



Long-Term Monitoring Report

Year Four SLRIDT Project

Prepared for
XIK, LLC,
Minnesota Department of Natural Resources, and
Minnesota Pollution Control Agency

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Abbreviations and Acronyms

ACM	Activated Carbon Mat
BAZ	Bioactive Zone
CAD	Contained Aquatic Disposal
EPA	U.S. Environmental Protection Agency
FCV	Final Chronic Value
GLNPO	Great Lakes National Program Office
ID	Inner Diameter
LR-BP	Large River Bioassessment Protocol
LTM&M	Long-Term Monitoring & Maintenance Plan
MNDNR	Minnesota Department of Natural Resources
MPCA	Minnesota Pollution Control Agency
PAH	Polycyclic Aromatic Hydrocarbons
PRAO	Post-Remedial Action Objectives
QA/QC	Quality Assurance/Quality Control
RA	Response Action
RD/RAP	Remedial Design/Response Action Plan
ROD	Record of Decision
SedOU	Sediment Operable Unit
SLRIDT	St. Louis River/Interlake/Duluth Tar Site
SOU	Soil Operable Unit
TICMP	Tallas Island Compensatory Mitigation Project
XIK	Responsible party

Units

cm	centimeters
F	Fahrenheit
m	meters
mg/kg	milligram per kilogram
mg/L	milligram per liter
#/m ²	density as number of organism per square meter

Executive Summary

The St. Louis River/Interlake/Duluth Tar (SLRIDT) site caps are performing as designed to contain polynuclear aromatic hydrocarbon (PAH)-impacted sediment, in accordance with the Remedial Design/Response Action Plan and the Minnesota Pollution Control Agency Record of Decision, based on monitoring completed in accordance with the Long-Term Monitoring & Maintenance (LTM&M) Plan. Additionally, vegetation and benthic monitoring indicates the site flora and fauna are on a good recovery trajectory and are expected to recover to provide ecosystem services consistent with other areas of the St. Louis River estuary with similar conditions and characteristics.

This report presents the methods, procedures, and results from the fourth year of cap stability and pore water monitoring, and the second year of benthic invertebrate sampling, completed in 2016. Pore water monitoring of the contained aquatic disposal (CAD) facility cap was also conducted in 2011 and 2012 for the U.S. Environmental Protection Agency Great Lakes National Program Office project and a final report issued to EPA. The EPA-required monitoring, which is not included or discussed in detail in this report, also indicated the CAD cap is performing as designed with respect to pore water migration.

Pore water samples collected in 2016 confirmed that the SLRIDT site caps are performing as designed. Two areas (one in Stryker Bay and one in the wet meadow portion of Slip 7) that have had PAH concentrations above the post-remedial action objectives in pore water at the base of the bio-active zone in past years were more fully delineated in 2016, confirming that the exceedances are isolated to relatively small areas.

Isolated areas of minor cap erosion at the shoreline at the north end of Stryker Bay and at the north end of the CAD were repaired in 2016, in accordance with the LTM&M Plan.

Upland and aquatic vegetation monitoring of the SLRIDT and Tallas Island Compensatory Mitigation Project work areas in 2015 concluded that plant communities at these sites have been re-established and are anticipated to recover to conditions similar to elsewhere in the St. Louis River estuary.

Benthic assemblage and abundance sampling was conducted for the second time in 2016. A diverse and abundant benthic macroinvertebrate community has developed at the site, and these initial results indicate that the benthic macroinvertebrate community is on a good recovery trajectory, and are anticipated to recover to conditions similar to elsewhere in the St. Louis River estuary.

1.0 Introduction

The MPCA-approved LTM&M Plan (Hard Hat Services 2013) for the SLRIDT site focuses on areas of the SedOU where RA caps were designed and installed to contain PAH-impacted sediments. The LTM&M inspections and samples were biased to the capped areas with PAH-impacted sediment remaining in place to provide the greatest probability of detecting PAHs migrating into the site caps. PAHs are the contaminant of concern with respect to the LTM&M of the SLRIDT caps. Aquatic and upland vegetation monitoring was completed annually from 2011 to 2015. The first year of pore water, bulk sediment and cap stability monitoring was 2013. Benthic assemblage monitoring was completed in 2014 and 2016.

The monitoring and maintenance activities conducted in 2016 include:

- Pore water sampling,
- Visual inspections of above-water cap areas,
- Cap thickness measurements,
- Survey activities below water to confirm the continued presence of armor materials placed during RA construction,
- Benthic invertebrate assemblage and abundance sampling, and
- Repair of two shoreline erosion areas affecting RA caps.

Tier I sampling and analysis activities are focused at the base of the bioactive zone (BAZ) to serve as an early indicator of potential PAH migration into site caps prior to potential impacts to the benthic organisms. The Tier I sampling requirements will be followed until one of the following conditions occurs:

- A PAH exceedance is observed and confirmed, at which time Tier II sampling activities will be implemented.
- Modification is requested and approved by XIX (the responsible party) and the MPCA.
- An extenuating circumstance at the SLRIDT site requires an immediate elevation from Tier I to Tier III.

Cap maintenance activities will be categorized as Minor Deficiencies or Major Deficiencies and will be remedied in accordance with the following descriptions:

- **Minor Deficiencies** are classified as isolated areas of erosion, disruptive cap settlement, lack of vegetation, or animal burrows where cap or bank stability may become compromised. These areas must be repaired by adding materials that meet the specification as defined in the RD/RAP or the TICMP permit requirements. The MPCA must be notified of these minor deficiencies when they are identified and shall be repaired as soon as practical.

- **Major Deficiencies** are classified as areas where the cap integrity may be compromised and/or contaminated sediments exposed. No repairs shall be made until a repair-specific remedial plan is approved by the MPCA. All areas where visual inspections and minor/major repair maintenance activities have taken place must be documented within the Annual LTM&M Report. The dates, activities, equipment, materials, and photos of the repairs shall be included within the Annual LTM&M Report.

1.1 Site Description

The SLRIDT site is located within the West Duluth neighborhood of the City of Duluth on the north bank of the St. Louis River, approximately four river miles upstream from Lake Superior (Figure 1).

The SLRIDT site includes approximately 255 acres of land and river embankments, wetlands, and shipping slips. The land portion of the SLRIDT site includes the 59th Avenue (Hallett) Peninsula and the 54th Avenue Peninsula, and is bounded on the north by the Burlington Northern railroad right-of-way and on the south by the St. Louis River.

The aquatic portion of the SLRIDT site includes Stryker Bay (approximately 41 acres and defining the western boundary of the SLRIDT site), Slip 6 (approximately 15 acres), and Keene Creek Bay/Slip 7 including the 48-inch outfall area and the Minnesota Channel (approximately 34 acres and defining the eastern boundary), and a portion of the St. Louis River south of the two peninsulas and the former shipping slips. A small portion of the SedOU (approximately 0.3 acres at the mouth of Slip 6 and 1.1 acres in the Minnesota Channel) is within the waters of the State of Wisconsin.

Residences are located west of the SLRIDT site on the 63rd Avenue Peninsula (on the west side of Stryker Bay), and to the north of the railroad tracks that form the northern boundary of the SLRIDT site. Approximately 800 people live within one mile of the SLRIDT site.

The SLRIDT and North Bay sites experienced a 500-year flood event that occurred throughout the area in June 2012. Using August water levels to compare the changes over time, water levels of 2014, 2015, and 2016 have not been seen since about 1996, and are currently about 18 inches higher than the chart datum (USACE 2016).

1.2 Institutional Controls

Institutional controls required for the SedOU are currently in preparation and have not been finalized or recorded on property records. The SedOU institutional controls are; 1) establish a conservation easement for the shoreland areas (RD/RAP Figure 11-2), and 2) prepare an Environmental Covenant and Easement establishing use restrictions in areas where PAH-impacted sediments are covered, capped or contained (RD/RAP Figure 4-6). The institutional controls for the SOU included establishment of a groundwater use restriction that does not influence the LTM&M for the SedOU.

The monitoring requirements related to SedOU institutional controls will be detailed in the documents establishing the required easements.

2.0 Annual Sampling and Monitoring

2.1 Pore Water

2.1.1 Introduction

Pore water samples were collected at all planned locations as described in the LTM&M Plan, 2015 LTM&M report, and the March 17, 2016, MPCA letter, *Review and Approval with Conditions, Long-Term Monitoring Reports, Year Two and Year Three, St. Louis River/Interlake/Duluth Tar Superfund Site, Sediment Operable Unit, SR149, Duluth, Minnesota*. SedPoint samplers consisting of a 6-inch-long, polypropylene screen attached in line to ¼-inch inner diameter (ID) polyethylene tubing were used to collect pore water samples at the locations shown on Figure 2.

2.1.2 Methods

The SedPoints were installed from a boat using a stainless steel SedPoint Installation Tool in accordance with construction and installation methods provided by the SedPoint manufacturer, MHE Products, presented in Exhibit A of the LTM&M Plan.

The SedPoint screen was pushed through the capping sand to the top of the ACM in Stryker Bay, top of the root barrier in the land area near Slip 7, and to one-half the depth of the BAZ and/or the base of the BAZ in other areas. The BAZ was defined in the LTM&M Plan as a depth of 1 meter in areas with water depths less than 8 feet, and 0.5 meter in areas with water depths greater than 8 feet. A hand held concrete vibrator tool was used as an aid while hand pushing the installation tool through the capping material. The installation tool was then removed, leaving the 6-inch SedPoint screen tip typically within 3 inches of the driven depth, depending on the amount of friction encountered inside the installation tool.

SedPoint installation was attempted at all sample locations depicted on Figure 2 on June 21 and 22, 2016. The cap material at points SB-PW-11, SB-PW-12, and SB-PW-13 was very dense below depths of approximately 1.1 to 1.5 feet and points could not be installed with just a push rod and concrete vibrator tool. The SedPoints were installed to the base of the BAZ at these three points on June 29, 2016 by creating a pilot boring with a slide hammer to break through the resistant material and allowing sediment to remain in the pilot boring. The SedPoints were then installed through the loosened sediment in the pilot boring using the manufacturer's recommended method.

Due to sampling and/or laboratory issues, SedPoints at SB-PW-11 and SB-PW-12 were reinstalled on August 30, 2016 to facilitate collecting additional samples from select points.

Pore water samples were collected in accordance with the Low Flow Sampling Procedure presented in Exhibit C of the LTM&M Plan. Samples were collected using a peristaltic pump to draw pore water through the SedPoints at a flow rate of less than 500 milliliters per minute. At least 5 tubing volumes of water were purged from the sampling points prior to collecting analytical samples. One 1-liter amber sample jar was filled at each sample location. Samples were submitted to Pace Analytical for laboratory analysis of PAHs using EPA method 8270C SIM.

Pore water PAH concentrations were compared to the PAH specific FCVs presented in the EPA's Equilibrium Partitioning Sediment Benchmark for the Protection of Benthic Organisms document from November 2003, in accordance with RD/RAP Appendix B, Quality Assurance Project Plan and Monitoring Plan, Table B-7. The site-specific list of 17 PAHs comprising the total PAH concentration will be used during the LTM&M monitoring activities and the sum of the ratios will be used for the compliance standard.

2.1.3 Results

Pore water samples were collected from a total of 26 locations in 2016. These locations included 20 Tier I monitoring locations as presented in the LTM&M Plan and six Tier II monitoring locations (SB-PW-11, SB-PW-12, SB-PW-13, S7-PW-11, S7-PW-12, and S7-PW-13) as presented in the 2015 annual monitoring report. All locations are shown on Figure 2.

Pore water samples were collected from the base of BAZ, top of ACM, or top of the root barrier at all 26 locations (Figure 2). Target PAH compound concentrations were less than detection limits and/or FCVs in samples collected in 2016 at 22 of 26 sample locations. The sum of the PAHs to FCV ratios exceeded 1 at four sample locations from the full target depth: SB-PW-02, SB-PW-12, and SB-PW-13 in Stryker Bay; and S7-PW-06 located in the filled (former mudflats) portion of Slip 7 (Figure 2). A compound-specific FCV (naphthalene) was exceeded only at SB-PW-02, SB-PW-13, and S7-PW-06. No individual PAHs exceeded FCVs in the sample from SB-PW-12 (3.0 feet). Additionally, no other PAH compound concentrations exceeded FCVs in any sample. Analytical results of the pore water samples are summarized on Table 1; validation information is presented on Tables 2 and 3.

Pore water samples were also collected from shallower depths of approximately one-half the depth of the BAZ at eight locations: SB-PW-02, SB-PW-11, SB-PW-12, and SB-PW-13 in Stryker Bay; and S7-PW-06, S7-PW-11, S7-PW-12, and S7-PW-13 in Slip 7 and the filled portion of Slip 7 (Figure 2a). Target PAH compound concentrations were less than detection limits and/or FCVs in samples collected at one-half the BAZ at six of the eight locations. The sum of the PAHs to FCV ratios exceeded 1 only at SB-PW-02 and SB-PW-13, both in Stryker Bay. No individual PAH compounds exceeded FCVs in the sample from SB-PW-13 (2.0 feet). Additionally, no other PAH compound concentrations exceeded FCVs in any sample.

The actual sample depths were at the target depths, except at sample locations (SB-PW-01 (2.1 feet), SB-PW-02 (2.8 feet), SB-PW-03 (2.6 feet), SB-PW-06 (1 foot) in Stryker Bay; and S7-PW-11 (2 feet), S7-PW-12 (2.5 feet), and S7-PW-13 (2 feet) in Slip 7) where refusal was met at less than 1 meter of depth (Table 4).

Samples were collected for a second time in 2016 from locations SB-PW-02, SB-PW-11, SB-PW-12, SB-PW-13 from both the base of the BAZ and one-half the depth of the BAZ, and from S6-PW-02 from the base of the BAZ, on September 9, 2016. Sample vials from SB-PW-02 and S6-PW-02 and/or the duplicate sample vials from these two locations appeared to have been mislabeled, or misinterpreted ("SB" being mistaken for "S6", and vice-versa, on the sample container), for the June 2016 sampling round. Sample concentrations did not match either past results or duplicate sample results, but could be matched by switching sample names. The June 2016 results from these locations were not considered valid and are not reported on Table 1 for these reasons. PAH concentrations at locations SB-PW-12 and SB-PW-13 had

higher PAH concentrations in the shallow sample (1/2 the BAZ thickness) than in the sample at the base of the BAZ, which was not anticipated. These were locations where it was difficult to install the deep SedPoints, as mentioned above, and the alternative installation method may have affected necessary equilibration time and, therefore, sample quality. A second sampling round was conducted in September 2016 after the SedPoints had been allowed to equilibrate for a longer period of time. All sample results are reported on Table 1, however, the information described above only presents the September 2016 results for clarity.

Quality Assurance/Quality Control (QA/QC) criteria were met for the sample analyses. QA/QC data is presented in Appendix A.

2.1.4 Discussion

Pore water concentrations in the capped portion of the SLRIDT site have met performance criteria with the exception of isolated locations and/or occurrences. Tier I pore water criteria exceedances for total PAHs have been observed annually in samples at locations SB-PW-02 and S7-PW-06, including in 2016. The Tier I criteria for total PAHs was exceeded in the sample collected at S7-PW-01 once in 2014 and the sample collected at S6-PW-01 once, in 2015. Prior and subsequent samples from S7-PW-01 and S6-PW-01 have met Tier I criteria including those collected in 2016. Tier II sampling was conducted in 2015 in the vicinity of SB-PW-02 in Stryker Bay in accordance with the LTM&M Plan. Concentrations of PAHs at Tier II locations in Stryker Bay in 2015 had a sum of PAH to FCV ratios of less than 1, which appeared to delineate the area where Post-Remedial Action Objectives (PRAOs) are exceeded (Figure 2a). Additional Tier II sampling was conducted in 2016 in Stryker Bay closer to the SB-PW-02 location at the base of the BAZ and approximately one-half the thickness of the BAZ to further evaluate the vertical and lateral area where PRAOs were exceeded. PRAOs were met in both samples at SB-PW-11 and in the shallow (1/2 BAZ) sample at PW-12. PRAOs were exceeded in both samples at SB-PW-13 and at the deep sample at PW-12; however, PAH concentrations in samples from SB-PW-12 and SB-PW-13 were less than those at SB-PW-02.

