	0.0791	0.7988	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	0.6701	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.6467	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.5615	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.5196	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.2934	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.3169	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.4307	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.5322	0.0527	0.0288	0.0714	25.699	8			
AT1-873	0.0645	0.6515	0.0645	0.0389	0.1071	33.418	8			
Control	0.1249	1.2617	0.1249	0.1022	0.1544	15.754	8	-3.531	1.860	0.0136

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94532	0.844	0.02346	0.02624
F-Test indicates unequal variances (p = 9.95E-03)	8.899	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates no significant differences	0.01365	0.13783	0.00269	0.00022	0.00332	1, 14

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID: TN-21-788	Sample ID: Swan Creek
End Date:	12/20/2021	Lab ID:	Sample Type: Sediment
Sample Date:		Protocol:	Test Species: HA-Hyalella azteca
Comments:			

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-873	0.8500	1.0000	1.1813	0.9912	1.2490	8.471	8		
*AT1-862	0.5625	0.6618	0.8483	0.7854	0.8861	6.142	8	36.00	47.00
AT1-863	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8	80.00	47.00
AT1-864	0.8000	0.9412	1.1104	0.9912	1.2490	6.231	8	54.00	47.00
*AT1-865	0.3625	0.4265	0.6453	0.5796	0.6847	8.427	8	36.00	47.00
*AT1-866	0.4875	0.5735	0.7728	0.6847	0.8861	8.349	8	36.00	47.00
*AT1-867	0.5500	0.6471	0.8363	0.6847	0.9912	11.268	8	36.50	47.00
*AT1-868	0.5875	0.6912	0.8735	0.7854	0.8861	4.075	8	36.00	47.00
*AT1-869	0.7375	0.8676	1.0360	0.8861	1.1071	8.056	8	45.50	47.00
*AT1-870	0.7375	0.8676	1.0347	0.9912	1.1071	5.802	8	44.50	47.00
AT1-871	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8	61.00	47.00
AT1-872	0.7375	0.8676	1.0393	0.8861	1.2490	10.662	8	47.50	47.00
Control	0.9125	1.0735	1.2694	1.2490	1.4120	4.539	8	82.50	47.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.93433	1.035	-0.0003	0.69225
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Rank Sum Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-873	0.8500	1.0000	1.1813	0.9912	1.2490	8.471	8		
*AT1-862	0.5625	0.6618	0.8483	0.7854	0.8861	6.142	8	36.00	51.00
AT1-863	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8		
AT1-864	0.8000	0.9412	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4265	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5735	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6471	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6912	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8676	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8676	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8676	1.0393	0.8861	1.2490	10.662	8		
Control	0.9125	1.0735	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.80124	0.844	-1.1019	0.614
F-Test indicates equal variances (p = 0.11)	3.68835	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-873	0.8500	1.0000	1.1813	0.9912	1.2490	8.471	8		
AT1-862	0.5625	0.6618	0.8483	0.7854	0.8861	6.142	8		
AT1-863	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8	80.00	51.00
AT1-864	0.8000	0.9412	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4265	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5735	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6471	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6912	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8676	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8676	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8676	1.0393	0.8861	1.2490	10.662	8		
Control	0.9125	1.0735	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.793	0.844	-1.465	3.01488
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1813	0.9912	1.2490	8.471	8			
AT1-862	0.5625	0.6618	0.8483	0.7854	0.8861	6.142	8			
AT1-863	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			
AT1-864	0.8000	0.9412	1.1104	0.9912	1.2490	6.231	8	1.649	1.761	0.0758
AT1-865	0.3625	0.4265	0.6453	0.5796	0.6847	8.427	8			
AT1-866	0.4875	0.5735	0.7728	0.6847	0.8861	8.349	8			
AT1-867	0.5500	0.6471	0.8363	0.6847	0.9912	11.268	8			
AT1-868	0.5875	0.6912	0.8735	0.7854	0.8861	4.075	8			
AT1-869	0.7375	0.8676	1.0360	0.8861	1.1071	8.056	8			
AT1-870	0.7375	0.8676	1.0347	0.9912	1.1071	5.802	8			
AT1-871	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-872	0.7375	0.8676	1.0393	0.8861	1.2490	10.662	8			
Control	0.9125	1.0735	1.2694	1.2490	1.4120	4.539	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.9183	0.844	-0.6865	0.56335
F-Test indicates equal variances (p = 0.35)	2.09218	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.05709	0.06671	0.02013	0.0074	0.1213	1, 14

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-873	0.8500	1.0000	1.1813	0.9912	1.2490	8.471	8		
AT1-862	0.5625	0.6618	0.8483	0.7854	0.8861	6.142	8		
AT1-863	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8		
AT1-864	0.8000	0.9412	1.1104	0.9912	1.2490	6.231	8		
*AT1-865	0.3625	0.4265	0.6453	0.5796	0.6847	8.427	8	36.00	51.00
AT1-866	0.4875	0.5735	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6471	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6912	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8676	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8676	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8676	1.0393	0.8861	1.2490	10.662	8		
Control	0.9125	1.0735	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.79436	0.844	-1.0817	0.48289
F-Test indicates equal variances (p = 0.13)	3.3859	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1813	0.9912	1.2490	8.471	8			
AT1-862	0.5625	0.6618	0.8483	0.7854	0.8861	6.142	8			
AT1-863	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			
AT1-864	0.8000	0.9412	1.1104	0.9912	1.2490	6.231	8			
AT1-865	0.3625	0.4265	0.6453	0.5796	0.6847	8.427	8			
*AT1-866	0.4875	0.5735	0.7728	0.6847	0.8861	8.349	8	9.704	1.761	0.0741
AT1-867	0.5500	0.6471	0.8363	0.6847	0.9912	11.268	8			
AT1-868	0.5875	0.6912	0.8735	0.7854	0.8861	4.075	8			
AT1-869	0.7375	0.8676	1.0360	0.8861	1.1071	8.056	8			
AT1-870	0.7375	0.8676	1.0347	0.9912	1.1071	5.802	8			
AT1-871	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-872	0.7375	0.8676	1.0393	0.8861	1.2490	10.662	8			
Control	0.9125	1.0735	1.2694	1.2490	1.4120	4.539	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.89211	0.844	-0.8562	0.29494
F-Test indicates equal variances (p = 0.27)	2.40544	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.0558	0.0652	0.66756	0.00709	1.4E-07	1, 14