Tier II sampling was conducted in 2015 in the vicinity of S7-PW-06 in the filled portion of Slip 7. Sample results were less than PRAOs in two of the four locations (Figure 2a). Additional Tier II sampling was conducted in 2016 near this location at the base of the BAZ and approximately one-half the thickness of the BAZ to evaluate the vertical and lateral area where PRAOs were exceeded. All Tier II samples collected in 2016 from the Slip 7 area met PRAOs.

The objective of Tier II monitoring is to delineate the extent of PRAO exceedances, and to evaluate if Tier III actions need to be conducted. The lateral areas with pore water PRAO exceedances in Stryker Bay and adjacent to Slip 7 have been successfully delineated based on the Tier II sample results. Bulk sediment samples from these areas have consistently had PAH concentrations below the PRAOs (Section 2.2).

2.1.4.1 Tier II Monitoring Plan

The areas of Tier I pore water PRAO exceedances in Stryker Bay and Slip 7 have been delineated. The areas are isolated, and the area in Slip 7 is located in a wet meadow habitat setting.

Benthic macroinvertebrate bioaccumulation monitoring is required if PRAOs are exceeded for two successive years. Benthic macroinvertebrate sampling is scheduled for 2017, and an additional sample point to those already planned is proposed near SB-PW-02 to evaluate BAZ conditions.

2.2 Bulk Sediment

2.2.1 Introduction

Tier I bulk sediment monitoring was not conducted in 2016 and is no longer a sampling requirement for future sampling in accordance with the LTM&M Plan because no bulk sediment samples exceeded the Total PAH criteria of 13.7 mg/kg in sampling rounds conducted in 2013 and 2015.

2.3 Cap Stability

2.3.1 Introduction

Cap stability monitoring is intended to identify cap areas that have been compromised and no longer meet the requirements of the MPCA ROD, in accordance with the LTM&M Plan.

2.3.2 Methods

Cap stability monitoring consists of a combination of the following components:

- Cap thickness measurements for the subaqueous areas with sand caps;
 - o Sand caps underlain with geosynthetics were probed to confirm the cap thickness,
 - o Sand caps without geosynthetics were cored and measured to confirm thickness
- Probing to determine the presence or absence of armor material and identify the elevation of caps containing gravel and cobble materials;
- Visual observations and cap thickness surveys where erosion observed for areas above, and leading into, the water; and,
- Visual inspection of dock walls above the water level in the CAD and Slip 7 from shore and/or water for deterioration that may have the potential to negatively impact the cap stability.

Cap thickness measurements were conducted by probing to the depth of the geosynthetic, or by collecting sediment core samples and measuring the thickness of cap materials in the sample core in capped areas where no geosynthetic was installed. The cap thickness measurements were completed during June and July 2016 in accordance with the LTM&M Plan at the locations shown on Figure 2. Measurements are presented on Table 4.

The presence of gravel or cobble below the current water elevation was probed with a rod to determine the presence or absence of the armor materials at the locations shown on Figure 2.

Photo documentation of the above-water caps was collected at the locations and directions presented on Figure 3 on October 24, 2016, with photographs taken in the directions listed by degrees in Table 5 and Appendix B. The photos are intended to serve as a year-by-year comparison to review visual changes over longer periods of time. Additional cap stability monitoring information is included in subsequent sections.

The banks of the TICMP site have been visually inspected for erosion, sparsely vegetated areas, slumping of bank materials, and any other unusual condition.

Dock wall inspections and riparian buffer zone transects above water inspections (Figure 4) were also conducted. Results are recorded on the inspection report form provided in the LTM&M Plan (Appendix C), and additional site photos are included in Appendix D.

2.3.3 Results and Discussion

Cap thickness measurements to determine the presence of gravel and cobbles in aquatic areas were conducted in June at the time pore water sample SedPoints were installed. Measurement data are summarized in Table 4. Measurements could not be made to the design depth at two locations within Slip 7 (S7-CT-02 and S7-CT-03). The core sampler was pushed to the target depth at these locations, but no or limited recovery of sediment was obtained. Material recovered was sand material used for the cap. This type of sand can be difficult to recover in the sampler, and there was no change in material noted based on the resistance to push the sampler into the sediment. Therefore, it is assumed that at least 3 feet of cap material is present at those locations. No thinning of the cap material was observed. The thickness measurements were consistent with past measurements at these locations.

Lake Superior and St. Louis River water levels in 2016 were 6.72 inches above the long-term average elevation, which is 6 to 17 inches above the level of the last several years. Water levels in 2016 were compared, and found to be similar to those of 2015 (<http://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Current-Conditions/>).

The heads of Stryker Bay and the CAD have had areas of erosion where overland runoff has formed channels in the cap material. These areas were surveyed in 2015 to confirm that cap material was thinner than designed and repairs were completed in 2016 after this confirmation (see Section 3.0). Hillside erosion areas of the east side of Stryker Bay have also been reconstructed by the landowner, and this area now has fewer erosional features.

The inspection transect at the south end of the 59th Avenue West Peninsula crosses an upland area which is well-vegetated and no erosional areas were observed. Increased construction activity is present on the peninsula, and a new rail yard is being constructed on Dock 6.

The dock wall along the western edge of Slip 6 (CAD) appears to be intact, and has no visible deficiencies. On the eastern shore of Slip 6 (CAD), the vegetative cover is increasing gradually.

The 54th Avenue West Peninsula had increased vehicle activity in 2013 and 2014, with a well-worn road crossing the culvert at the north end of Slip 7 to gain access to the peninsula. This roadway is still evident,

although it appears that there has been no more traffic accessing the site from that location since boulders were placed across this entry point in late fall of 2014. Repairs were made to the most eroded areas near the southwestern shoreline. The cobble armor along the southern end of this peninsula appears to be intact, with much of the cobble still underwater, and the outer-most line of cobbles are visible at water level.

Conditions along the Slip 7 dock wall appear to be similar to the 2013, 2014, and 2015 inspections, with several areas where the soil behind the dock wall has washed out.

Tallas Island shoreline inspections completed in November 2016 observed similar conditions to 2014 and 2015. There is still a delta at the mouth of Knowlton Creek, and there is a beaver dam near the south end of the island near the inlet. Although water levels are higher this year, the banks appear to be stable and no erosion was observed.

2.4 Benthic Assemblage and Abundance

2.4.1 Introduction

Benthic macroinvertebrate assemblage (benthic community) and abundance were monitored at the SLRIDT site in order to track the re-establishment of the biotic community after completion of the response actions. This monitoring resulted in data regarding the diversity in the benthic macroinvertebrate assemblages and taxa (species) abundance in the four sampling areas: North Bay (reference location), Stryker Bay, Slip 6, and Slip 7. The monitoring plan requires that Stryker Bay, Slip 6, and Slip 7 be monitored for the reestablishment of the benthic macroinvertebrate communities and compared to the North Bay reference site every two years starting in 2014. This section provides the 2016 monitoring results.

2.4.2 Methods

2.4.2.1 Field Collection

The benthic macroinvertebrate community was sampled using a modification of the Large River Bioassessment Protocol (LR-BP) for Benthic Macroinvertebrates developed by EPA, as stated in Exhibit E of the LTM&M Plan. Each of the four sampling areas (North Bay, Stryker Bay, Slip 6, and Slip 7) were divided into generally equally spaced transects with three sampling stations on each transect. North Bay and Slip 7 each had 4 transects and 12 sample stations, Stryker Bay had 6 transects and 18 sample stations, and Slip 6 had 7 transects and 21 sample stations (Figure 5 and Figure 6).

At each sampling station, 3 ponar grabs were collected, composited, washed through a 242-micron sieve bucket, placed in sample jars, and preserved in the field (Appendix E - photographs). Physical habitat characteristics and water quality data were collected at each sample station, including sediment type, water depth, temperature, and dissolved oxygen percentage. Water clarity was measured at each sampling area, except Stryker Bay, using a Secchi disk.

2.4.2.2 Laboratory Identification

Sixty-three preserved samples were sent to Rhithron Associates, Inc. for taxonomic identification. Standard sorting protocols were applied in an attempt to achieve subsamples with a minimum of 300 organisms. The sorting was conducted using Caton sub-sampling trays that were divided into 30 grids, with each grid approximately 6 cm by 6 cm. Each individual sample was thoroughly mixed in its jar, poured out and evenly spread into a Caton tray, and individual grids were randomly selected. The contents of each grid were examined under stereoscopic microscopes using 10x-30x magnification. All benthic macroinvertebrates from each selected grid were sorted and placed in a jar with 80% ethanol for subsequent taxonomic identification. Grid selection, examination, and sorting continued until at least 300 organisms were sorted or until the entire sample was processed. All samples for this project were completely processed because there were fewer than 300 organisms collected for each sample station in 2016.

The benthic macroinvertebrates were individually examined by certified taxonomists, using 10x-80x stereoscopic dissecting scopes (Leica S8E) and identified to target taxonomic levels consistent with MPCA stream protocols and requests from the Barr project manager, using appropriate published taxonomic references and keys. Appendix F includes the taxonomic classification levels for all organisms collected and identified in 2014 and 2016, as well as the number of sample stations where each taxa was collected.

2.4.3 Results

2.4.3.1 Laboratory QA/QC

Rhithron Associates, Inc. provided their similarity statistics for the laboratory results in 2016. The identified that the sorting efficiency averaged 99.22%, taxonomic precision for identification and enumeration as measured by the Bray-Curtis index averaged 99.15%, percent taxonomic disagreement averaged 0.99%, the percent difference in enumeration averaged 0.14%, and data entry efficiency was 100%. These similarity statistics fall within acceptable industry criteria (Stribling et al. 2003). A technical summary of methods, quality assurance procedures, and quality assurance results for 2014 and 2016 are included in Appendix G.

Representatives of benthic macroinvertebrates (reference specimen) identified to the target level were photographed and placed in reference collection vials. Each reference specimen was verified by three additional taxonomists. Reference specimens added to the collection and taxonomist verifications were tracked on a reference collection form. An electronic spreadsheet and a compact disk including reference specimen collection photographs were provided to Barr; all these data and photographs are stored at Barr's offices along with other project data.

2.4.3.2 Sample Collection and Field Results

Water quality parameters collected in 2016 were relatively similar for all sampling locations; Slip 7 had the lowest mean dissolved oxygen and Secchi Disk depth of the sampling locations (Table 6).

The dominant substrate identified at the sampling stations was primarily fine silt; some substrates also included organic debris or sand with the silt (Table 7).

Table 6 **Field Site Data - 2016 (by sampling location)**

Sampling Location	Mean % Dissolved Oxygen	Mean Dissolved Oxygen (mg/L)	Secchi Disk Depth (inches) ⁽¹⁾	Air Temperature (degrees F)	Mean Water Temperature (degrees F)
North Bay	86%	7.38	24.0	65	72.3
Stryker Bay	76%	6.74	---	68	69.8
Slip 6	91%	7.08	19.2	75	80.0
Slip 7	71%	6.02	16.8	68	73.2

(1) Secchi Disk measurements for clarity were not measured in Stryker Bay.

2.4.3.3 Benthic Macroinvertebrates

In 2016, benthic macroinvertebrates were collected at a total of 63 sample stations across four locations (Table 8). There were 66 taxa identified across the four sampling locations, representing five phyla and five insect orders (Appendix F). North Bay, Stryker Bay, and Slip 6 each had 34 total taxa; North Bay also had the highest mean density of organisms per square meter in 2016 (Table 9).

Appendix G provides a listing of species and their densities (#/m²) for at each sample station where benthic macroinvertebrates were present in 2014 and 2016. Table 10 provides a summary of the taxa found at each sampling location in 2016. The list of taxa in Table 10 also defines the lowest taxonomic levels used for the data analyses.

Table 8 **Number of Taxa and Samples Collected by Sampling Location – 2014 and 2016**

Sampling Location	2014		2016	
	Number of Sample Stations with Macroinvertebrates	Number of Taxa per Sampling Location	Number of Sample Stations with Macroinvertebrates	Number of Taxa per Sampling Location
North Bay	8	20	12	34
Stryker Bay	12	18	18	34
Slip 6	3	18	21	34
Slip 7	5	2	12	22

Table 9 **Mean Number of Benthic Macroinvertebrates per Square Meter by Location – 2014 and 2016**

Sampling Location	2014			2016		
	Mean Number of Benthic Macro-invertebrates (# /m ²)	Standard Deviation	Range (#/m ²) ⁽¹⁾	Mean Number of Benthic Macro-invertebrates (#/m ²)	Standard Deviation	Range (#/m ²)
North Bay	14,655	16,593	0 – 56,449	12,737	11,376	1,045 - 42,237
Stryker Bay	6,122	12,453	0 – 48,304	5,936	5,886	627 - 21,119
Slip 6	7,159	8,812	0 – 27,391	11,470	11,546	1882 - 51,019
Slip 7	157	426	0 – 1,464	3,014	2,431	627 - 7,318

(1) Summary statistics calculated using all sampling stations at each sampling location. Sampling stations with no macroinvertebrates collected = 0.

Table 10 Taxonomic Summary by Sampling Location - 2016

Taxonomic Group	Number of Taxonomic Groups ⁽¹⁾			
	North Bay	Stryker Bay	Slip 6	Slip 7
Annelida	2 Subclasses	2 Subclasses	1 Subclass	1 Subclass
Arachnida	1 Subclass	1 Subclass	1 Subclass	1 Subclass
Amphipoda	1 Family	0	0	0
Ceratopogonidae	1 Family	1 Family	1 Family	1 Family
Chaoboridae	0	0	1 Family	0
Chironomidae	17 Genera	20 Genera	21 Genera	12 Genera
Ephemeraeidae	1 Genus	1 Genus	1 Genus	1 Genus
Caenidae	1 Genus	1 Genus	1 Genus	1 Genus
Halipidae	0	1 Genus	0	0
Megaloptera	1 Genus	0	0	0
Trichoptera	2 Families	0	2 Families	2 Families
Isopoda	1 Genus	1 Genus	0	0
Gastropoda	3 Genera	2 Genera	2 Genera	0
Bivalvia	1 Family	3 Families	2 Families	2 Families
Nemata	1 Phylum	1 Phylum	1 Phylum	1 Phylum
Platyhelminthes	1 Class	0	0	0
TOTAL TAXA	34	34	34	22

(1) Lowest taxonomic classification used for taxa count in reporting and calculations; excludes single individuals unidentifiable below the Taxonomic Group. Hierarchy for Taxonomic Group in decreasing order or rank includes Subclass, Family, and Genus.

2.4.4 Discussion

2.4.4.1 Taxa Composition, Diversity, and Evenness

The taxa structure of the benthic macroinvertebrate community was also assessed for diversity and community evenness. We calculated four metrics: the H' – the Shannon Diversity Index, D_{MG} – Margalef's Diversity Index, $e^{H'}$ – number of expected taxa, and E_H – Evenness Index for the benthic macroinvertebrate community at each of the sampling stations for 2016 (Magurran 2004). The results of these four metrics were used to evaluate the overall benthic macroinvertebrate community composition at the four sampling locations. None of these calculations were completed for the 2014 sampling results,

The Shannon Diversity Index (H') uses the species (taxa) abundance proportionality to provide a non-parametric value that can be used to compare diversity differences. Calculated values for H' typically range from 1.0 to 3.5, where a higher value indicates a more diverse community. The Shannon Diversity Index was calculated for the 2016 samples using:

$$H' = - \sum_{i=1}^S p_i \ln p_i$$

Where: S = the number of taxa (also called taxa richness)

p_i = the relative abundance of each taxa, calculated as the proportion of the total sample (n) belonging to the i^{th} taxa:

$$\frac{n_i}{N}$$

The evenness index (E_H) is the ratio of observed species diversity to what might be the maximum diversity if all of the species were equally abundant. This assumes that all species at each location have been collected. The value for E_H ranges between 0 and 1. A value of 1 is obtained when all species are of equal abundance and 0 is obtained when one species is dominant. The evenness index was calculated using:

$$E_H = H' / \ln S$$

Where: H' = the Shannon Diversity Index

S = the number of taxa (also called taxa richness)

Margalef's Diversity Index (D_{MG}) uses the species (taxa) abundance proportionality to provide a non-parametric value that can be used to compare diversity differences. This diversity index provides a quick measure of diversity based upon taxa abundance and dominance. Calculated values for D_{MG} typically range from 1.0 – 3.5, where a higher value indicates a more diverse community. Margalef's Diversity Index was calculated for the 2016 samples using:

$$D_{MG} = S-1 / \ln N$$

Where: S = the number of taxa (also called taxa richness)

N = the total number of organisms

The H' and E_H values for the four locations indicate relatively similar taxa diversity and evenness for the benthic macroinvertebrate community present in 2016 (Table 11). Sample size can influence the variability of the diversity indices. The diversity indices were not calculated for the 2014 samples due to the small sample sizes.

Table 11 **Summary of Taxa Diversity and Evenness Indices - 2016**

Sampling Location	H'	E _H	e ^{H'}	D _{MG}	# Taxa	# Samples
North Bay	2.32	0.66	10	2.77	34	12
Stryker Bay	2.53	0.72	13	2.85	34	18
Slip 6	2.18	0.62	9	2.66	34	21
Slip 7	2.48	0.80	12	2.19	22	12

While Table 11 shows that H', D_{MG} and E_H are similar across the sampling locations, Figure 7 shows that the species composition in 2016 is not similar. Slip 7 had fewer taxa, lower densities and nearly 70% of the organisms were chironomids. In 2014, Slip 7 was also different from the other three locations in composition; it had only two taxa in the two samples enumerated (Figure 8).

The diversity and evenness measures indicate that Stryker Bay had the most diverse benthic macroinvertebrate community in 2016 for all sampling locations, in terms of both taxa richness and evenness (Table 11). Slip 6 also had higher total taxa numbers and taxa diversity that were similar to the reference sampling location, North Bay. A review of the 2016 taxa composition data (Table 12 and Figure 7) indicates that dominance by bivalves in North Bay and oligochaetes in Slip 6 influences the lower values for the diversity indices, compared to higher values for Stryker Bay. Slip 7 appears to have good taxa diversity based on H' but not D_{MG}, suggesting that the macroinvertebrates are more evenly distributed among fewer taxa (Table 11).

A comparison of the taxa composition data from 2014 and 2016 (Table 12, Figures 8 and 7) indicates that bivalves increased in proportion at all sampling locations; North Bay had the largest increase (31%). Slip 6 showed the largest decrease in the proportion of chironomids (35%) and the largest increase in the proportion of oligochaetes (40%).

Table 12 Taxa Composition by Location - 2014 and 2016

Sampling Location 2016	Percent Composition						
	Chironomidae	Non-Insect Arthropods	Oligochaeta	Bivalves	Gastropods	Nematoda	Other
North Bay	27%	1%	6%	36%	3%	10%	16%
Stryker Bay	32%	1%	20%	17%	1%	10%	19%
Slip 6	32%	0%	42%	7%	1%	7%	10%
Slip 7	67%	3%	5%	3%	0%	3%	18%

Sampling Location 2014	Percent Composition						
	Chironomidae	Non-Insect Arthropods	Oligochaeta	Bivalves	Gastropods	Nematoda	Other
North Bay	52%	13%	2%	5%	10%	3%	15%
Stryker Bay	35%	16%	2%	1%	9%	2%	35%
Slip 6	67%	7%	2%	3%	4%	4%	13%
Slip 7	0%	0%	0%	0%	0%	0%	100%

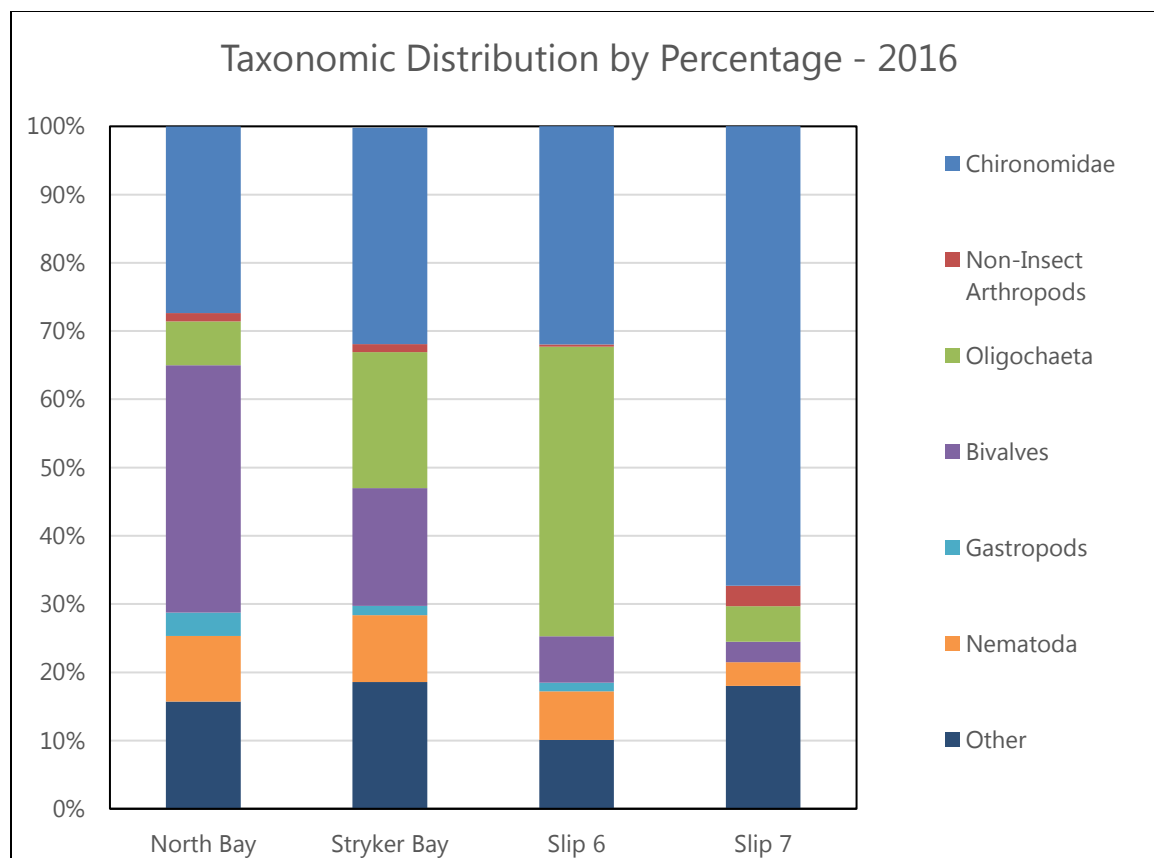


Figure 7 Taxonomic Distribution by Percentage at Sampling Locations - 2016

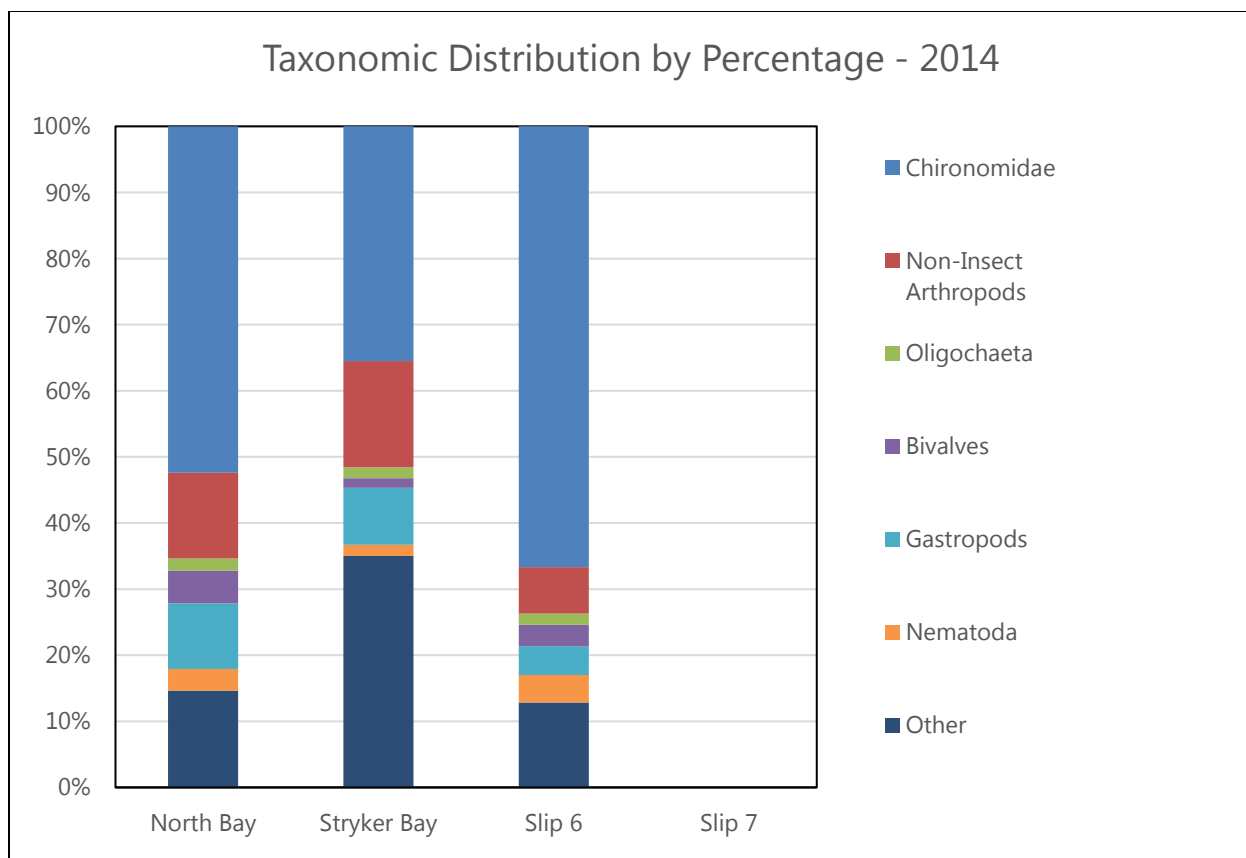


Figure 8 Taxonomic Distribution by Percentage at Sampling Locations (2014)

2.4.4.2 Taxa Abundance and Density

The number of taxa collected at all sampling locations was greater in 2016 compared to 2014 (Table 8); the increase in taxa numbers was greatest in Slip 7. In 2014, benthic macroinvertebrates were not collected at all sample stations; however, in 2016, benthic macroinvertebrates were collected from all sample stations (Table 8). In 2016, there were 34 taxa identified for North Bay, Stryker Bay, and Slip 6; and 22 taxa identified for Slip 7.

The density of benthic macroinvertebrates increased at Slip 6 and Slip 7 by 60% and 1,820%, respectively, from 2014 to 2016 (Table 9); densities dropped slightly in Stryker Bay and North Bay. Sampling stations with the greatest density of benthic macroinvertebrates in 2016 tended to be centrally located within each water body (Appendix G). The exception was in North Bay, where the greatest concentration of organisms was closest to the main body of the river. Noteworthy is the ongoing Wild Rice restoration work being performed in the St. Louis River Estuary. Several bays, including North Bay were mowed for removal of submerged aquatic vegetation in 2106 in preparation for seeding wild rice. This disturbance may have impacted the 2016 benthic density at North Bay, as we did not collect any of the Zygopterans (Odonata) present in 2014.

The taxa numbers and density of benthic macroinvertebrates were reported in a number of synoptic (general summary) studies undertaken within the St Louis River Estuary (Table 13). Many of these studies

included multiple types of sampling methods for benthic macroinvertebrates; therefore, only studies which used a ponar dredge were included for comparison to the SLIRDT sampling locations. Results are summarized in Table 13 for number of taxa, taxa composition, and benthic macroinvertebrate density. The number of taxa reported for each study presented the greatest challenge for comparison of study results since the taxonomic level used to report the "number of taxa" was not uniform across the studies, different taxa level were reported, and in some studies the taxa numbers used in the assessment was not always fully explained. That being said, four prior studies were reviewed to place the 2016 in context with other benthic macroinvertebrate surveys in the estuary; these surveys are summarized in Table 13.

Stryker Bay and Slip 6 had taxa numbers in 2016 that were greater than found in most other studies. This larger number is likely due to the identification and reporting of the Chironomidae to the genera level, whereas most of the synoptic studies did not identify the chironomid genera. If chironomids were included as only one taxa grouping, the number of taxa collected at each SLRIDT location in 2016 would be revised to; North Bay – 18 taxa, Stryker bay – 15 taxa, Slip 6 – 14 taxa, and Slip 7 – 11 taxa. If these chironomid genera are not included, the number of taxa collected in 2016 for each sampling location is still within the range of total taxa identified for the four other studies in Table 13 (range: 8-45 taxa).

The density of benthic macroinvertebrates at the SLRIDT sampling locations (not including North Bay) was lower than in the other studies in Table 13. However, the sediment remediation effort is now four years old so it is assumed the benthic macroinvertebrate community is still developing and will continue to develop and increase in density. These initial results indicate that the benthic macroinvertebrate community is on a good recovery trajectory for Stryker Bay and Slip 6, albeit each sampling location is on a slightly different trajectory. The number of taxa present and the community composition is comparable to other locations in the estuary. The slight differences observed are most likely driven by the differences in bathymetry of each site and plant community development, or lack thereof.

The benthic macroinvertebrate community development in Slip 7 has neither the taxa diversity nor the population densities found at other sample locations in 2016. It was always recognized that the physical characteristics of Slip 7 (steep side slopes and deep water) would make it less conducive to the successful establishment of both submerged aquatic vegetation and benthic macroinvertebrates.

Table 13 Summary of Benthic Macroinvertebrate Sampling using a Ponar Dredge in the St. Louis River Estuary

Date	Sampling Location	Mean density #/m ²	Reported # taxa ⁽⁷⁾	Percent Composition			
				Chironomidae	Oligochaeta	Bivalves	Nematoda
2011 ^(1,8)	North Bay	25,023	10 - 25 ⁽⁵⁾	53%	15%	11%	22%
	Radio Tower Bay	29,549	10 - 21 ⁽⁵⁾	34%	9%	3%	12%
2000 ^(2,8)	Spirit Lake	5,042	11.5 (mean)	34%	48%	4%	--
	St Louis Bay	5,387	9.1 (mean)	19%	46%	7%	--
2010 ^(3,8)	Project area	~17,200	38	22%	--	--	--
	Ref - Spirit Lake	~15,600	45	36%	--	--	--
2012 ^(4,8)	Reference site	15,921	15 (mean)	36%	29%	--	--
	40th Ave West	20,360	9 (mean)	22%	39%	--	--
	21st Ave shallow	34,857	9 (mean)	9%	55%	--	--
	21st Ave deep (>3 meters)	44,587	8 (mean)	2%	55%	--	--
2014 ⁽⁶⁾	North Bay	14,655	20	52%	2%	5%	3%
	Stryker Bay	6,122	18	35%	2%	1%	2%
	Slip 6	7,159	18	67%	2%	3%	4%
	Slip 7	157	2	--	--	--	--
2016 ⁽⁷⁾	North Bay	12,737	34	27%		36%	10%
	Stryker Bay	5,936	34	32%	20%	17%	10%
	Slip 6	11,470	34	32%	42%	7%	7%
	Slip 7	3,014	22	67%	5%	2%	3%

Notes:

- (1) Brady, V., J. Dumke, and D. Breneman. 2011.
- (2) Breneman, D., C. Richards and S. Lozano. 2000.
- (3) Brady, V., C. Reschke, D. Breneman, G. Host and L. Johnson. 2010.
- (4) Host, G., C. Reschke, V. Brady, D. Breneman, J. Dumke, G. Niemi, J. Austin, M. James and L. Johnson. 2012.
- (5) Brady, 2016.
- (6) Barr Engineering. 2014.
- (7) Barr Engineering. 2016.
- (8) In all studies reviewed, the taxonomic level used to report the "number of taxa" was not uniform across studies.