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1813	0.9912	1.2490	8.471	8			
AT1-862	0.5625	0.6618	0.8483	0.7854	0.8861	6.142	8			
AT1-863	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			
AT1-864	0.8000	0.9412	1.1104	0.9912	1.2490	6.231	8			
AT1-865	0.3625	0.4265	0.6453	0.5796	0.6847	8.427	8			
AT1-866	0.4875	0.5735	0.7728	0.6847	0.8861	8.349	8			
*AT1-867	0.5500	0.6471	0.8363	0.6847	0.9912	11.268	8	7.100	1.761	0.0856
AT1-868	0.5875	0.6912	0.8735	0.7854	0.8861	4.075	8			
AT1-869	0.7375	0.8676	1.0360	0.8861	1.1071	8.056	8			
AT1-870	0.7375	0.8676	1.0347	0.9912	1.1071	5.802	8			
AT1-871	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-872	0.7375	0.8676	1.0393	0.8861	1.2490	10.662	8			
Control	0.9125	1.0735	1.2694	1.2490	1.4120	4.539	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.89958	0.844	-0.5462	-0.3572
F-Test indicates equal variances (p = 0.88)	1.12765	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.06504	0.076	0.47623	0.00945	5.3E-06	1, 14

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-873	0.8500	1.0000	1.1813	0.9912	1.2490	8.471	8		
AT1-862	0.5625	0.6618	0.8483	0.7854	0.8861	6.142	8		
AT1-863	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8		
AT1-864	0.8000	0.9412	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4265	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5735	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6471	0.8363	0.6847	0.9912	11.268	8		
*AT1-868	0.5875	0.6912	0.8735	0.7854	0.8861	4.075	8	36.00	51.00
AT1-869	0.7375	0.8676	1.0360	0.8861	1.1071	8.056	8		
AT1-870	0.7375	0.8676	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8676	1.0393	0.8861	1.2490	10.662	8		
Control	0.9125	1.0735	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.81	0.844	-1.3588	1.80651
F-Test indicates equal variances (p = 0.01)	7.9036	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-873	0.8500	1.0000	1.1813	0.9912	1.2490	8.471	8		
AT1-862	0.5625	0.6618	0.8483	0.7854	0.8861	6.142	8		
AT1-863	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8		
AT1-864	0.8000	0.9412	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4265	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5735	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6471	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6912	0.8735	0.7854	0.8861	4.075	8		
*AT1-869	0.7375	0.8676	1.0360	0.8861	1.1071	8.056	8	45.50	51.00
AT1-870	0.7375	0.8676	1.0347	0.9912	1.1071	5.802	8		
AT1-871	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8676	1.0393	0.8861	1.2490	10.662	8		
Control	0.9125	1.0735	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.77723	0.844	-0.9014	-0.3862
F-Test indicates equal variances (p = 0.64)	1.43768	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-873	0.8500	1.0000	1.1813	0.9912	1.2490	8.471	8		
AT1-862	0.5625	0.6618	0.8483	0.7854	0.8861	6.142	8		
AT1-863	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8		
AT1-864	0.8000	0.9412	1.1104	0.9912	1.2490	6.231	8		
AT1-865	0.3625	0.4265	0.6453	0.5796	0.6847	8.427	8		
AT1-866	0.4875	0.5735	0.7728	0.6847	0.8861	8.349	8		
AT1-867	0.5500	0.6471	0.8363	0.6847	0.9912	11.268	8		
AT1-868	0.5875	0.6912	0.8735	0.7854	0.8861	4.075	8		
AT1-869	0.7375	0.8676	1.0360	0.8861	1.1071	8.056	8		
*AT1-870	0.7375	0.8676	1.0347	0.9912	1.1071	5.802	8	44.50	51.00
AT1-871	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8		
AT1-872	0.7375	0.8676	1.0393	0.8861	1.2490	10.662	8		
Control	0.9125	1.0735	1.2694	1.2490	1.4120	4.539	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.79709	0.844	-0.8138	0.17567
F-Test indicates equal variances (p = 0.20)	2.77877	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates significant differences

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1813	0.9912	1.2490	8.471	8			
AT1-862	0.5625	0.6618	0.8483	0.7854	0.8861	6.142	8			
AT1-863	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			
AT1-864	0.8000	0.9412	1.1104	0.9912	1.2490	6.231	8			
AT1-865	0.3625	0.4265	0.6453	0.5796	0.6847	8.427	8			
AT1-866	0.4875	0.5735	0.7728	0.6847	0.8861	8.349	8			
AT1-867	0.5500	0.6471	0.8363	0.6847	0.9912	11.268	8			
AT1-868	0.5875	0.6912	0.8735	0.7854	0.8861	4.075	8			
AT1-869	0.7375	0.8676	1.0360	0.8861	1.1071	8.056	8			
AT1-870	0.7375	0.8676	1.0347	0.9912	1.1071	5.802	8			
AT1-871	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8	0.731	1.761	0.0855
AT1-872	0.7375	0.8676	1.0393	0.8861	1.2490	10.662	8			
Control	0.9125	1.0735	1.2694	1.2490	1.4120	4.539	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.87541	0.844	-0.6261	-0.625
F-Test indicates equal variances (p = 0.87)	1.13301	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.06496	0.07591	0.00503	0.00943	0.47698	1, 14

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1813	0.9912	1.2490	8.471	8			
AT1-862	0.5625	0.6618	0.8483	0.7854	0.8861	6.142	8			
AT1-863	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			
AT1-864	0.8000	0.9412	1.1104	0.9912	1.2490	6.231	8			
AT1-865	0.3625	0.4265	0.6453	0.5796	0.6847	8.427	8			
AT1-866	0.4875	0.5735	0.7728	0.6847	0.8861	8.349	8			
AT1-867	0.5500	0.6471	0.8363	0.6847	0.9912	11.268	8			
AT1-868	0.5875	0.6912	0.8735	0.7854	0.8861	4.075	8			
AT1-869	0.7375	0.8676	1.0360	0.8861	1.1071	8.056	8			
AT1-870	0.7375	0.8676	1.0347	0.9912	1.1071	5.802	8			
AT1-871	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
*AT1-872	0.7375	0.8676	1.0393	0.8861	1.2490	10.662	8	2.692	1.761	0.0930
Control	0.9125	1.0735	1.2694	1.2490	1.4120	4.539	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.90513	0.844	-0.0232	-0.0031
F-Test indicates equal variances (p = 0.79)	1.22611	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.07108	0.08305	0.08075	0.01115	0.01755	1, 14