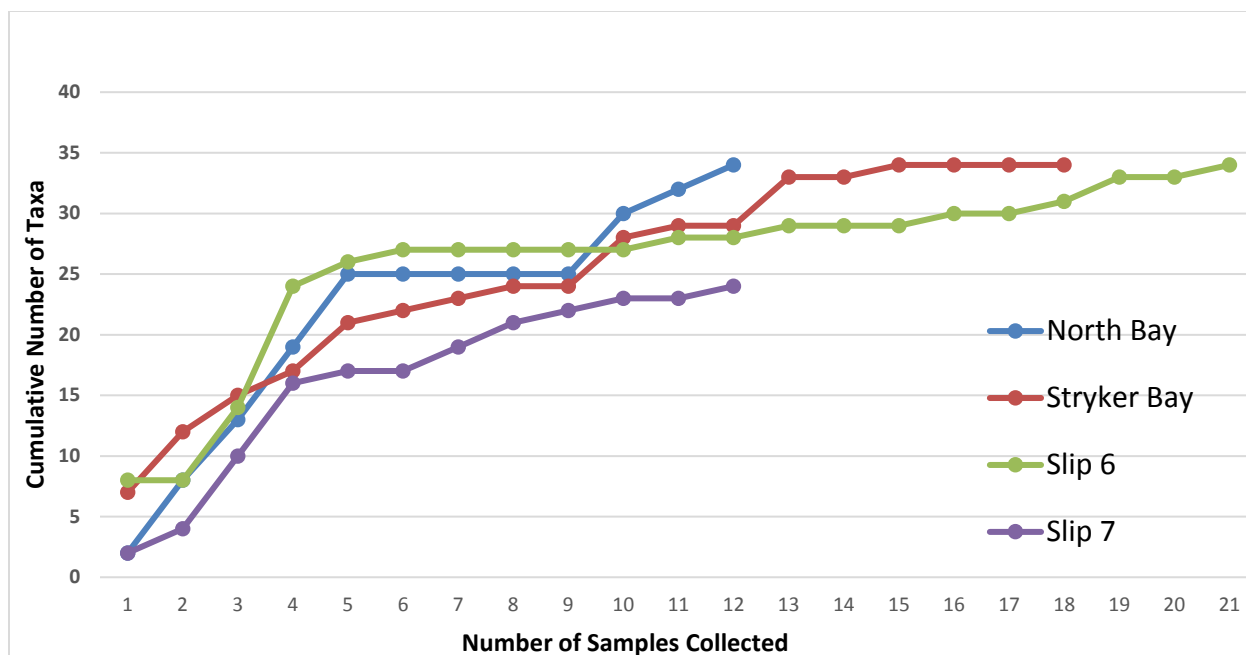
2.4.5 Conclusions and Future Sampling

This was the second benthic macroinvertebrate assemblage (community composition) and abundance sampling effort (2014 and 2016). The results from 2016 show that both Stryker Bay and Slip 6 have developed diverse and abundant benthic macroinvertebrate communities.

In theory, finding out how many taxa characterize a community requires collecting individuals until no new taxa are found and the taxa accumulation curve reaches an asymptote. The number of individuals that must be collected to reach an asymptote can often be prohibitively large. The taxa accumulation curves for 2016 for each sampling location show that collection of taxa at Stryker Bay and Slip 6 both approximate an asymptote, so it is likely that in 2016 all of the taxa present were sampled (Figure 9). Finding additional taxa would require a much larger number of samples to be collected at Stryker Bay and Slip 6. Additional sampling at North Bay likely would have generated more taxa as the curve has not yet reached asymptote with the collection of 12 samples (Figure 9). As the 2016 sampling at North Bay did not collect any of the Zygopterans (Odonata) present in 2014, it is likely that additional sampling efforts would yield more taxa. As was mentioned previously, the physical characteristics of Slip 7 make it less conducive to the successful establishment of benthic macroinvertebrates, so it is likely that this sampling location will not support a larger benthic macroinvertebrate community than already present.

Based upon the 2016 results, a diverse and abundant benthic macroinvertebrate community has developed in both Stryker Bay and Slip 6. These initial results indicate that the benthic macroinvertebrate community is on a good recovery trajectory. The sediment remediation is now four years old, so it is assumed that the benthic macroinvertebrate community will continue to develop and increase in both density and diversity comparable to similar habitats in the St. Louis River estuary.

The 2016 results indicate that additional monitoring for benthic macroinvertebrates is not needed.



*See Appendix G for complete taxa lists by location and sample.

Figure 9 Cumulative Taxa Curves for SLRIDT Sampling Locations – 2016*

2.5 Aquatic and Upland Vegetation Sampling

A Public Waters Restoration Permit issued by the MNDNR for construction of the RAs includes requirements for vegetation monitoring at the SLRIDT site and at the TICMP site. Vegetation monitoring began in 2011 in accordance with the permit and the draft LTM&M Plan, pending approval of the final LTM&M Plan. Field work for the fifth and final annual survey was completed in August of 2015.

2.6 Benthic Bioaccumulation Monitoring

The LTM&M Plan calls for benthic bioaccumulation monitoring in Year 5 (2017) to assess recovery of the benthic invertebrate communities and to confirm that the caps are preventing the upward migration of PAHs. The bioaccumulation sampling plan calls for assessments to be performed at both the capped areas at the SLRIDT site and the North Bay reference area. If this sampling event provides similar results between North Bay and the SLRIDT site then no other bioaccumulation sampling will be conducted unless the tiered approach to long-term monitoring indicates otherwise, in accordance with the LTM&M Plan. Bioaccumulation samples will be collected at the locations proposed in the LTM&M Plan, and also at SB-PW-02 to determine the effects of elevated pore water PAH concentrations at these locations.

EPA Test Method 100.3 (or ASTM Method E1688-10) with *Lumbriculus variegatus* as per EPA (2000) and ASTM (2000) is proposed for 2017 (a variation from the LTM&M Plan). Either of these two testing methods are more applicable to the bioaccumulation assessment the SLRIDT locations. *In situ* testing is fraught with difficulties, including control of conditions, retention of organisms, inability to monitor the testing *in situ*, and a lack of any meaningful quality control. The EPA and ASTM methods provide greater

likelihood of successfully completing the assessment and obtaining reliable results than the *in situ* methods proposed by either Beckingham and Ghosh (2010) or Burton, et al (2005).

Lumbriculus variegatus (Oligochaeta) have many desirable characteristics that make them organism for ideal sediment bioaccumulation testing including contact with sediment, ease of culture in the laboratory, and tolerance to varying physico-chemical characteristics of sediment. The response of *L. variegatus* in laboratory exposures has been confirmed with natural benthic populations. Many investigators have successfully used *L. variegatus* in toxicity or bioaccumulation tests. Sediment will be collected for conducting a 28-d sediment bioaccumulation test with *L. variegatus* as summarized in van Geest, et al, (2000). Use of a laboratory test reduces variability by giving greater control over test conditions.

3.0 Maintenance Activities

Two areas of shoreline erosion were identified at the SLRIDT site, one at the northeast shoreline of Stryker Bay and one at the northeast shoreline of the CAD (Figure 4). In 2015 these areas were surveyed to confirm that the erosion impacted (thinned) the edges of the RA caps, and repair was performed in 2016.

To restore the remedial cap thickness and prevent additional erosion at the Stryker Bay location, a dedicated flow path, armored to prevent erosion, was constructed on top of the remediation cap. The area is generally trapezoidal in shape, and is protected with Armor Cobble (RD/RAP Table 13-1) placed over geotextile. Capping Sand (RD/RAP Table 13-1) was placed in the eroded area beneath the geotextile and Armor Cobble to bring the cap to its design thickness. A soil berm was constructed on the west side of the swale and stabilized with seed and erosion control blankets to direct overland flow into in the newly armored area. Additionally, pea-rock was placed above new cap sand in areas not protected by Armor Cobble. Prior to work, the area was staked to identify limits of cap erosion and elevations to restore cap thickness. Work started on August 1, 2016, and was substantially complete on August 3, 2016. Final placement of riprap occurred on August 17, 2016.

To restore the remedial cap thickness and prevent erosion at the CAD location, the eastern half of the pre-existing armored area was re-graded to form a parabolic swale and stabilized with geotextile and riprap. The newly graded area connects the swale with the surrounding topography, allowing runoff to be directed into the middle of the armored swale. The area disturbed by grading was covered with topsoil, and stabilized with seed and erosion control blanket. Prior to work, the area was staked to identify limits of cap erosion and elevations to restore cap thickness. Work started on August 3, 2016, and was completed on August 5, 2016.

Photographs of the completed erosion repairs are included in Appendix D.

4.0 Conclusions and Recommendations

4.1 Pore Water

Tier I and an expanded Tier II sampling plan were implemented in 2016. Two of the 20 Tier I pore water sample locations exceeded the PRAO. Tier II samples were collected at these two locations, SB-PW-02 and S7-PW-06, in 2015 and 2016 to delineate the extent of PRAO exceedance. S7-PW-06 is in an upland area (wet meadow) and does not represent an aquatic benthic environment. The area of PRAO exceedance around SB-PW-02 has been delineated. Bioaccumulation sampling is proposed for SB-PW-02 in 2017 to evaluate the effect of pore water quality at the base of the BAZ on benthic macroinvertebrates.

4.2 Cap Stability

Cap thickness measurements and probing to determine the presence of gravel and cobbles in aquatic areas were conducted in June. The thickness measurements were consistent with past measurements and probing confirmed that armor material is in place at these locations.

The heads of Stryker Bay and the CAD have had areas of erosion where overland runoff has formed channels in the above-water cap material. These areas were surveyed in 2015 to confirm that the cap in these areas is thinner than designed, and repairs were completed in 2016.

The inspection transect at the south end of the 59th Avenue West Peninsula crosses an upland area which is well-vegetated and no erosional areas were observed.

The dock wall along the western edge of Slip 6 (CAD) appears to be intact, and has no visible deficiencies.

The 54th Avenue West Peninsula had some unauthorized vehicle activity in 2013 and 2014, with a well-worn road crossing the culvert at the north end of Slip 7 to gain access to the peninsula. This roadway is still evident, although it appears that there has been no more traffic accessing the site from that location. Boulders were placed across this entry point in late fall of 2014 to block vehicular access and repairs were made to the most eroded areas near the southwestern shoreline of the peninsula. Ruts remain, and are inundated, due to higher water levels. The cobble armor along the southern end of this peninsula appears to be intact, with much of the cobble still underwater.

Conditions along the Slip 7 dock wall appear to be similar to the 2013, 2014, and 2015 inspections, with several areas where the soil behind the dock wall has washed out.

4.3 Benthic Invertebrate Monitoring

The results of benthic assemblage and abundance monitoring in 2016 show that the SLRIDT site has developed diverse and abundant benthic macroinvertebrate communities, similar to those in the reference area. No additional benthic assemblage and abundance monitoring is recommended.