Growth and Survival Test-Survival

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.9000	0.8000	0.9000	0.7000	0.8000	0.9000	0.9000	0.9000
AT1-862	0.6000	0.6000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
AT1-863	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
AT1-864	0.8000	0.8000	0.7000	0.8000	0.9000	0.8000	0.8000	0.8000
AT1-865	0.4000	0.4000	0.4000	0.4000	0.3000	0.4000	0.3000	0.3000
AT1-866	0.5000	0.5000	0.6000	0.4000	0.5000	0.4000	0.5000	0.5000
AT1-867	0.6000	0.6000	0.5000	0.6000	0.7000	0.5000	0.4000	0.5000
AT1-868	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000
AT1-869	0.8000	0.7000	0.8000	0.7000	0.8000	0.6000	0.7000	0.8000
AT1-870	0.7000	0.8000	0.8000	0.7000	0.8000	0.7000	0.7000	0.7000
AT1-871	0.9000	0.8000	0.7000	0.8000	0.9000	0.8000	0.9000	0.8000
AT1-872	0.8000	0.7000	0.9000	0.8000	0.7000	0.6000	0.7000	0.7000
Control	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.8500	1.0000	1.1813	0.9912	1.2490	8.471	8			
AT1-862	0.5625	0.6618	0.8483	0.7854	0.8861	6.142	8			
AT1-863	0.9000	1.0588	1.2490	1.2490	1.2490	0.000	8			
AT1-864	0.8000	0.9412	1.1104	0.9912	1.2490	6.231	8			
AT1-865	0.3625	0.4265	0.6453	0.5796	0.6847	8.427	8			
AT1-866	0.4875	0.5735	0.7728	0.6847	0.8861	8.349	8			
AT1-867	0.5500	0.6471	0.8363	0.6847	0.9912	11.268	8			
AT1-868	0.5875	0.6912	0.8735	0.7854	0.8861	4.075	8			
AT1-869	0.7375	0.8676	1.0360	0.8861	1.1071	8.056	8			
AT1-870	0.7375	0.8676	1.0347	0.9912	1.1071	5.802	8			
AT1-871	0.8250	0.9706	1.1459	0.9912	1.2490	8.205	8			
AT1-872	0.7375	0.8676	1.0393	0.8861	1.2490	10.662	8			
Control	0.9125	1.0735	1.2694	1.2490	1.4120	4.539	8	-2.157	1.761	0.0719

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.89721	0.844	-0.5126	1.15065
F-Test indicates equal variances (p = 0.17)	3.01637	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.05402	0.06311	0.03103	0.00667	0.04883	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-873	0.0645	1.0000	0.0645	0.0389	0.1071	33.418	8		
AT1-862	0.0663	1.0268	0.0663	0.0417	0.0900	21.013	8	72.00	47.00
AT1-863	0.0990	1.5348	0.0990	0.0922	0.1089	6.663	8	94.00	47.00
AT1-864	0.0791	1.2259	0.0791	0.0575	0.1157	22.298	8	82.50	47.00
AT1-865	0.0664	1.0284	0.0664	0.0475	0.1100	33.281	8	71.00	47.00
AT1-866	0.0640	0.9926	0.0640	0.0333	0.0925	35.445	8	68.50	47.00
AT1-867	0.0556	0.8618	0.0556	0.0200	0.1350	62.180	8	56.00	47.00
AT1-868	0.0515	0.7975	0.0515	0.0400	0.0650	18.111	8	56.00	47.00
*AT1-869	0.0291	0.4503	0.0291	0.0138	0.0486	43.921	8	40.00	47.00
*AT1-870	0.0314	0.4864	0.0314	0.0157	0.0486	32.559	8	39.00	47.00
AT1-871	0.0426	0.6610	0.0426	0.0300	0.0578	17.690	8	47.50	47.00
AT1-872	0.0527	0.8168	0.0527	0.0288	0.0714	25.699	8	56.00	47.00
Control	0.1249	1.9365	0.1249	0.1022	0.1544	15.754	8	97.00	47.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.10656	1.035	1.23919	4.18444
Bartlett's Test indicates unequal variances (p = 4.98E-04)	34.8347	26.217		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Rank Sum Test indicates significant differences