5.0 References

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Tables

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		NW-PW-01 11/07/2013		NW-PW-01 11/12/2014		NW-PW-01 6/04/2015		NW-PW-01 7/11/2016		S6-PW-01 11/08/2013		S6-PW-01 10/30/2014			
		N		N		N		N		N		N		FD	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter		EPA's FCVs													
Effective Date		03/24/2003													
SVOCs															
2-Methylnaphthalene	72.16 ug/l	0.023 j ug/l	0.00032 a	< 0.041 ug/l	0.00028	< 0.040 ug/l	0.00028	< 0.042 ug/l	0.00029	1.2 ug/l	0.017	0.79 ug/l	0.011	0.87 ug/l	0.012
Acenaphthene	55.85 ug/l	0.013 j ug/l	0.00023 a	< 0.041 ug/l	0.00037	< 0.040 ug/l	0.00036	< 0.042 ug/l	0.00038	0.31 ug/l	0.0056	0.25 ug/l	0.0045	0.28 ug/l	0.0050
Acenaphthylene	306.9 ug/l	< 0.0047 ug/l	0.0000077	< 0.041 ug/l	0.000067	< 0.040 ug/l	0.000065	< 0.042 ug/l	0.000068	1.1 * ug/l	0.0036 a	0.67 ug/l	0.0022	0.73 ug/l	0.0024
Anthracene	20.73 ug/l	< 0.0059 ug/l	0.00014	< 0.041 ug/l	0.00099	< 0.040 ug/l	0.00096	< 0.042 ug/l	0.0010	0.014 j ug/l	0.00068 a	< 0.044 ug/l	0.0011	< 0.044 ug/l	0.0011
Benzo(a)anthracene	2.227 ug/l	< 0.0016 ug/l	0.00036	< 0.041 ug/l	0.0092	< 0.040 ug/l	0.0090	< 0.042 ug/l	0.0094	< 0.0016 ug/l	0.00036	< 0.044 ug/l	0.0099	< 0.044 ug/l	0.0099
Benzo(a)pyrene	0.9008 ug/l	< 0.0010 ug/l	0.00056	< 0.041 ug/l	0.023	< 0.040 ug/l	0.022	< 0.042 ug/l	0.023	< 0.0010 ug/l	0.00056	< 0.044 ug/l	0.024	< 0.044 ug/l	0.024
Benzo(b)fluoranthene	0.6774 ug/l	--	--	< 0.041 ug/l	0.030	< 0.040 ug/l	0.030	< 0.042 ug/l	0.031	--	--	< 0.044 ug/l	0.032	< 0.044 ug/l	0.032
Benzo(b&j)fluoranthene	0.6774 ug/l	< 0.0018 ug/l	0.0013	--	--	--	--	--	--	< 0.0017 ug/l	0.0013	--	--	--	--
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.0020 ug/l	0.0023	< 0.041 ug/l	0.047	< 0.040 ug/l	0.046	< 0.042 ug/l	0.048	< 0.0019 ug/l	0.0022	< 0.044 ug/l	0.050	< 0.044 ug/l	0.050
Benzo(k)fluoranthene	0.6415 ug/l	< 0.0034 ug/l	0.0027	< 0.041 ug/l	0.032	< 0.040 ug/l	0.031	< 0.042 ug/l	0.033	< 0.0033 ug/l	0.0026	< 0.044 ug/l	0.034	< 0.044 ug/l	0.034
Chrysene	2.042 ug/l	< 0.0016 ug/l	0.00039	< 0.041 ug/l	0.010	< 0.040 ug/l	0.010	< 0.042 ug/l	0.010	< 0.0015 ug/l	0.00037	< 0.044 ug/l	0.011	< 0.044 ug/l	0.011
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.0016 ug/l	0.0028	< 0.041 ug/l	0.073	< 0.040 ug/l	0.071	< 0.042 ug/l	0.074	< 0.0015 ug/l	0.0027	< 0.044 ug/l	0.078	< 0.044 ug/l	0.078
Fluoranthene	7.109 ug/l	< 0.0041 ug/l	0.00029	< 0.041 ug/l	0.0029	< 0.040 ug/l	0.0028	< 0.042 ug/l	0.0030	< 0.0040 ug/l	0.00028	< 0.044 ug/l	0.0031	< 0.044 ug/l	0.0031
Fluorene	39.9 ug/l	< 0.0064 ug/l	0.000080	< 0.041 ug/l	0.00051	< 0.040 ug/l	0.00050	< 0.042 ug/l	0.00053	0.31 ug/l	0.0078	0.19 ug/l	0.0048	0.22 ug/l	0.0055
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.0020 ug/l	0.0036	< 0.041 ug/l	0.075	< 0.040 ug/l	0.073	< 0.042 ug/l	0.076	< 0.0019 ug/l	0.0035	< 0.044 ug/l	0.080	< 0.044 ug/l	0.080
Naphthalene	193.5 ug/l	1.2 ug/l	0.0062	< 0.041 ug/l	0.00011	< 0.040 ug/l	0.00010	< 0.042 ug/l	0.00011	69 ug/l	0.36	50.7 ug/l	0.26	51.4 ug/l	0.27
Phenanthrene	19.13 ug/l	< 0.0068 ug/l	0.00018	< 0.041 ug/l	0.0011	< 0.040 ug/l	0.0010	< 0.042 ug/l	0.0011	0.097 ug/l	0.0051	0.070 ug/l	0.0037	0.092 ug/l	0.0048
Pyrene	10.11 ug/l	< 0.0043 ug/l	0.00021	< 0.041 ug/l	0.0020	< 0.040 ug/l	0.0020	< 0.042 ug/l	0.0021	< 0.0041 ug/l	0.00020	< 0.044 ug/l	0.0022	< 0.044 ug/l	0.0022
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.022 a		0.31		0.30		0.31		0.41 a		0.61		0.62	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		S6-PW-01 6/03/2015		S6-PW-01 6/23/2016		S6-PW-02 11/08/2013		S6-PW-02 10/31/2014		S6-PW-02 6/03/2015		S6-PW-02 8/30/2016		S6-PW-03 11/14/2013 2 ft N	
		N		N		N		N		N		N		N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter		EPA's FCVs													
Effective Date		03/24/2003													
SVOCs															
2-Methylnaphthalene	72.16 ug/l	5.1 * ug/l	0.071 a	0.25 ug/l	0.0035	0.0053 j ug/l	0.000073 a	< 0.043 ug/l	0.00030	< 0.041 ug/l	0.00028	< 0.041 ug/l	0.00028	0.016 j ug/l	0.00022 a
Acenaphthene	55.85 ug/l	0.47 ug/l	0.0084	0.12 ug/l	0.0021	0.0079 j ug/l	0.00014 a	< 0.043 ug/l	0.00038	< 0.041 ug/l	0.00037	< 0.041 ug/l	0.00037	< 0.0050 ug/l	0.000045
Acenaphthylene	306.9 ug/l	4.3 ug/l	0.014	0.23 ug/l	0.00075	< 0.0046 ug/l	0.0000075	< 0.043 ug/l	0.00007	< 0.041 ug/l	0.00007	< 0.041 ug/l	0.000067	< 0.0046 ug/l	0.0000075
Anthracene	20.73 ug/l	0.14 ug/l	0.0068	< 0.040 ug/l	0.00096	< 0.0057 ug/l	0.00014	< 0.043 ug/l	0.0010	< 0.041 ug/l	0.0010	< 0.041 ug/l	0.00099	< 0.0057 ug/l	0.00014
Benzo(a)anthracene	2.227 ug/l	< 0.040 ug/l	0.0090	< 0.040 ug/l	0.009	< 0.0016 ug/l	0.00036	< 0.043 ug/l	0.0097	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.0016 ug/l	0.00036
Benzo(a)pyrene	0.9008 ug/l	< 0.040 ug/l	0.022	< 0.040 ug/l	0.022	< 0.0010 ug/l	0.00056	< 0.043 ug/l	0.024	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.0010 ug/l	0.00056
Benzo(b)fluoranthene	0.6774 ug/l	< 0.040 ug/l	0.030	< 0.040 ug/l	0.03	--	--	< 0.043 ug/l	0.032	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	--	--
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	--	--	< 0.0017 ug/l	0.0013	--	--	--	--	--	--	< 0.0017 ug/l	0.0013
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.040 ug/l	0.046	< 0.040 ug/l	0.046	< 0.0019 ug/l	0.0022	< 0.043 ug/l	0.049	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.0019 ug/l	0.0022
Benzo(k)fluoranthene	0.6415 ug/l	< 0.040 ug/l	0.031	< 0.040 ug/l	0.031	< 0.0033 ug/l	0.0026	< 0.043 ug/l	0.034	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.0033 ug/l	0.0026
Chrysene	2.042 ug/l	< 0.040 ug/l	0.010	< 0.040 ug/l	0.0098	< 0.0015 ug/l	0.00037	< 0.043 ug/l	0.011	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.0015 ug/l	0.00037
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.040 ug/l	0.071	< 0.040 ug/l	0.071	< 0.0015 ug/l	0.0027	< 0.043 ug/l	0.076	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.0015 ug/l	0.0027
Fluoranthene	7.109 ug/l	< 0.040 ug/l	0.0028	< 0.040 ug/l	0.0028	< 0.0040 ug/l	0.00028	< 0.043 ug/l	0.003	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.0040 ug/l	0.00028
Fluorene	39.9 ug/l	2.1 * ug/l	0.053 a	0.082 ug/l	0.0021	< 0.0062 ug/l	0.000078	< 0.043 ug/l	0.00054	< 0.041 ug/l	0.00051	< 0.041 ug/l	0.00051	< 0.0062 ug/l	0.000078
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.040 ug/l	0.073	< 0.040 ug/l	0.073	< 0.0019 ug/l	0.0035	< 0.043 ug/l	0.078	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.0019 ug/l	0.0035
Naphthalene	193.5 ug/l	130 ug/l	0.67	27.4 ug/l	0.14	0.01 jb ug/l	0.000052 a	< 0.043 ug/l	0.00011	0.049 ug/l	0.00025	< 0.041 ug/l	0.00011	0.021 jb ug/l	0.00011 a
Phenanthrene	19.13 ug/l	1.1 ug/l	0.058	0.064 ug/l	0.0033	< 0.0066 ug/l	0.00017	< 0.043 ug/l	0.0011	< 0.041 ug/l	0.0011	< 0.041 ug/l	0.0011	< 0.0066 ug/l	0.00017
Pyrene	10.11 ug/l	< 0.040 ug/l	0.0020	< 0.040 ug/l	0.002	< 0.0041 ug/l	0.0002	< 0.043 ug/l	0.0021	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.0041 ug/l	0.00020
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		1.2 a		0.45		0.015 a		0.32		0.31		0.31		0.015 a	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		S6-PW-03 6/03/2015		S6-PW-03 6/23/2016		S6-PW-04 11/08/2013		S6-PW-04 10/31/2014		S6-PW-04 6/03/2015		S6-PW-04 6/23/2016		S6-PW-05 11/08/2013	
		N		N		N		N		N		N		N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter	EPA's FCVs														
Effective Date	03/24/2003														
SVOCs															
2-Methylnaphthalene	72.16 ug/l	< 0.040 ug/l	0.00028	< 0.041 ug/l	0.00028	< 0.0049 ug/l	0.000034	< 0.041 ug/l	0.00028	< 0.041 ug/l	0.00028	< 0.041 ug/l	0.00028	0.0058 j ug/l	0.000080 a
Acenaphthene	55.85 ug/l	0.055 ug/l	0.0010	0.37 ug/l	0.0066	< 0.0050 ug/l	0.000045	< 0.041 ug/l	0.00037	< 0.041 ug/l	0.00037	< 0.041 ug/l	0.00037	0.085 ug/l	0.0015
Acenaphthylene	306.9 ug/l	< 0.040 ug/l	0.000065	< 0.041 ug/l	0.000067	< 0.0046 ug/l	0.0000075	< 0.041 ug/l	0.000067	< 0.041 ug/l	0.000067	< 0.041 ug/l	0.000067	0.028 * ug/l	0.000091 a
Anthracene	20.73 ug/l	< 0.040 ug/l	0.0010	< 0.041 ug/l	0.00099	< 0.0057 ug/l	0.00014	< 0.041 ug/l	0.00099	< 0.041 ug/l	0.0010	< 0.041 ug/l	0.00099	< 0.0057 ug/l	0.00014
Benzo(a)anthracene	2.227 ug/l	< 0.040 ug/l	0.0090	< 0.041 ug/l	0.0092	< 0.0016 ug/l	0.00036	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.0016 ug/l	0.00036
Benzo(a)pyrene	0.9008 ug/l	< 0.040 ug/l	0.022	< 0.041 ug/l	0.023	< 0.0010 ug/l	0.00056	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.0010 ug/l	0.00056
Benzo(b)fluoranthene	0.6774 ug/l	< 0.040 ug/l	0.030	< 0.041 ug/l	0.03	--	--	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.03	--	--
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	--	--	< 0.0017 ug/l	0.0013	--	--	--	--	--	--	< 0.0017 ug/l	0.0013
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.040 ug/l	0.046	< 0.041 ug/l	0.047	< 0.0019 ug/l	0.0022	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.0019 ug/l	0.0022
Benzo(k)fluoranthene	0.6415 ug/l	< 0.040 ug/l	0.031	< 0.041 ug/l	0.032	< 0.0033 ug/l	0.0026	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.0033 ug/l	0.0026
Chrysene	2.042 ug/l	< 0.040 ug/l	0.010	< 0.041 ug/l	0.01	< 0.0015 ug/l	0.00037	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.041 ug/l	0.01	< 0.0015 ug/l	0.00037
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.040 ug/l	0.071	< 0.041 ug/l	0.073	< 0.0015 ug/l	0.0027	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.0015 ug/l	0.0027
Fluoranthene	7.109 ug/l	< 0.040 ug/l	0.0028	< 0.041 ug/l	0.0029	< 0.0040 ug/l	0.00028	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.0040 ug/l	0.00028
Fluorene	39.9 ug/l	< 0.040 ug/l	0.00050	< 0.041 ug/l	0.00051	< 0.0062 ug/l	0.000078	< 0.041 ug/l	0.00051	< 0.041 ug/l	0.00051	< 0.041 ug/l	0.00051	0.0064 j ug/l	0.00016 a
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.040 ug/l	0.073	< 0.041 ug/l	0.075	< 0.0019 ug/l	0.0035	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.0019 ug/l	0.0035
Naphthalene	193.5 ug/l	< 0.040 ug/l	0.00010	< 0.041 ug/l	0.00011	0.04 jb ug/l	0.00021 a	< 0.041 ug/l	0.00011	< 0.041 ug/l	0.00011	< 0.041 ug/l	0.00011	0.02 jb ug/l	0.00010 a
Phenanthrene	19.13 ug/l	< 0.040 ug/l	0.0010	< 0.041 ug/l	0.0011	< 0.0066 ug/l	0.00017	< 0.041 ug/l	0.0011	< 0.041 ug/l	0.0011	< 0.041 ug/l	0.0011	< 0.0066 ug/l	0.00017
Pyrene	10.11 ug/l	< 0.040 ug/l	0.0020	< 0.041 ug/l	0.002	< 0.0041 ug/l	0.00020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.002	< 0.0041 ug/l	0.00020
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.30		0.31		0.015 a		0.31		0.31		0.31		0.016 a	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		S6-PW-05 10/31/2014		S6-PW-05 6/03/2015		S6-PW-05 6/23/2016		S6-PW-06 11/08/2013		S6-PW-06 10/31/2014		S6-PW-06 6/03/2015		S6-PW-06 6/23/2016	
		N		N		N		N		N		N		N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter	EPA's FCVs														
Effective Date	03/24/2003														
SVOCs															
2-Methylnaphthalene	72.16 ug/l	< 0.043 ug/l	0.00030	< 0.041 ug/l	0.00028	< 0.041 ug/l	0.00028	0.0075 j ug/l	0.00010 a	< 0.043 ug/l	0.00030	< 0.041 ug/l	0.00028	< 0.041 ug/l	0.00028
Acenaphthene	55.85 ug/l	< 0.043 ug/l	0.00038	0.14 ug/l	0.0025	< 0.041 ug/l	0.00037	< 0.0050 ug/l	0.000045	< 0.043 ug/l	0.00038	< 0.041 ug/l	0.00037	< 0.041 ug/l	0.00037
Acenaphthylene	306.9 ug/l	< 0.043 ug/l	0.00007	< 0.041 ug/l	0.000067	< 0.041 ug/l	0.000067	< 0.0046 ug/l	0.0000075	< 0.043 ug/l	0.00007	< 0.041 ug/l	0.00007	< 0.041 ug/l	0.000067
Anthracene	20.73 ug/l	< 0.043 ug/l	0.0010	< 0.041 ug/l	0.0010	< 0.041 ug/l	0.00099	< 0.0057 ug/l	0.00014	< 0.043 ug/l	0.0010	< 0.041 ug/l	0.0010	< 0.041 ug/l	0.00099
Benzo(a)anthracene	2.227 ug/l	< 0.043 ug/l	0.0097	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.0016 ug/l	0.00036	< 0.043 ug/l	0.0097	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092
Benzo(a)pyrene	0.9008 ug/l	< 0.043 ug/l	0.024	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.0010 ug/l	0.00056	< 0.043 ug/l	0.024	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023
Benzo(b)fluoranthene	0.6774 ug/l	< 0.043 ug/l	0.032	< 0.041 ug/l	0.030	< 0.041 ug/l	0.03	--	--	< 0.043 ug/l	0.032	< 0.041 ug/l	0.030	< 0.041 ug/l	0.03
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	--	--	--	--	< 0.0017 ug/l	0.0013	--	--	--	--	--	--
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.043 ug/l	0.049	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.0019 ug/l	0.0022	< 0.043 ug/l	0.049	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047
Benzo(k)fluoranthene	0.6415 ug/l	< 0.043 ug/l	0.034	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.0033 ug/l	0.0026	< 0.043 ug/l	0.034	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032
Chrysene	2.042 ug/l	< 0.043 ug/l	0.011	< 0.041 ug/l	0.010	< 0.041 ug/l	0.01	< 0.0015 ug/l	0.00037	< 0.043 ug/l	0.011	< 0.041 ug/l	0.010	< 0.041 ug/l	0.01
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.043 ug/l	0.076	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.0015 ug/l	0.0027	< 0.043 ug/l	0.076	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073
Fluoranthene	7.109 ug/l	< 0.043 ug/l	0.0030	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	0.0047 j ug/l	0.00066 a	< 0.043 ug/l	0.0030	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029
Fluorene	39.9 ug/l	< 0.043 ug/l	0.00054	< 0.041 ug/l	0.00051	< 0.041 ug/l	0.00051	< 0.0062 ug/l	0.000078	< 0.043 ug/l	0.00054	< 0.041 ug/l	0.00051	< 0.041 ug/l	0.00051
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.043 ug/l	0.078	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.0019 ug/l	0.0035	< 0.043 ug/l	0.078	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075
Naphthalene	193.5 ug/l	< 0.043 ug/l	0.00011	< 0.041 ug/l	0.00011	< 0.041 ug/l	0.00011	0.011 jb ug/l	0.000057 a	< 0.043 ug/l	0.00011	< 0.041 ug/l	0.00011	< 0.041 ug/l	0.00011
Phenanthrene	19.13 ug/l	< 0.043 ug/l	0.0011	< 0.041 ug/l	0.0011	< 0.041 ug/l	0.0011	< 0.0066 ug/l	0.00017	< 0.043 ug/l	0.0011	< 0.041 ug/l	0.0011	< 0.041 ug/l	0.0011
Pyrene	10.11 ug/l	< 0.043 ug/l	0.0021	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.002	0.0042 j ug/l	0.00042 a	< 0.043 ug/l	0.0021	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.002
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.32		0.31		0.31		0.015 a		0.32		0.31		0.31	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		S7-PW-01 11/08/2013		S7-PW-01 10/30/2014		S7-PW-01 6/04/2015		S7-PW-01 6/24/2016				S7-PW-02 11/08/2013		S7-PW-02 10/30/2014	
		N		N		N		N		FD		N		N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter	EPA's FCVs														
Effective Date	03/24/2003														
SVOCs															
2-Methylnaphthalene	72.16 ug/l	0.0051 j ug/l	0.000071 a	3.6 ug/l	0.050	< 0.040 ug/l	0.00028	0.37 ug/l	0.0051	0.38 ug/l	0.0053	0.013 j ug/l	0.00018 a	< 0.045 ug/l	0.00031
Acenaphthene	55.85 ug/l	< 0.0051 ug/l	0.000046	3.6 ug/l	0.064	< 0.040 ug/l	0.00036	1.5 ug/l	0.027	1.5 ug/l	0.027	1.2 ug/l	0.021	0.25 ug/l	0.0045
Acenaphthylene	306.9 ug/l	< 0.0047 ug/l	0.0000077	0.14 ug/l	0.00046	< 0.040 ug/l	0.000065	0.17 ug/l	0.00055	0.17 ug/l	0.00055	< 0.0060 ug/l	0.0000098	< 0.045 ug/l	0.000073
Anthracene	20.73 ug/l	< 0.0059 ug/l	0.00014	0.48 ug/l	0.023	< 0.040 ug/l	0.0010	0.21 ug/l	0.010	0.20 ug/l	0.0096	0.022 j ug/l	0.0011 a	< 0.045 ug/l	0.0011
Benzo(a)anthracene	2.227 ug/l	< 0.0016 ug/l	0.00036	< 0.043 ug/l	0.0097	< 0.040 ug/l	0.0090	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.0021 ug/l	0.00047	< 0.045 ug/l	0.010
Benzo(a)pyrene	0.9008 ug/l	< 0.0010 ug/l	0.00056	< 0.043 ug/l	0.024	< 0.040 ug/l	0.022	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.0013 ug/l	0.00072	< 0.045 ug/l	0.025
Benzo(b)fluoranthene	0.6774 ug/l	--	--	< 0.043 ug/l	0.032	< 0.040 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	--	--	< 0.045 ug/l	0.033
Benzo(b&j)fluoranthene	0.6774 ug/l	< 0.0018 ug/l	0.0013	--	--	--	--	--	--	--	--	< 0.0022 ug/l	0.0016	--	--
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.0020 ug/l	0.0023	< 0.043 ug/l	0.049	< 0.040 ug/l	0.046	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.0026 ug/l	0.0030	< 0.045 ug/l	0.051
Benzo(k)fluoranthene	0.6415 ug/l	< 0.0034 ug/l	0.0027	< 0.043 ug/l	0.034	< 0.040 ug/l	0.031	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.0043 ug/l	0.0034	< 0.045 ug/l	0.035
Chrysene	2.042 ug/l	0.0025 j ug/l	0.0012 a	< 0.043 ug/l	0.011	< 0.040 ug/l	0.010	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.0020 ug/l	0.00049	< 0.045 ug/l	0.011
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.0016 ug/l	0.0028	< 0.043 ug/l	0.076	< 0.040 ug/l	0.071	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.0020 ug/l	0.0035	< 0.045 ug/l	0.080
Fluoranthene	7.109 ug/l	0.0061 j ug/l	0.00086 a	0.081 ug/l	0.011	< 0.040 ug/l	0.0028	0.29 ug/l	0.041	0.24 ug/l	0.034	0.01 j ug/l	0.0014 a	< 0.045 ug/l	0.0032
Fluorene	39.9 ug/l	< 0.0064 ug/l	0.000080	3.0 ug/l	0.075	< 0.040 ug/l	0.00050	1.2 ug/l	0.030	1.2 ug/l	0.030	0.27 ug/l	0.0068	0.088 ug/l	0.0022
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.0020 ug/l	0.0036	< 0.043 ug/l	0.078	< 0.040 ug/l	0.073	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.0026 ug/l	0.0047	< 0.045 ug/l	0.082
Naphthalene	193.5 ug/l	0.1 ug/l	0.00052	310 ug/l	1.6	< 0.040 ug/l	0.00010	39.1 ug/l	0.200	41.6 ug/l	0.21	0.071 b ug/l	0.00037 a	< 0.045 ug/l	0.00012
Phenanthrene	19.13 ug/l	< 0.0068 ug/l	0.00018	1.9 ug/l	0.099	< 0.040 ug/l	0.0010	0.64 ug/l	0.033	0.57 ug/l	0.030	0.072 ug/l	0.0038	< 0.045 ug/l	0.0012
Pyrene	10.11 ug/l	0.0055 j ug/l	0.00054 a	< 0.043 ug/l	0.0021	< 0.040 ug/l	0.0020	0.16 ug/l	0.016	0.14 ug/l	0.014	0.0091 j ug/l	0.0009 a	< 0.045 ug/l	0.0022
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.017 a		2.2		0.30		0.66		0.66		0.054 a		0.34	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		S7-PW-02 6/04/2015		S7-PW-02 6/24/2016		S7-PW-03 11/08/2013		S7-PW-03 10/30/2014		S7-PW-03 6/15/2015		S7-PW-03 6/29/2016		S7-PW-04 11/14/2013 1.5 ft	
		N		N		N		N		N		N		N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter		EPA's FCVs													
Effective Date		03/24/2003													
SVOCs															
2-Methylnaphthalene	72.16 ug/l	< 0.040 ug/l	0.00028	< 0.041 ug/l	0.00028	< 0.0060 ug/l	0.000042	< 0.043 ug/l	0.00030	< 0.040 ug/l	0.00028	0.079 ug/l	0.0011	0.02 j ug/l	0.00028 a
Acenaphthene	55.85 ug/l	0.080 ug/l	0.0014	< 0.041 ug/l	0.00037	0.039 ug/l	0.00070	0.25 ug/l	0.0045	0.074 ug/l	0.0013	0.048 ug/l	0.00086	< 0.0056 ug/l	0.000050
Acenaphthylene	306.9 ug/l	< 0.040 ug/l	0.000065	< 0.041 ug/l	0.000067	< 0.0056 ug/l	0.0000091	< 0.043 ug/l	0.00007	< 0.040 ug/l	0.000065	< 0.040 ug/l	0.000065	< 0.0052 ug/l	0.0000085
Anthracene	20.73 ug/l	< 0.040 ug/l	0.0010	< 0.041 ug/l	0.00099	< 0.0070 ug/l	0.00017	< 0.043 ug/l	0.0010	< 0.040 ug/l	0.0010	< 0.040 ug/l	0.00096	0.0078 j ug/l	0.00038 a
Benzo(a)anthracene	2.227 ug/l	< 0.040 ug/l	0.0090	< 0.041 ug/l	0.0092	< 0.0019 ug/l	0.00043	< 0.043 ug/l	0.0097	< 0.040 ug/l	0.0090	< 0.040 ug/l	0.0090	< 0.0018 ug/l	0.00040
Benzo(a)pyrene	0.9008 ug/l	< 0.040 ug/l	0.022	< 0.041 ug/l	0.023	< 0.0012 ug/l	0.00067	< 0.043 ug/l	0.024	< 0.040 ug/l	0.022	< 0.040 ug/l	0.022	< 0.0011 ug/l	0.00061
Benzo(b)fluoranthene	0.6774 ug/l	< 0.040 ug/l	0.030	< 0.041 ug/l	0.030	--	--	< 0.043 ug/l	0.032	< 0.040 ug/l	0.030	< 0.040 ug/l	0.030	--	--
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	--	--	< 0.0021 ug/l	0.0016	--	--	--	--	--	--	< 0.0019 ug/l	0.0014
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.040 ug/l	0.046	< 0.041 ug/l	0.047	< 0.0024 ug/l	0.0027	< 0.043 ug/l	0.049	< 0.040 ug/l	0.046	< 0.040 ug/l	0.046	< 0.0022 ug/l	0.0025
Benzo(k)fluoranthene	0.6415 ug/l	< 0.040 ug/l	0.031	< 0.041 ug/l	0.032	< 0.0040 ug/l	0.0031	< 0.043 ug/l	0.034	< 0.040 ug/l	0.031	< 0.040 ug/l	0.031	< 0.0037 ug/l	0.0029
Chrysene	2.042 ug/l	< 0.040 ug/l	0.010	< 0.041 ug/l	0.010	< 0.0018 ug/l	0.00044	< 0.043 ug/l	0.011	< 0.040 ug/l	0.010	< 0.040 ug/l	0.0098	< 0.0017 ug/l	0.00042
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.040 ug/l	0.071	< 0.041 ug/l	0.073	< 0.0019 ug/l	0.0034	< 0.043 ug/l	0.076	< 0.040 ug/l	0.071	< 0.040 ug/l	0.071	< 0.0017 ug/l	0.0030
Fluoranthene	7.109 ug/l	< 0.040 ug/l	0.0028	< 0.041 ug/l	0.0029	< 0.0048 ug/l	0.00034	< 0.043 ug/l	0.003	< 0.040 ug/l	0.0028	< 0.040 ug/l	0.0028	< 0.0044 ug/l	0.00031
Fluorene	39.9 ug/l	< 0.040 ug/l	0.0005	< 0.041 ug/l	0.00051	0.019 j ug/l	0.00048 a	0.097 ug/l	0.0024	0.042 ug/l	0.0011	< 0.040 ug/l	0.00050	0.024 ug/l	0.00060
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.040 ug/l	0.073	< 0.041 ug/l	0.075	< 0.0024 ug/l	0.0044	< 0.043 ug/l	0.078	< 0.040 ug/l	0.073	< 0.040 ug/l	0.073	< 0.0022 ug/l	0.0040
Naphthalene	193.5 ug/l	< 0.040 ug/l	0.00010	< 0.041 ug/l	0.00011	0.04 jb ug/l	0.00021 a	< 0.043 ug/l	0.00011	1.4 ug/l	0.0072	0.15 ug/l	0.00078	0.038 jb ug/l	0.0002 a
Phenanthrene	19.13 ug/l	< 0.040 ug/l	0.0010	< 0.041 ug/l	0.0011	< 0.0080 ug/l	0.00021	< 0.043 ug/l	0.0011	0.046 ug/l	0.0024	< 0.040 ug/l	0.0010	0.013 j ug/l	0.00068 a
Pyrene	10.11 ug/l	< 0.040 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.0050 ug/l	0.00025	< 0.043 ug/l	0.0021	< 0.040 ug/l	0.0020	< 0.040 ug/l	0.0020	< 0.0046 ug/l	0.00023
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.30		0.31		0.019 a		0.33		0.31		0.30		0.018 a	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		S7-PW-04 10/30/2014		S7-PW-04 6/04/2015		S7-PW-04 6/24/2016		S7-PW-04 6/24/2016				S7-PW-05 11/07/2013		S7-PW-05 11/12/2014	
		N		N		N		N		FD		N		N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter		EPA's FCVs													
Effective Date		03/24/2003													
SVOCs															
2-Methylnaphthalene	72.16 ug/l	< 0.043 ug/l	0.00030	< 0.040 ug/l	0.00028	< 0.040 ug/l	0.00028	< 0.041 ug/l	0.00028	< 0.040 ug/l	0.00028	0.026 j* ug/l	0.00036 a	< 0.041 ug/l	0.00028
Acenaphthene	55.85 ug/l	0.052 ug/l	0.00093	< 0.040 ug/l	0.00036	< 0.040 ug/l	0.00036	< 0.041 ug/l	0.00037	< 0.040 ug/l	0.00036	< 0.0053 ug/l	0.000047	< 0.041 ug/l	0.00037
Acenaphthylene	306.9 ug/l	< 0.043 ug/l	0.00007	< 0.040 ug/l	0.00007	< 0.040 ug/l	0.000065	< 0.041 ug/l	0.000067	< 0.040 ug/l	0.000065	< 0.0049 ug/l	0.0000080	< 0.041 ug/l	0.000067
Anthracene	20.73 ug/l	< 0.043 ug/l	0.0010	< 0.040 ug/l	0.0010	< 0.040 ug/l	0.00096	< 0.041 ug/l	0.00099	< 0.040 ug/l	0.00096	0.0092 j* ug/l	0.00044 a	< 0.041 ug/l	0.00099
Benzo(a)anthracene	2.227 ug/l	< 0.043 ug/l	0.0097	< 0.040 ug/l	0.0090	< 0.040 ug/l	0.0090	< 0.041 ug/l	0.0092	< 0.040 ug/l	0.0090	< 0.0017 ug/l	0.00038	< 0.041 ug/l	0.0092
Benzo(a)pyrene	0.9008 ug/l	< 0.043 ug/l	0.024	< 0.040 ug/l	0.022	< 0.040 ug/l	0.022	< 0.041 ug/l	0.023	< 0.040 ug/l	0.022	< 0.0011 ug/l	0.00061	< 0.041 ug/l	0.023
Benzo(b)fluoranthene	0.6774 ug/l	< 0.043 ug/l	0.032	< 0.040 ug/l	0.030	< 0.040 ug/l	0.030	< 0.041 ug/l	0.030	< 0.040 ug/l	0.030	--	--	< 0.041 ug/l	0.030
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	--	--	--	--	--	--	--	--	< 0.0018 ug/l	0.0013	--	--
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.043 ug/l	0.049	< 0.040 ug/l	0.046	< 0.040 ug/l	0.046	< 0.041 ug/l	0.047	< 0.040 ug/l	0.046	< 0.0021 ug/l	0.0024	< 0.041 ug/l	0.047
Benzo(k)fluoranthene	0.6415 ug/l	< 0.043 ug/l	0.034	< 0.040 ug/l	0.031	< 0.040 ug/l	0.031	< 0.041 ug/l	0.032	< 0.040 ug/l	0.031	< 0.0035 ug/l	0.0027	< 0.041 ug/l	0.032
Chrysene	2.042 ug/l	< 0.043 ug/l	0.011	< 0.040 ug/l	0.010	< 0.040 ug/l	0.0098	< 0.041 ug/l	0.010	< 0.040 ug/l	0.0098	< 0.0016 ug/l	0.00039	< 0.041 ug/l	0.010
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.043 ug/l	0.076	< 0.040 ug/l	0.071	< 0.040 ug/l	0.071	< 0.041 ug/l	0.073	< 0.040 ug/l	0.071	< 0.0016 ug/l	0.0028	< 0.041 ug/l	0.073
Fluoranthene	7.109 ug/l	< 0.043 ug/l	0.0030	< 0.040 ug/l	0.0028	< 0.040 ug/l	0.0028	< 0.041 ug/l	0.0029	< 0.040 ug/l	0.0028	< 0.0042 ug/l	0.00030	< 0.041 ug/l	0.0029
Fluorene	39.9 ug/l	< 0.043 ug/l	0.00054	< 0.040 ug/l	0.00050	< 0.040 ug/l	0.00050	< 0.041 ug/l	0.00051	< 0.040 ug/l	0.0005	< 0.0066 ug/l	0.000083	< 0.041 ug/l	0.00051
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.043 ug/l	0.078	< 0.040 ug/l	0.073	< 0.040 ug/l	0.073	< 0.041 ug/l	0.075	< 0.040 ug/l	0.073	< 0.0021 ug/l	0.0038	< 0.041 ug/l	0.075
Naphthalene	193.5 ug/l	< 0.043 ug/l	0.00011	< 0.040 ug/l	0.00010	0.42 * ug/l	0.0022 a	0.27 * ug/l	0.0014	0.42 * ug/l	0.0022	1.3 * ug/l	0.0067 a	< 0.041 ug/l	0.00011
Phenanthrene	19.13 ug/l	< 0.043 ug/l	0.0011	< 0.040 ug/l	0.0010	< 0.040 ug/l	0.0010	< 0.041 ug/l	0.0011	< 0.040 ug/l	0.0010	< 0.0070 ug/l	0.00018	< 0.041 ug/l	0.0011
Pyrene	10.11 ug/l	< 0.043 ug/l	0.0021	< 0.040 ug/l	0.0020	< 0.040 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.040 ug/l	0.0020	< 0.0044 ug/l	0.00022	< 0.041 ug/l	0.0020
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.32		0.30		0.30 a		0.31 a		0.30 a		0.023 a		0.31	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		S7-PW-05 6/04/2015		S7-PW-05 6/24/2016		S7-PW-06 11/07/2013				S7-PW-06 11/12/2014		S7-PW-06 6/04/2015		S7-PW-06 6/24/2016	
		N		N		N		FD		N		N		3.0 ft N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter	EPA's FCVs														
Effective Date	03/24/2003														
SVOCs															
2-Methylnaphthalene	72.16 ug/l	< 0.041 ug/l	0.00028	< 0.041 ug/l	0.00028	22 * ug/l	0.3 a	25 ug/l	0.35	13.6 ug/l	0.19	6.1 ug/l	0.085	3.0 ug/l	0.042
Acenaphthene	55.85 ug/l	0.046 ug/l	0.00082	< 0.041 ug/l	0.00037	12 * ug/l	0.21 a	10 ug/l	0.18	8.5 ug/l	0.15	9.3 ug/l	0.167	11.3 ug/l	0.20
Acenaphthylene	306.9 ug/l	< 0.041 ug/l	0.000067	< 0.041 ug/l	0.000067	33 * ug/l	0.11 a	34 * ug/l	0.11 a	23.6 ug/l	0.077	3.4 ug/l	0.011	1.1 ug/l	0.0036
Anthracene	20.73 ug/l	< 0.041 ug/l	0.0010	< 0.041 ug/l	0.00099	0.091 * ug/l	0.0044 a	0.2 * ug/l	0.0096 a	< 0.040 ug/l	0.00096	0.091 ug/l	0.0044	0.059 ug/l	0.0028
Benzo(a)anthracene	2.227 ug/l	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	0.0080 j ug/l	0.0036 a	< 0.0017 ug/l	0.00038	< 0.040 ug/l	0.0090	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092
Benzo(a)pyrene	0.9008 ug/l	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	0.0026 j ug/l	0.0029 a	< 0.0011 ug/l	0.00061	< 0.040 ug/l	0.022	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023
Benzo(b)fluoranthene	0.6774 ug/l	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	--	--	--	--	< 0.040 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	--	--	< 0.0019 ug/l	0.0014	< 0.0018 ug/l	0.0013	--	--	--	--	--	--