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.0645	1.0000	0.0645	0.0389	0.1071	33.418	8			
AT1-862	0.0663	1.0268	0.0663	0.0417	0.0900	21.013	8	-0.191	1.761	0.0160
AT1-863	0.0990	1.5348	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	1.2259	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	1.0284	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.9926	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.8618	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.7975	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.4503	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.4864	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.6610	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.8168	0.0527	0.0288	0.0714	25.699	8			
Control	0.1249	1.9365	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.93852	0.844	0.70493	1.2321
F-Test indicates equal variances (p = 0.27)	2.3989	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.01598	0.24771	1.2E-05	0.00033	0.85165	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.0645	1.0000	0.0645	0.0389	0.1071	33.418	8			
AT1-862	0.0663	1.0268	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	1.5348	0.0990	0.0922	0.1089	6.663	8	-4.328	1.860	0.0148
AT1-864	0.0791	1.2259	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	1.0284	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.9926	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.8618	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.7975	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.4503	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.4864	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.6610	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.8168	0.0527	0.0288	0.0714	25.699	8			
Control	0.1249	1.9365	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.88346	0.844	1.09174	3.39046
F-Test indicates unequal variances (p = 5.76E-03)	10.6777	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Heteroscedastic t Test indicates no significant differences	0.01482	0.22976	0.00476	0.00025	6.9E-04	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.0645	1.0000	0.0645	0.0389	0.1071	33.418	8			
AT1-862	0.0663	1.0268	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	1.5348	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	1.2259	0.0791	0.0575	0.1157	22.298	8	-1.480	1.761	0.0173
AT1-865	0.0664	1.0284	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.9926	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.8618	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.7975	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.4503	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.4864	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.6610	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.8168	0.0527	0.0288	0.0714	25.699	8			
Control	0.1249	1.9365	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.89536	0.844	1.00923	0.88822
F-Test indicates equal variances (p = 0.61)	1.49452	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.01735	0.26885	0.00085	0.00039	0.16096	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.0645	1.0000	0.0645	0.0389	0.1071	33.418	8			
AT1-862	0.0663	1.0268	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	1.5348	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	1.2259	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	1.0284	0.0664	0.0475	0.1100	33.281	8	-0.168	1.761	0.0192
AT1-866	0.0640	0.9926	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.8618	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.7975	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.4503	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.4864	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.6610	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.8168	0.0527	0.0288	0.0714	25.699	8			
Control	0.1249	1.9365	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.88692	0.844	0.92716	0.35554
F-Test indicates equal variances (p = 0.95)	1.04899	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.01922	0.29788	1.3E-05	0.00048	0.86901	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.0645	1.0000	0.0645	0.0389	0.1071	33.418	8			
AT1-862	0.0663	1.0268	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	1.5348	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	1.2259	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	1.0284	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.9926	0.0640	0.0333	0.0925	35.445	8	0.043	1.761	0.0195
AT1-867	0.0556	0.8618	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.7975	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.4503	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.4864	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.6610	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.8168	0.0527	0.0288	0.0714	25.699	8			
Control	0.1249	1.9365	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95745	0.844	0.41899	-0.6512
F-Test indicates equal variances (p = 0.90)	1.10833	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.0195	0.30216	9.2E-07	0.00049	0.96605	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					Rank	1-Tailed
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
AT1-873	0.0645	1.0000	0.0645	0.0389	0.1071	33.418	8		
AT1-862	0.0663	1.0268	0.0663	0.0417	0.0900	21.013	8		
AT1-863	0.0990	1.5348	0.0990	0.0922	0.1089	6.663	8		
AT1-864	0.0791	1.2259	0.0791	0.0575	0.1157	22.298	8		
AT1-865	0.0664	1.0284	0.0664	0.0475	0.1100	33.281	8		
AT1-866	0.0640	0.9926	0.0640	0.0333	0.0925	35.445	8		
AT1-867	0.0556	0.8618	0.0556	0.0200	0.1350	62.180	8	56.00	51.00
AT1-868	0.0515	0.7975	0.0515	0.0400	0.0650	18.111	8		
AT1-869	0.0291	0.4503	0.0291	0.0138	0.0486	43.921	8		
AT1-870	0.0314	0.4864	0.0314	0.0157	0.0486	32.559	8		
AT1-871	0.0426	0.6610	0.0426	0.0300	0.0578	17.690	8		
AT1-872	0.0527	0.8168	0.0527	0.0288	0.0714	25.699	8		
Control	0.1249	1.9365	0.1249	0.1022	0.1544	15.754	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.8429	0.844	1.75177	3.84354
F-Test indicates equal variances (p = 0.24)	2.57157	8.88539		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.0645	1.0000	0.0645	0.0389	0.1071	33.418	8			
AT1-862	0.0663	1.0268	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	1.5348	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	1.2259	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	1.0284	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.9926	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.8618	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.7975	0.0515	0.0400	0.0650	18.111	8	1.573	1.761	0.0146
AT1-869	0.0291	0.4503	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.4864	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.6610	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.8168	0.0527	0.0288	0.0714	25.699	8			
Control	0.1249	1.9365	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.92208	0.844	0.99099	2.43202
F-Test indicates equal variances (p = 0.04)	5.35272	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.01463	0.22671	0.00068	0.00028	0.13806	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.0645	1.0000	0.0645	0.0389	0.1071	33.418	8			
AT1-862	0.0663	1.0268	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	1.5348	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	1.2259	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	1.0284	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.9926	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.8618	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.7975	0.0515	0.0400	0.0650	18.111	8			
*AT1-869	0.0291	0.4503	0.0291	0.0138	0.0486	43.921	8	4.004	1.761	0.0156
AT1-870	0.0314	0.4864	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.6610	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.8168	0.0527	0.0288	0.0714	25.699	8			
Control	0.1249	1.9365	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95752	0.844	0.83815	1.27428
F-Test indicates equal variances (p = 0.19)	2.8549	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.0156	0.24182	0.00503	0.00031	0.00131	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.0645	1.0000	0.0645	0.0389	0.1071	33.418	8			
AT1-862	0.0663	1.0268	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	1.5348	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	1.2259	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	1.0284	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.9926	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.8618	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.7975	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.4503	0.0291	0.0138	0.0486	43.921	8			
*AT1-870	0.0314	0.4864	0.0314	0.0157	0.0486	32.559	8	3.928	1.761	0.0149
AT1-871	0.0426	0.6610	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.8168	0.0527	0.0288	0.0714	25.699	8			
Control	0.1249	1.9365	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94069	0.844	0.9172	2.15668
F-Test indicates equal variances (p = 0.07)	4.45247	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.01486	0.23029	0.00439	0.00028	0.00152	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.0645	1.0000	0.0645	0.0389	0.1071	33.418	8			
AT1-862	0.0663	1.0268	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	1.5348	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	1.2259	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	1.0284	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.9926	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.8618	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.7975	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.4503	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.4864	0.0314	0.0157	0.0486	32.559	8			
*AT1-871	0.0426	0.6610	0.0426	0.0300	0.0578	17.690	8	2.708	1.761	0.0142
AT1-872	0.0527	0.8168	0.0527	0.0288	0.0714	25.699	8			
Control	0.1249	1.9365	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.89829	0.844	1.05641	3.13024
F-Test indicates equal variances (p = 0.01)	8.16768	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates significant differences	0.01423	0.22047	0.00191	0.00026	0.01698	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed					1-Tailed		
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.0645	1.0000	0.0645	0.0389	0.1071	33.418	8			
AT1-862	0.0663	1.0268	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	1.5348	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	1.2259	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	1.0284	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.9926	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.8618	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.7975	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.4503	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.4864	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.6610	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.8168	0.0527	0.0288	0.0714	25.699	8	1.313	1.761	0.0159
Control	0.1249	1.9365	0.1249	0.1022	0.1544	15.754	8			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95138	0.844	0.63831	1.18339
F-Test indicates equal variances (p = 0.24)	2.53452	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.01586	0.24575	0.00056	0.00032	0.21029	1, 14

Growth and Survival Test-Growth

Start Date:	12/10/2021	Test ID:	TN-21-788	Sample ID:	Swan Creek
End Date:	12/20/2021	Lab ID:		Sample Type:	Sediment
Sample Date:		Protocol:		Test Species:	HA-Hyalella azteca
Comments:					