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.0022 ug/l	0.0025	< 0.0021 ug/l	0.0024	< 0.040 ug/l	0.046	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047
Benzo(k)fluoranthene	0.6415 ug/l	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.0037 ug/l	0.0029	< 0.0035 ug/l	0.0027	< 0.040 ug/l	0.031	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032
Chrysene	2.042 ug/l	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	0.0043 j* ug/l	0.0021 a	< 0.0016 ug/l	0.00039	< 0.040 ug/l	0.0098	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.0017 ug/l	0.0030	< 0.0016 ug/l	0.0028	< 0.040 ug/l	0.071	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073
Fluoranthene	7.109 ug/l	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.0044 ug/l	0.00031	< 0.0042 ug/l	0.00030	< 0.040 ug/l	0.0028	0.049 ug/l	0.0069	0.049 ug/l	0.0069
Fluorene	39.9 ug/l	< 0.041 ug/l	0.00051	< 0.041 ug/l	0.00051	3 * ug/l	0.075 a	3.2 ug/l	0.080	3.4 ug/l	0.085	0.55 ug/l	0.014	0.20 ug/l	0.0050
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.0022 ug/l	0.0040	< 0.0021 ug/l	0.0038	< 0.040 ug/l	0.073	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075
Naphthalene	193.5 ug/l	< 0.041 ug/l	0.00011	0.32 ug/l	0.0017	1200 * ug/l	6.2 a	1200 ug/l	6.2	1210 ug/l	6.3	750 ug/l	3.9	519 ug/l	2.7
Phenanthrene	19.13 ug/l	< 0.041 ug/l	0.0011	< 0.041 ug/l	0.0011	1.8 * ug/l	0.094 a	1.3 ug/l	0.068	1.9 ug/l	0.099	0.36 ug/l	0.019	0.13 ug/l	0.0068
Pyrene	10.11 ug/l	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.0046 ug/l	0.00023	< 0.0044 ug/l	0.00022	< 0.040 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.31		0.31		7.0 a		7.0 a		7.2		4.5		3.3	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		S7-PW-06.5 6/24/2016 1.5 ft N		S7-PW-07 6/04/2015 N		S7-PW-08 6/04/2015				S7-PW-09 6/04/2015 N		S7-PW-10 6/15/2015 N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	N		FD		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
						Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio				
Parameter	EPA's FCVs												
Effective Date	03/24/2003												
SVOCs													
2-Methylnaphthalene	72.16 ug/l	< 0.041 ug/l	0.00028	< 0.041 ug/l	0.00028	0.89 ug/l	0.012	1.0 ug/l	0.014	< 0.041 ug/l	0.00028	164 ug/l	2.3
Acenaphthene	55.85 ug/l	< 0.041 ug/l	0.00037	< 0.041 ug/l	0.00037	30.9 ug/l	0.55	29.9 ug/l	0.54	0.11 ug/l	0.0020	26.1 ug/l	0.47
Acenaphthylene	306.9 ug/l	< 0.041 ug/l	0.000067	< 0.041 ug/l	0.00007	1.1 ug/l	0.0036	1.3 ug/l	0.0042	< 0.041 ug/l	0.000067	106 ug/l	0.35
Anthracene	20.73 ug/l	< 0.041 ug/l	0.00099	< 0.041 ug/l	0.0010	0.060 ug/l	0.0029	< 0.041 ug/l	0.0010	< 0.041 ug/l	0.0010	0.89 ug/l	0.043
Benzo(a)anthracene	2.227 ug/l	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.80 ug/l	0.18
Benzo(a)pyrene	0.9008 ug/l	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.80 ug/l	0.44
Benzo(b)fluoranthene	0.6774 ug/l	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.80 ug/l	0.59
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.80 ug/l	0.91
Benzo(k)fluoranthene	0.6415 ug/l	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.80 ug/l	0.62
Chrysene	2.042 ug/l	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.80 ug/l	0.20
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.80 ug/l	1.4
Fluoranthene	7.109 ug/l	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.80 ug/l	0.056
Fluorene	39.9 ug/l	< 0.041 ug/l	0.00051	< 0.041 ug/l	0.00051	0.12 ug/l	0.0030	0.12 ug/l	0.0030	< 0.041 ug/l	0.00051	39.6 ug/l	0.99
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.80 ug/l	1.5
Naphthalene	193.5 ug/l	1.6 ug/l	0.0083	< 0.041 ug/l	0.00011	657 ug/l	3.4	664 ug/l	3.4	< 0.041 ug/l	0.00011	4540 ug/l	23
Phenanthrene	19.13 ug/l	< 0.041 ug/l	0.0011	< 0.041 ug/l	0.0011	0.051 ug/l	0.0027	0.047 ug/l	0.0025	< 0.041 ug/l	0.0011	3.7 ug/l	0.19
Pyrene	10.11 ug/l	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.80 ug/l	0.040
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.32		0.31		4.3		4.3		0.31		34	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		S7-PW-11 6/23/2016				S7-PW-11.5 6/24/2016		S7-PW-12 6/24/2016		S7-PW-12.5 6/24/2016		S7-PW-13 6/24/2016		S7-PW-13.5 6/24/2016	
		2.0 ft N		2.0 ft FD		1.0 ft N		2.5 ft N		1.5 ft N		2.0 ft N		1.5 ft N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter		EPA's FCVs													
Effective Date		03/24/2003													
SVOCs															
2-Methylnaphthalene	72.16 ug/l	< 0.040 ug/l	0.00028	< 0.041 ug/l	0.00028	< 0.041 ug/l	0.00028	1.1 ug/l	0.015	< 0.041 ug/l	0.00028	0.063 ug/l	0.00087	< 0.040 ug/l	0.00028
Acenaphthene	55.85 ug/l	< 0.040 ug/l	0.00036	< 0.041 ug/l	0.00037	< 0.041 ug/l	0.00037	2.2 ug/l	0.039	0.044 ug/l	0.00079	1.1 ug/l	0.020	< 0.040 ug/l	0.00036
Acenaphthylene	306.9 ug/l	< 0.040 ug/l	0.000065	< 0.041 ug/l	0.000067	< 0.041 ug/l	0.000067	1.1 ug/l	0.0036	< 0.041 ug/l	0.000067	0.39 ug/l	0.0013	< 0.040 ug/l	0.000065
Anthracene	20.73 ug/l	< 0.040 ug/l	0.00096	< 0.041 ug/l	0.00099	< 0.041 ug/l	0.00099	0.066 ug/l	0.0032	< 0.041 ug/l	0.00099	< 0.040 ug/l	0.00096	< 0.040 ug/l	0.00096
Benzo(a)anthracene	2.227 ug/l	< 0.040 ug/l	0.0090	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.040 ug/l	0.0090	< 0.041 ug/l	0.0092	< 0.040 ug/l	0.0090	< 0.040 ug/l	0.0090
Benzo(a)pyrene	0.9008 ug/l	< 0.040 ug/l	0.022	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.040 ug/l	0.022	< 0.041 ug/l	0.023	< 0.040 ug/l	0.022	< 0.040 ug/l	0.022
Benzo(b)fluoranthene	0.6774 ug/l	< 0.040 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.040 ug/l	0.030	< 0.041 ug/l	0.030	< 0.040 ug/l	0.0300	< 0.040 ug/l	0.0300
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.040 ug/l	0.046	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.040 ug/l	0.046	< 0.041 ug/l	0.047	< 0.040 ug/l	0.046	< 0.040 ug/l	0.046
Benzo(k)fluoranthene	0.6415 ug/l	< 0.040 ug/l	0.031	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.040 ug/l	0.031	< 0.041 ug/l	0.032	< 0.040 ug/l	0.031	< 0.040 ug/l	0.031
Chrysene	2.042 ug/l	< 0.040 ug/l	0.0098	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.040 ug/l	0.0098	< 0.041 ug/l	0.010	< 0.040 ug/l	0.0098	< 0.040 ug/l	0.0098
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.040 ug/l	0.071	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.040 ug/l	0.071	< 0.041 ug/l	0.073	< 0.040 ug/l	0.071	< 0.040 ug/l	0.071
Fluoranthene	7.109 ug/l	< 0.040 ug/l	0.0028	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.040 ug/l	0.0028	< 0.041 ug/l	0.0029	< 0.040 ug/l	0.0028	< 0.040 ug/l	0.0028
Fluorene	39.9 ug/l	< 0.040 ug/l	0.00050	< 0.041 ug/l	0.00051	< 0.041 ug/l	0.00051	0.44 ug/l	0.011	< 0.041 ug/l	0.00051	0.20 ug/l	0.0050	< 0.040 ug/l	0.0005
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.040 ug/l	0.073	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.040 ug/l	0.073	< 0.041 ug/l	0.075	< 0.040 ug/l	0.073	< 0.040 ug/l	0.073
Naphthalene	193.5 ug/l	< 0.040 ug/l	0.00010	< 0.041 ug/l	0.00011	< 0.041 ug/l	0.00011	26.1 ug/l	0.13	0.073 ug/l	0.00038	111 ug/l	0.57	1.7 ug/l	0.0088
Phenanthrene	19.13 ug/l	< 0.040 ug/l	0.0010	< 0.041 ug/l	0.0011	< 0.041 ug/l	0.0011	0.18 ug/l	0.0094	< 0.041 ug/l	0.0011	< 0.040 ug/l	0.0010	< 0.040 ug/l	0.0010
Pyrene	10.11 ug/l	< 0.040 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.040 ug/l	0.002	< 0.041 ug/l	0.0020	< 0.040 ug/l	0.0020	< 0.040 ug/l	0.0020
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.30		0.31		0.31		0.51		0.31		0.9		0.31	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		SB-PW-01 11/06/2013		SB-PW-01 10/31/2014		SB-PW-01 6/03/2015		SB-PW-01 6/23/2016		SB-PW-02 11/06/2013			
		N		N		N		N		N		FD	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter	EPA's FCVs												
Effective Date	03/24/2003												
SVOCs													
2-Methylnaphthalene	72.16 ug/l	0.011 j ug/l	0.00015 a	< 0.044 ug/l	0.00030	< 0.040 ug/l	0.00028	< 0.040 ug/l	0.00028	32 ug/l	0.44	35 ug/l	0.49
Acenaphthene	55.85 ug/l	< 0.0051 ug/l	0.000046	< 0.044 ug/l	0.00039	0.25 ug/l	0.0045	0.079 ug/l	0.0014	8.2 ug/l	0.15	8.2 ug/l	0.15
Acenaphthylene	306.9 ug/l	< 0.0047 ug/l	0.0000077	< 0.044 ug/l	0.000072	< 0.040 ug/l	0.000065	< 0.040 ug/l	0.000065	14 * ug/l	0.046 a	14 * ug/l	0.046 a
Anthracene	20.73 ug/l	< 0.0059 ug/l	0.00014	< 0.044 ug/l	0.0011	< 0.040 ug/l	0.0010	< 0.040 ug/l	0.00096	0.31 ug/l	0.015	0.33 ug/l	0.016
Benzo(a)anthracene	2.227 ug/l	0.0039 j ug/l	0.0018 a	< 0.044 ug/l	0.0099	< 0.040 ug/l	0.0090	< 0.040 ug/l	0.0090	< 0.0016 ug/l	0.00036	< 0.0016 ug/l	0.00036
Benzo(a)pyrene	0.9008 ug/l	0.0030 j ug/l	0.0033 a	< 0.044 ug/l	0.024	< 0.040 ug/l	0.022	< 0.040 ug/l	0.022	< 0.0010 ug/l	0.00056	< 0.0010 ug/l	0.00056
Benzo(b)fluoranthene	0.6774 ug/l	--	--	< 0.044 ug/l	0.032	< 0.040 ug/l	0.030	< 0.040 ug/l	0.030	--	--	--	--
Benzo(b&j)fluoranthene	0.6774 ug/l	< 0.0018 ug/l	0.0013	--	--	--	--	--	--	< 0.0017 ug/l	0.0013	< 0.0017 ug/l	0.0013
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.0020 ug/l	0.0023	< 0.044 ug/l	0.050	< 0.040 ug/l	0.046	< 0.040 ug/l	0.046	< 0.0019 ug/l	0.0022	< 0.0019 ug/l	0.0022
Benzo(k)fluoranthene	0.6415 ug/l	< 0.0034 ug/l	0.0027	< 0.044 ug/l	0.034	< 0.040 ug/l	0.031	< 0.040 ug/l	0.031	< 0.0033 ug/l	0.0026	< 0.0033 ug/l	0.0026
Chrysene	2.042 ug/l	0.0036 j ug/l	0.0018 a	< 0.044 ug/l	0.011	< 0.040 ug/l	0.010	< 0.040 ug/l	0.0098	< 0.0015 ug/l	0.00037	< 0.0015 ug/l	0.00037
Dibenz(a,h)anthracene	0.2825 ug/l	0.0049 j ug/l	0.017 a	< 0.044 ug/l	0.078	< 0.040 ug/l	0.071	< 0.040 ug/l	0.071	< 0.0015 ug/l	0.0027	< 0.0015 ug/l	0.0027
Fluoranthene	7.109 ug/l	< 0.0041 ug/l	0.00029	< 0.044 ug/l	0.0031	< 0.040 ug/l	0.0028	< 0.040 ug/l	0.0028	< 0.0040 ug/l	0.00028	< 0.0040 ug/l	0.00028
Fluorene	39.9 ug/l	< 0.0064 ug/l	0.000080	< 0.044 ug/l	0.00055	0.10 ug/l	0.0025	< 0.040 ug/l	0.0005	5.6 ug/l	0.14	5.9 ug/l	0.15
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.0020 ug/l	0.0036	< 0.044 ug/l	0.080	< 0.040 ug/l	0.073	< 0.040 ug/l	0.073	< 0.0019 ug/l	0.0035	< 0.0019 ug/l	0.0035
Naphthalene	193.5 ug/l	0.29 ug/l	0.0015	< 0.044 ug/l	0.00011	0.051 ug/l	0.00026	< 0.040 ug/l	0.00010	750 ug/l	3.9	710 ug/l	3.7
Phenanthrene	19.13 ug/l	< 0.0068 ug/l	0.00018	< 0.044 ug/l	0.0012	< 0.040 ug/l	0.0010	< 0.040 ug/l	0.0010	2.4 ug/l	0.13	2.6 ug/l	0.14
Pyrene	10.11 ug/l	< 0.0043 ug/l	0.00021	< 0.044 ug/l	0.0022	< 0.040 ug/l	0.0020	< 0.040 ug/l	0.0020	< 0.0041 ug/l	0.00020	< 0.0041 ug/l	0.00020
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.037 a		0.33		0.31		0.3		4.8 a		4.7 a	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		SB-PW-02 10/31/2014				SB-PW-02 6/03/2015				SB-PW-02.5 6/23/2016		SB-PW-02 9/09/2016		SB-PW-02 9/09/2016	
		N		FD		N		FD		2.5 ft N		1.5 ft N		2.8 ft N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter	EPA's FCVs														
Effective Date	03/24/2003														
SVOCs															
2-Methylnaphthalene	72.16 ug/l	23.9 ug/l	0.33	25.5 ug/l	0.35	22.6 ug/l	0.31	22.9 ug/l	0.32	6.2 ug/l	0.086	14.5 ug/l	0.20	27.9 ug/l	0.39
Acenaphthene	55.85 ug/l	6.7 ug/l	0.12	7.0 ug/l	0.13	7.1 ug/l	0.13	7.0 ug/l	0.13	2.4 ug/l	0.043	4.8 ug/l	0.086	6.7 ug/l	0.12
Acenaphthylene	306.9 ug/l	9.4 ug/l	0.031	9.8 ug/l	0.032	8.3 ug/l	0.027	8.2 ug/l	0.027	3.6 ug/l	0.012	4.8 ug/l	0.016	8.7 ug/l	0.028
Anthracene	20.73 ug/l	0.48 ug/l	0.023	0.50 ug/l	0.024	0.36 ug/l	0.017	0.36 ug/l	0.017	0.093 ug/l	0.0045	0.094 ug/l	0.0045	0.30 ug/l	0.014
Benzo(a)anthracene	2.227 ug/l	< 0.044 ug/l	0.0099	< 0.043 ug/l	0.0097	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.040 ug/l	0.0090
Benzo(a)pyrene	0.9008 ug/l	< 0.044 ug/l	0.024	< 0.043 ug/l	0.024	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.040 ug/l	0.022
Benzo(b)fluoranthene	0.6774 ug/l	< 0.044 ug/l	0.032	< 0.043 ug/l	0.032	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.040 ug/l	0.030
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.044 ug/l	0.050	< 0.043 ug/l	0.049	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.040 ug/l	0.046
Benzo(k)fluoranthene	0.6415 ug/l	< 0.044 ug/l	0.034	< 0.043 ug/l	0.034	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.040 ug/l	0.031
Chrysene	2.042 ug/l	< 0.044 ug/l	0.011	< 0.043 ug/l	0.011	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.040 ug/l	0.0098
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.044 ug/l	0.078	< 0.043 ug/l	0.076	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.040 ug/l	0.071
Fluoranthene	7.109 ug/l	< 0.044 ug/l	0.0031	< 0.043 ug/l	0.003	0.060 ug/l	0.0084	0.059 ug/l	0.0083	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	0.058 ug/l	0.0082
Fluorene	39.9 ug/l	5.5 ug/l	0.14	5.7 ug/l	0.14	5.1 ug/l	0.13	5.0 ug/l	0.13	1.0 ug/l	0.025	2.5 ug/l	0.063	4.4 ug/l	0.11
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.044 ug/l	0.080	< 0.043 ug/l	0.078	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.040 ug/l	0.073
Naphthalene	193.5 ug/l	610 ug/l	3.2	659 ug/l	3.4	801 ug/l	4.1	848 ug/l	4.4	355 ug/l	1.8	382 ug/l	2.0	745 ug/l	3.9
Phenanthrene	19.13 ug/l	3.3 ug/l	0.17	3.5 ug/l	0.18	3.2 ug/l	0.17	3.2 ug/l	0.17	0.099 ug/l	0.0052	0.32 ug/l	0.017	3.0 ug/l	0.16
Pyrene	10.11 ug/l	< 0.044 ug/l	0.0022	< 0.043 ug/l	0.0021	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.040 ug/l	0.0020
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)			4.3		4.6		5.2		5.5		2.3		2.7		5.0