Conc-	1	2	3	4	5	6	7	8
AT1-873	0.0733	0.0588	0.0567	0.1071	0.0425	0.0756	0.0389	0.0633
AT1-862	0.0650	0.0733	0.0667	0.0733	0.0417	0.0900	0.0580	0.0620
AT1-863	0.0922	0.0956	0.1078	0.1033	0.0944	0.1089	0.0944	0.0956
AT1-864	0.0925	0.0700	0.1157	0.0738	0.0733	0.0575	0.0725	0.0775
AT1-865	0.0475	0.0525	0.0475	0.0725	0.0767	0.0475	0.0767	0.1100
AT1-866	0.0620	0.0880	0.0333	0.0925	0.0620	0.0425	0.0460	0.0860
AT1-867	0.0200	0.0433	0.0380	0.0517	0.0529	0.0400	0.1350	0.0640
AT1-868	0.0500	0.0517	0.0650	0.0400	0.0500	0.0417	0.0483	0.0650
AT1-869	0.0150	0.0443	0.0200	0.0300	0.0138	0.0283	0.0486	0.0325
AT1-870	0.0300	0.0400	0.0338	0.0329	0.0288	0.0214	0.0157	0.0486
AT1-871	0.0578	0.0413	0.0429	0.0425	0.0411	0.0300	0.0444	0.0413
AT1-872	0.0650	0.0714	0.0400	0.0288	0.0529	0.0550	0.0500	0.0586
Control	0.1544	0.1256	0.1356	0.1356	0.1389	0.1033	0.1040	0.1022

			Transform: Untransformed						1-Tailed	
Conc-	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
AT1-873	0.0645	1.0000	0.0645	0.0389	0.1071	33.418	8			
AT1-862	0.0663	1.0268	0.0663	0.0417	0.0900	21.013	8			
AT1-863	0.0990	1.5348	0.0990	0.0922	0.1089	6.663	8			
AT1-864	0.0791	1.2259	0.0791	0.0575	0.1157	22.298	8			
AT1-865	0.0664	1.0284	0.0664	0.0475	0.1100	33.281	8			
AT1-866	0.0640	0.9926	0.0640	0.0333	0.0925	35.445	8			
AT1-867	0.0556	0.8618	0.0556	0.0200	0.1350	62.180	8			
AT1-868	0.0515	0.7975	0.0515	0.0400	0.0650	18.111	8			
AT1-869	0.0291	0.4503	0.0291	0.0138	0.0486	43.921	8			
AT1-870	0.0314	0.4864	0.0314	0.0157	0.0486	32.559	8			
AT1-871	0.0426	0.6610	0.0426	0.0300	0.0578	17.690	8			
AT1-872	0.0527	0.8168	0.0527	0.0288	0.0714	25.699	8			
Control	0.1249	1.9365	0.1249	0.1022	0.1544	15.754	8	-5.854	1.761	0.0182

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.92795	0.844	0.48995	-0.2516
F-Test indicates equal variances (p = 0.82)	1.19987	8.88539		

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.01818	0.28178	0.0146	0.00043	4.2E-05	1, 14

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ATTACHMENT VI

Data Sheets from *Lumbriculus variegatus* Toxicity Tests
(13 pages)

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SEDIMENT TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-787

TEST ORGANISM INFORMATION

Common Name: Oligochaete

Scientific Name: *Lumbriculus variegatus*

Lot Number: LV-025

Source: Eastern Aquatics

Adults Isolated (Time, Date): _____

Neonates Pulled (Time, Date): _____

Acclimation: <24 hours Age: Adult

Culture Water (T/S): 23.2 °C ϕ ppt

TEST INITIATION

Date	Time	Initials	Activity
12/6/21	1350	LAO/AG	Sediment Added to Chambers
↓	1415	AG	Overlying Water Added to Chambers
12/8/21	1600	M	Organisms Transferred

TEST SET-UP

Sample Number(s): AT1-697 (Lab Control), AT1-866 → 868, AT1-873

~~Overyling~~ Water: Dechlor

Overlying (S) 6/6/21 JR

Treatment	Volume Test Sediment	Volume Overlying Water
AT1-697 (Lab Control) AT1-866	1.5 L	6L
AT1-868 AT1-873		

TOXICOLOGY LABORATORY BENCH SHEET - ORGANISM RECOVERY RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-787

TEST ORGANISM

Common Name: Oligochaete

Scientific Name: *Lumbriculus variegatus*

Organisms Recovered (date, time, initials): LAD 1-5-22 / MM 1/5/22

Treatment	Replicate	Weight of Organisms Loaded	Weight of Organisms Recovered
AT1-697	A	15 g	15 g
(Lab Control)	B		15
	C		15
	D		15
	E		15
AT1-866	A		15
	B		15
	C		15
	D		15
	E		15
AT1-867	A		10
	B		10
	C		12
	D		11
	E		15
AT1-868	A		10
	B		8
	C		10
	D		8
	E		8
AT1-873	A		11
	B		12
	C		10
	D		13
	E		10

TOXICITY TEST WATER QUALITY DATA SHEET - NEW SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-787

TEST ORGANISM
Common Name: Oligochaete
Scientific Name: *Lumbriculus variegatus*

Beginning Date: 12/8/21 Time: 1600
Ending Date: 1/5/22 Time: 1600

TARGET VALUES: Temp: 23 °C pH: 6.0 - 9.0 DO: ≥4.0 mg/L Salinity: 0 ppt Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Sample #		Temperature (°C)							pH							Dissolved Oxygen (mg/L)							Conductivity (µS/cm)						
		0	1	2	3	4	5	6	0	1	2	3	4	5	6	0	1	2	3	4	5	6	0	1	2	3	4	5	6
AT1-697	Control	22.0							8.2							6.6							347						
AT1-866		22.0							8.1							6.4							404						
AT1-867		22.0							8.1							6.5							421						
AT1-868		22.0							8.1							6.1							409						
AT1-873		22.0							8.0							6.0							403						
Meter Number		680							680							680							680						
Time		0836							0836							0836							0836						
Initials		TP							TP							TP							TP						

TOXICITY TEST WATER QUALITY DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX TEST ORGANISM Beginning Date: 12/8/21 Time: 1600

Client: Swan Creek Common Name: Oligochaete Ending Date: 1/5/22 Time: 1600

QC Test Number: TN-21-787 Scientific Name: *Lumbriculus variegatus*

TARGET VALUES Temp: 23 °C pH: 6.0 - 9.0 DO: >4.0 mg/L Salinity: 0 ppt Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Sample #		Temperature (°C)							pH							Dissolved Oxygen (mg/L)							Conductivity (µS/cm)						
		1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
AT1-697	Control	22.0	22.1	23.2	23.0	22.0	22.0	22.0	8.0	8.1	8.5	8.1	7.6	8.1	7.7	4.8	5.9	5.9	5.8	7.8	6.9	7.0	344	331	346	344	349	338	338
AT1-866		22.0	22.4	23.1	23.0	22.1	22.0	22.2	7.9	8.0	8.5	8.0	7.5	8.0	7.7	5.1	5.9	5.9	5.7	4.5	5.6	6.0	368	353	365	357	371	350	350
AT1-867		22.0	23.0	23.2	23.0	22.0	22.0	22.2	7.9	8.0	8.4	8.0	7.5	8.0	7.7	5.1	5.8	5.7	5.4	4.1	5.8	5.7	380	359	371	364	377	352	352
AT1-868		22.0	23.1	23.3	23.0	22.0	22.1	22.2	7.9	8.0	8.4	7.9	7.5	8.0	7.7	5.1	5.7	5.6	5.4	4.0	6.0	5.6	374	354	371	363	376	354	353
AT1-873		22.0	23.1	23.3	23.0	22.0	22.1	22.1	7.8	7.9	8.3	7.9	7.5	7.9	7.7	4.6	5.6	5.5	5.4	4.1	6.0	5.6	377	359	369	364	384	356	359
Meter Number		681	680	680	680	680	681	680	681	681	680	680	680	681	680	681	680	680	680	680	681	680	681	680	680	680	680	681	680
Time		1049	1508	1407	1440	0840	1430	1443	1049	1508	1407	1440	0840	1430	1443	1049	1508	1407	1440	0840	1430	1443	1049	1508	1407	1440	0840	1430	1443
Initials		MT	MT	MT	AY	SL	MT	MT	MT	MT	MT	AY	SL	MT	MT	MT	MT	MT	AY	SL	MT	MT	MT	MT	MT	AY	SL	MT	MT

TOXICITY TEST WATER QUALITY DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX | TEST ORGANISM | Beginning Date: 12/5/21 Time: 1600

Client: Swan Creek | Common Name: Oligochaete | Ending Date: 1/5/22 Time: 1600

QC Test Number: TN-21-787 | Scientific Name: *Lumbriculus variegatus*

TARGET VALUES Temp: 23 °C pH: 6.0 - 9.0 DO: >4.0 mg/L Salinity: 0 ppt Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Sample #		Temperature (°C)							pH							Dissolved Oxygen (mg/L)							Conductivity (µS/cm)						
		8	9	10	11	12	13	14	8	9	10	11	12	13	14	8	9	10	11	12	13	14	8	9	10	11	12	13	14
AT1-697	Control	22.1	22.0	24.0	23.0	22.0	22.0	22.0	8.0	7.9	8.2	7.8	7.6	8.0	7.8	6.2	6.4	6.2	4.0	5.1	6.4	7.3	343	349	335	342	363	341	330
AT1-866		22.4	22.0	23.4	23.0	22.0	22.0	22.0	7.9	7.8	8.0	7.8	7.6	7.9	7.7	5.7	5.9	6.0	4.0	4.0	6.3	5.7	357	360	352	372	385	357	347
AT1-867		22.4	22.0	23.2	22.7	22.1	22.0	22.0	7.9	7.8	8.0	7.8	7.6	7.9	7.7	5.7	5.4	5.4	4.0	4.0	6.1	5.6	358	360	353	372	385	358	350
AT1-868		22.4	22.4	23.1	22.7	22.1	22.0	22.0	7.9	7.8	8.0	7.8	7.5	7.9	7.7	5.7	5.3	5.1	4.0	4.0	6.1	5.5	359	361	353	372	386	357	350
AT1-873		22.4	22.5	23.0	22.7	22.1	22.0	22.0	7.9	7.8	8.0	7.7	7.5	7.9	7.7	5.7	5.3	5.2	4.1	4.0	6.4	5.6	363	362	357	378	394	362	353
Meter Number		680	681	681	680	681	680	681	680	681	681	680	681	680	681	680	681	681	680	681	680	681	680	681	681	680	681	680	681
Time		1425	1508	1420	1448	1020	1501	1416	1425	1508	1420	1448	1020	1501	1416	1425	1508	1420	1448	1020	1501	1416	1425	1508	1420	1448	1020	1501	1416
Initials		MT	MT	MT	SL	SL	MT	MT	MT	MT	MT	SL	SL	MT	MT	MT	MT	MT	SL	SL	MT	MT	MT	MT	MT	SL	SL	MT	MT

TOXICITY TEST WATER QUALITY DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX | TEST ORGANISM | Beginning Date: 12/9/21 Time: 1600

Client: Swan Creek | Common Name: Oligochaete | Ending Date: 1/5/22 Time: 1600

QC Test Number: TN-21-787 | Scientific Name: *Lumbriculus variegatus*

TARGET VALUES Temp: 23 °C pH: 6.0 - 9.0 DO: >4.0 mg/L Salinity: 0 ppt Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Sample #		Temperature (°C)							pH							Dissolved Oxygen (mg/L)							Conductivity (µS/cm)						
		15	16	17	18	19	20	21	15	16	17	18	19	20	21	15	16	17	18	19	20	21	15	16	17	18	19	20	21
AT1-697	Control	22.0	22.0	22.0	22.0	22.1	22.0	22.5	8.1	8.0	8.1	8.1	7.7	8.0	8.1	6.4	6.6	6.8	6.5	5.7	7.3	6.0	339	340	331	336	333	344	319
AT1-866		22.0	22.0	22.0	22.0	22.4	22.0	22.4	8.0	8.1	8.1	8.1	7.6	8.1	8.1	6.1	6.1	6.6	6.6	5.0	7.0	5.8	355	351	356	351	350	360	331
AT1-867		22.0	22.0	22.0	22.0	22.4	22.0	22.3	8.0	8.1	8.2	8.1	7.6	8.1	8.1	6.0	6.1	5.9	6.5	5.5	6.4	6.0	359	354	356	357	347	360	330
AT1-868		22.0	22.0	22.0	22.0	22.5	22.0	22.2	8.0	8.1	8.2	8.1	7.6	8.2	8.1	6.0	6.3	5.8	6.2	5.4	6.2	6.1	357	356	358	360	347	360	332
AT1-873		22.0	22.0	22.0	22.0	22.3	22.0	22.1	8.0	8.1	8.2	8.1	7.6	8.1	8.0	5.9	6.2	5.8	6.2	5.5	6.3	6.2	358	359	357	358	354	360	333
Meter Number		680	681	681	681	681	681	681	680	681	681	681	681	681	681	680	681	681	681	681	681	681	680	681	681	681	681	681	681
Time		1048	1400	1350	1305	1331	0917	0918	1048	1400	1350	1305	1531	0917	0918	1048	1400	1350	1305	1531	0917	0918	1048	1400	1350	1305	1531	0917	0918
Initials		MT	~	TP	~	JR	TP	MT	MT	~	TP	~	JR	TP	MT	MT	~	TP	~	JR	TP	MT	MT	~	TP	~	JR	TP	MT

TOXICITY TEST WATER QUALITY DATA SHEET - OLD SOLUTIONS

Project Number: 70019.TOX
Client: Swan Creek
QC Test Number: TN-21-787

TEST ORGANISM
Common Name: Oligochaete
Scientific Name: *Lumbriculus variegatus*

Beginning Date: 12/8/21 Time: 1600
Ending Date: 1/5/22 Time: 1600

TARGET VALUES Temp: 23 °C pH: 6.0 - 9.0 DO: >4.0 mg/L Salinity: 0 ppt Photoperiod: 16 *l*, 8 *d* Light Intensity: 50 - 100 fc

Sample #		Temperature (°C)							pH							Dissolved Oxygen (mg/L)							Conductivity (µS/cm)						
		22	23	24	25	26	27	28	22	23	24	25	26	27	28	22	23	24	25	26	27	28	22	23	24	25	26	27	28
AT1-697	Control	22.6	22.0	23.3	22.8	22.3	22.0	22.0	7.8	7.8	8.5	8.2	8.4	7.8	7.9	5.4	4.9	6.0	5.2	5.5	5.2	2.6	331	353	339	343	352	345	382
AT1-866		22.6	22.0	23.0	23.1	22.4	22.0	22.0	7.8	7.8	8.4	8.1	8.3	7.8	7.9	5.2	5.0	5.9	4.0	5.5	6.2	4.9	343	371	354	367	367	362	409
AT1-867		22.5	22.2	23.0	23.2	22.5	22.0	22.0	7.8	7.8	8.4	8.1	8.3	7.8	7.9	5.7	5.3	6.0	5.0	5.9	6.1	4.7	341	370	353	367	365	365	412
AT1-868		22.5	22.2	22.9	23.2	22.4	22.0	22.0	7.8	7.8	8.4	8.1	8.3	7.8	7.9	5.9	5.6	5.7	4.1	5.9	6.1	4.3	343	337	351	365	364	367	410
AT1-873		22.4	22.4	22.8	23.2	22.3	22.0	22.0	7.8	7.8	8.4	8.0	8.2	7.7	7.8	6.2	5.7	5.9	4.2	5.8	5.9	3.7	344	378	355	371	371	368	420
Meter Number		681	680	681	681	681	681	680	681	680	681	681	681	681	680	681	680	681	681	681	681	680	681	680	681	681	681	681	680
Time		0858	0934	1038	1023	1052	1010	0915	0858	0934	1036	1023	1052	1010	0915	0858	0934	1038	1023	1052	1010	0915	0858	0934	1038	1023	1052	1010	0915
Initials		MT	AY	MT	SL	LAD	AY	LAD	MT	AY	MT	SL	LAD	AY	LAD	MT	AY	MT	SC	LAD	AY	LAD	MT	AY	MT	SC	LAD	AY	LAD

TOXICOLOGY LABORATORY BENCH SHEET - RENEWAL RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-787

Date	Time		Initials
12/8/21	AM	0930	MT
	PM		
12/9/21	AM	1030	MT
	PM		
12/10/21	AM	1353	MT
	PM		
12/11/21	AM	1320	MT
	PM		
12/12/21	AM	1433	MT
	PM		
12/13/21	AM	0957	SL
	PM		
12/14/21	AM		
	PM	1332	MT
12/15/21	AM		
	PM	1346	MT
12/16/21	AM		
	PM	1330	MT
12/17/21	AM		
	PM	1346	MT
12/18/21	AM		
	PM	1330	MT
12/19/21	AM		SL
	PM	1552	SL
12/20/21	AM	1025	SL
	PM		
12/21/21	AM		
	PM	1437	MT
12/22/21	AM		
	PM	1324	MT

TOXICOLOGY LABORATORY BENCH SHEET - RENEWAL RECORD

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-787

Date		Time	Initials
12/23/21	AM	1008	MT
	PM		
12/24/21	AM		
	PM	1313	~
12/25/21	AM		
	PM	1255	TD
12/26/21	AM		
	PM	1400	~
12/27/21	AM		
	PM	1515	JR
12/28/21	AM	0845	TD
	PM		
12/29/21	AM	0827	MT
	PM		
12/30/21	AM	0820	MT
	PM		
12/31/21	AM	0930	AZ
	PM		
1/1/22	AM	1000	MT
	PM		
1/2/22	AM	1023	SL
	PM		
1/3/22	AM	1041	LAD
	PM		
1/4/22	AM	1000	AZ
	PM		
	AM		
	PM		
	AM		
	PM		

TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-787

Day	Testing Location	Date	Time	Initials
0	52B, 53A, 53B	12/8/21	1600	—
1	52B, 53A, 53B	12/9/21	1630	MT
2	52B, 53A, 53B	12/10/21	1745	LAD
3	52B, 53A, 53B	12/11/21	1407	MT
4	52B, 53A, 53B	12/12/21	1433	AY
5	52B, 53A, 53B	12/13/21	1730	LAD
6	52B, 53A, 53B	12/14/21	1331	MT
7	52B, 53A, 53B	12/15/21	1346	MT
8	52B, 53A, 53B	12/16/21	1331	MT
9	52B, 53A, 53B	12/17/21	1346	MT
10	52B, 53A, 53B	12/18/21	1330	MT
11	52B, 53A, 53B	12/19/21	1449	SL
12	52B, 53A, 53B	12/20/21	1020	SL
13	52B, 53A, 53B	12/21/21	1436	MT
14	52B, 53A, 53B	12/22/21	1324	MT
15	52B, 53A, 53B	12/23/21	1604	MT
16	52B, 53A, 53B	12/24/21	1400	—
17	52B, 53A, 53B	12/25/21	1300	TO
18	52B, 53A, 53B	12/26/21	1400	—
19	52B, 53A, 53B	12/27/21	1516	JR
20	52B, 53A, 53B	12/28/21	0915	TO
21	52B, 53A, 53B	12/29/21	0830	MT
22	52B, 53A, 53B	12/30/21	0825	MT
23	52B, 53A, 53B	12/31/21	0930	AY
24	52B, 53A, 53B	1/1/22	1000	MT
25	52B, 53A, 53B	1/2/22	1019	SL
26	52B, 53A, 53B	1/3/22	1042	LAD
27	52B, 53A, 53B	1/4/22	1000	AY
28	52B, 53A, 53B	1/5/22	0851	LAD
29				
30				

TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-787

Date/Time/Initials	Comments/Activity

TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: Swan Creek

QC Test Number: TN-21-787

Correction Explanations

(a) Technician Error-Mathematical

(b) Technician Error-Manual Data Recording

(c) Technician Error-Head Count Observation

(d) Technician Error-Overwrite

(e) Technician Error-Missing Data

(f) Technician Error-Lost Organism

(g) Technician Error-Transcription Error

(h) Technician Error-Other:

(i) Meter Malfunction

ATTACHMENT VII

Report Quality Assurance Record
(2 pages)

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REPORT QUALITY ASSURANCE RECORD

Client: Swan Creek | Project Number: 70022.TOX

Author: M. Chan | EA Report Number: 8748

REPORT CHECKLIST

QA/QC ITEM	REVIEWER	DATE
1. Samples collected, transported, and received according to study plan requirements.		2/1/22
2. Samples prepared and processed according to study plan requirements.		2/1/22
3. Data collected using calibrated instruments and equipment.		2/1/22
4. Calculations checked:		
- Hand calculations checked		2/1/22
- Documented and verified statistical procedure used.		2/1/22
5. Data input/statistical analyses complete and correct.	Jessica M Redlich	2/8/2022
6. Reported results and facts checked against original sources.	Jessica M Redlich	2/8/2022
7. Data presented in figures and tables correct and in agreement with text.	Jessica M Redlich	2/8/2022
8. Results reviewed for compliance with study plan requirements.		2/1/22

	AUTHOR	DATE
9. Commentary reviewed and resolved.		2/11/22

10. All study plan and quality assurance/control requirements have been met and the report is approved:

PROJECT MANAGER	2/11/22 DATE
Jessica M Redlich QUALITY CONTROL OFFICER	2/8/2022 DATE
SENIOR TECHNICAL REVIEWER	2/11/2022 DATE

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APPENDIX E:

SCREENING CRITERIA

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SEDIMENT SCREENING LEVELS

Analyte	Units	TEC [a]	PEC [a]	Ohio SRV [b]	Region 5 ECO [c]	Region 4 ESV [d]
TAL Metals + Mercury (mg/kg)						
Aluminum	mg/kg	--	--	42000	--	25000
Antimony	mg/kg	--	--	0.84	--	2
Arsenic	mg/kg	9.79	33	11	9.79	9.8
Barium	mg/kg	--	--	210	--	20
Beryllium	mg/kg	--	--	0.8	--	--
Cadmium	mg/kg	0.99	4.98	0.96	0.99	1
Calcium	mg/kg	--	--	110000	--	--
Chromium	mg/kg	43.4	111	51	43.4	43.4
Cobalt	mg/kg	--	--	12	50	50
Copper	mg/kg	31.6	149	42	31.6	31.6
Iron	mg/kg	--	--	44000	--	20000
Lead	mg/kg	35.8	128	47	35.8	35.8
Magnesium	mg/kg	--	--	29000	--	--
Manganese	mg/kg	--	--	1000	--	460
Mercury	mg/kg	0.18	1.06	0.12	0.174	0.18
Nickel	mg/kg	22.7	48.6	36	22.7	22.7
Potassium	mg/kg	--	--	12000	--	--
Selenium	mg/kg	--	--	1.4	--	0.72
Sodium	mg/kg	--	--	--	--	--
Silver	mg/kg	--	--	0.43	0.5	1
Thallium	mg/kg	--	--	4.7	--	--
Vanadium	mg/kg	--	--	40	--	--
Zinc	mg/kg	121	459	190	121	121
PAHs (µg/kg)						
2-Methylnaphthalene	µg/kg	--	--	--	20.2	20.2
Acenaphthene	µg/kg	--	--	--	6.71	6.7
Acenaphthylene	µg/kg	--	--	--	5.87	5.9
Anthracene	µg/kg	57.2	845	--	57.2	57
Benzo(a)anthracene	µg/kg	108	1050	--	108	108
Benzo(a)pyrene	µg/kg	150	1450	--	150	150
Benzo(b)fluoranthene	µg/kg	--	--	--	10400	190
Benzo(g,h,i)perylene	µg/kg	--	--	--	170	170
Benzo(k)fluoranthene	µg/kg	--	--	--	240	240
Chrysene	µg/kg	166	1290	--	166	166
Dibenzo(a,h)anthracene	µg/kg	33	--	--	33	33
Fluoranthene	µg/kg	423	2230	--	423	423
Fluorene	µg/kg	77.4	536	--	77.4	77
Indeno(1,2,3-cd)pyrene	µg/kg	--	--	--	200	200
Naphthalene	µg/kg	176	561	--	176	176
Phenanthrene	µg/kg	204	1170	--	204	204
Pyrene	µg/kg	195	1520	--	195	195
Total PAH17 ND=1/2RL	µg/kg	1610	22800	--	--	--
Total PAH34 ND=1/2RL	µg/kg	1610	22800	--	--	--
PCBs (µg/kg)						
Total PCBs (ND=0)	µg/kg	59.8	676	--	59.8	59.8
Other (mg/kg)						
Oil and Grease	mg/kg	--	--	--	--	--
DRO-ORO	mg/kg	--	--	--	--	340
Cyanide	mg/kg	--	--	--	0.0001	--

Notes

a. TEC and PEC from Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
b. Ecological Risk Assessment Guidance Document (Ohio EPA 2018)
c. Ecological Screening Levels (EPA Region 5, RCRA 2003).
d. Ecological Screening Values (EPA Region 4, 2018).
-- = No screening level available.
CAS = Chemical Abstracts Service
CLP = Contract Laboratory Program
EPA = U.S. Environmental Protection Agency
ESV = Ecological Screening Values
mg/kg = Milligram(s) per kilogram
NA = Not applicable
PAH = Polycyclic Aromatic Hydrocarbon
PCB = Polychlorinated biphenyl
PEC = Probable effect concentration
SRV = Sediment reference value
TEC = Threshold effect concentration
µg/kg = Microgram(s) per kilogram

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