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		SB-PW-03 11/06/2013		SB-PW-03 10/31/2014		SB-PW-03 6/03/2015		SB-PW-03 6/23/2016		SB-PW-04 11/06/2013		SB-PW-04 10/31/2014		SB-PW-04 6/03/2015	
		N		N		N		N		N		N		N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter		EPA's FCVs													
Effective Date		03/24/2003													
SVOCs															
2-Methylnaphthalene	72.16 ug/l	0.0085 j ug/l	0.00012 a	< 0.043 ug/l	0.00030	< 0.040 ug/l	0.00028	< 0.041 ug/l	0.00028	0.021 j ug/l	0.00029 a	< 0.044 ug/l	0.00030	< 0.041 ug/l	0.00028
Acenaphthene	55.85 ug/l	0.15 ug/l	0.0027	0.33 ug/l	0.0059	0.38 ug/l	0.0068	< 0.041 ug/l	0.00037	< 0.0050 ug/l	0.000045	< 0.044 ug/l	0.00039	< 0.041 ug/l	0.00037
Acenaphthylene	306.9 ug/l	< 0.0046 ug/l	0.0000075	< 0.043 ug/l	0.000070	< 0.040 ug/l	0.000065	< 0.041 ug/l	0.000067	< 0.0046 ug/l	0.0000075	< 0.044 ug/l	0.000072	< 0.041 ug/l	0.000067
Anthracene	20.73 ug/l	< 0.0057 ug/l	0.00014	< 0.043 ug/l	0.0010	< 0.040 ug/l	0.0010	< 0.041 ug/l	0.00099	< 0.0057 ug/l	0.00014	< 0.044 ug/l	0.0011	< 0.041 ug/l	0.0010
Benzo(a)anthracene	2.227 ug/l	< 0.0016 ug/l	0.00036	< 0.043 ug/l	0.0097	< 0.040 ug/l	0.0090	< 0.041 ug/l	0.0092	0.0042 j ug/l	0.0019 a	< 0.044 ug/l	0.0099	< 0.041 ug/l	0.0092
Benzo(a)pyrene	0.9008 ug/l	< 0.0010 ug/l	0.00056	< 0.043 ug/l	0.024	< 0.040 ug/l	0.022	< 0.041 ug/l	0.023	0.0028 j ug/l	0.0031 a	< 0.044 ug/l	0.024	< 0.041 ug/l	0.023
Benzo(b)fluoranthene	0.6774 ug/l	--	--	< 0.043 ug/l	0.032	< 0.040 ug/l	0.030	< 0.041 ug/l	0.030	--	--	< 0.044 ug/l	0.032	< 0.041 ug/l	0.030
Benzo(b&j)fluoranthene	0.6774 ug/l	< 0.0017 ug/l	0.0013	--	--	--	--	--	--	0.0076 j ug/l	0.011 a	--	--	--	--
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.0019 ug/l	0.0022	< 0.043 ug/l	0.049	< 0.040 ug/l	0.046	< 0.041 ug/l	0.047	< 0.0019 ug/l	0.0022	< 0.044 ug/l	0.050	< 0.041 ug/l	0.047
Benzo(k)fluoranthene	0.6415 ug/l	< 0.0033 ug/l	0.0026	< 0.043 ug/l	0.034	< 0.040 ug/l	0.031	< 0.041 ug/l	0.032	0.0080 j ug/l	0.012 a	< 0.044 ug/l	0.034	< 0.041 ug/l	0.032
Chrysene	2.042 ug/l	< 0.0015 ug/l	0.00037	< 0.043 ug/l	0.011	< 0.040 ug/l	0.010	< 0.041 ug/l	0.010	0.0064 j ug/l	0.0031 a	< 0.044 ug/l	0.011	< 0.041 ug/l	0.010
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.0015 ug/l	0.0027	< 0.043 ug/l	0.076	< 0.040 ug/l	0.071	< 0.041 ug/l	0.073	0.0051 j ug/l	0.018 a	< 0.044 ug/l	0.078	< 0.041 ug/l	0.073
Fluoranthene	7.109 ug/l	< 0.0040 ug/l	0.00028	< 0.043 ug/l	0.003	< 0.040 ug/l	0.0028	< 0.041 ug/l	0.0029	< 0.0040 ug/l	0.00028	< 0.044 ug/l	0.0031	< 0.041 ug/l	0.0029
Fluorene	39.9 ug/l	< 0.0062 ug/l	0.000078	< 0.043 ug/l	0.00054	< 0.040 ug/l	0.00050	< 0.041 ug/l	0.00051	< 0.0062 ug/l	0.000078	< 0.044 ug/l	0.00055	< 0.041 ug/l	0.00051
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.0019 ug/l	0.0035	< 0.043 ug/l	0.078	< 0.040 ug/l	0.073	< 0.041 ug/l	0.075	0.0092 j ug/l	0.033 a	< 0.044 ug/l	0.080	< 0.041 ug/l	0.075
Naphthalene	193.5 ug/l	0.16 ug/l	0.00083	< 0.043 ug/l	0.00011	< 0.040 ug/l	0.00010	< 0.041 ug/l	0.00011	0.38 ug/l	0.0020	< 0.044 ug/l	0.00011	< 0.041 ug/l	0.00011
Phenanthrene	19.13 ug/l	< 0.0066 ug/l	0.00017	< 0.043 ug/l	0.0011	< 0.040 ug/l	0.0010	< 0.041 ug/l	0.0011	0.0086 j ug/l	0.00045 a	< 0.044 ug/l	0.0012	< 0.041 ug/l	0.0011
Pyrene	10.11 ug/l	< 0.0041 ug/l	0.00020	< 0.043 ug/l	0.0021	< 0.040 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.0041 ug/l	0.00020	< 0.044 ug/l	0.0022	< 0.041 ug/l	0.0020
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.018 a		0.33		0.31		0.31		0.089 a		0.33		0.31	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		SB-PW-04 6/23/2016		SB-PW-05 11/06/2013		SB-PW-05 10/31/2014		SB-PW-05 6/03/2015		SB-PW-05 6/23/2016		SB-PW-06 11/06/2013		SB-PW-06 11/06/2013	
		N		N		N		N		N		N		N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter	EPA's FCVs														
Effective Date	03/24/2003														
SVOCs															
2-Methylnaphthalene	72.16 ug/l	< 0.040 ug/l	0.00028	0.043 j ug/l	0.0006 a	< 0.043 ug/l	0.00030	< 0.041 ug/l	0.00028	< 0.041 ug/l	0.00028	0.07 ug/l	0.00097	0.13 ug/l	0.0018
Acenaphthene	55.85 ug/l	< 0.040 ug/l	0.00036	0.19 ug/l	0.0034	0.15 ug/l	0.0027	0.19 ug/l	0.0034	< 0.041 ug/l	0.00037	0.051 ug/l	0.00091	0.083 ug/l	0.0015
Acenaphthylene	306.9 ug/l	< 0.040 ug/l	0.000065	< 0.0046 ug/l	0.0000075	0.057 ug/l	0.00019	< 0.041 ug/l	0.000067	< 0.041 ug/l	0.000067	< 0.0046 ug/l	0.0000075	< 0.0046 ug/l	0.0000075
Anthracene	20.73 ug/l	< 0.040 ug/l	0.00096	< 0.0057 ug/l	0.00014	< 0.043 ug/l	0.0010	< 0.041 ug/l	0.0010	< 0.041 ug/l	0.00099	< 0.0057 ug/l	0.00014	< 0.0057 ug/l	0.00014
Benzo(a)anthracene	2.227 ug/l	< 0.040 ug/l	0.0090	0.0028 j ug/l	0.0013 a	< 0.043 ug/l	0.0097	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.0016 ug/l	0.00036	< 0.0016 ug/l	0.00036
Benzo(a)pyrene	0.9008 ug/l	< 0.040 ug/l	0.022	< 0.0010 ug/l	0.00056	< 0.043 ug/l	0.024	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.0010 ug/l	0.00056	< 0.0010 ug/l	0.00056
Benzo(b)fluoranthene	0.6774 ug/l	< 0.040 ug/l	0.030	--	--	< 0.043 ug/l	0.032	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	--	--	--	--
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	< 0.0017 ug/l	0.0013	--	--	--	--	--	--	< 0.0017 ug/l	0.0013	< 0.0017 ug/l	0.0013
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.040 ug/l	0.046	< 0.0019 ug/l	0.0022	< 0.043 ug/l	0.049	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.0019 ug/l	0.0022	< 0.0019 ug/l	0.0022
Benzo(k)fluoranthene	0.6415 ug/l	< 0.040 ug/l	0.031	< 0.0033 ug/l	0.0026	< 0.043 ug/l	0.034	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.0033 * ug/l	0.0026 a	< 0.0033 * ug/l	0.0026 a
Chrysene	2.042 ug/l	< 0.040 ug/l	0.0098	0.0025 j ug/l	0.0012 a	< 0.043 ug/l	0.011	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.0015 ug/l	0.00037	< 0.0015 ug/l	0.00037
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.040 ug/l	0.071	0.0021 j ug/l	0.0074 a	< 0.043 ug/l	0.076	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.0015 * ug/l	0.0027 a	< 0.0015 * ug/l	0.0027 a
Fluoranthene	7.109 ug/l	< 0.040 ug/l	0.0028	< 0.0040 ug/l	0.00028	< 0.043 ug/l	0.0030	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.0040 ug/l	0.00028	< 0.0040 ug/l	0.00028
Fluorene	39.9 ug/l	< 0.040 ug/l	0.00050	< 0.0062 ug/l	0.000078	< 0.043 ug/l	0.00054	0.065 ug/l	0.0016	< 0.041 ug/l	0.00051	0.017 j ug/l	0.00043 a	0.03 ug/l	0.00075
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.040 ug/l	0.073	< 0.0019 ug/l	0.0035	< 0.043 ug/l	0.078	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.0019 ug/l	0.0035	< 0.0019 ug/l	0.0035
Naphthalene	193.5 ug/l	< 0.040 ug/l	0.00010	14 ug/l	0.072	33.0 ug/l	0.17	< 0.041 ug/l	0.00011	0.079 ug/l	0.00041	2.9 ug/l	0.015	5 ug/l	0.026
Phenanthrene	19.13 ug/l	< 0.040 ug/l	0.0010	< 0.0066 ug/l	0.00017	< 0.043 ug/l	0.0011	< 0.041 ug/l	0.0011	< 0.041 ug/l	0.0011	< 0.0066 ug/l	0.00017	0.0092 j ug/l	0.00048 a
Pyrene	10.11 ug/l	< 0.040 ug/l	0.0020	< 0.0041 ug/l	0.00020	< 0.043 ug/l	0.0021	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.0041 ug/l	0.00020	< 0.0041 ug/l	0.00020
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.30		0.097 a		0.49		0.31		0.31		0.031 a		0.044 a	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		SB-PW-06 10/31/2014		SB-PW-06 6/03/2015		SB-PW-06 6/23/2016		SB-PW-07 6/03/2015		SB-PW-08 6/03/2015		SB-PW-09 6/03/2015		SB-PW-10 6/15/2015	
		N		N		N		N		N		N		N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter	EPA's FCVs														
Effective Date	03/24/2003														
SVOCs															
2-Methylnaphthalene	72.16 ug/l	0.13 ug/l	0.0018	0.11 ug/l	0.0015	0.20 ug/l	0.0028	< 0.041 ug/l	0.00028	< 0.041 ug/l	0.00028	4.2 ug/l	0.058	0.047 ug/l	0.00065
Acenaphthene	55.85 ug/l	0.10 ug/l	0.0018	0.11 ug/l	0.0020	0.16 ug/l	0.0029	1.7 ug/l	0.030	< 0.041 ug/l	0.00037	2.0 ug/l	0.036	3.1 ug/l	0.056
Acenaphthylene	306.9 ug/l	0.057 ug/l	0.00019	0.049 ug/l	0.00016	0.086 ug/l	0.00028	< 0.041 ug/l	0.000067	< 0.041 ug/l	0.00007	1.5 ug/l	0.0049	0.24 ug/l	0.00078
Anthracene	20.73 ug/l	< 0.043 ug/l	0.0010	< 0.041 ug/l	0.0010	< 0.041 ug/l	0.00099	< 0.041 ug/l	0.0010	< 0.041 ug/l	0.0010	0.10 ug/l	0.0048	0.042 ug/l	0.0020
Benzo(a)anthracene	2.227 ug/l	< 0.043 ug/l	0.0097	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.040 ug/l	0.0090
Benzo(a)pyrene	0.9008 ug/l	< 0.043 ug/l	0.024	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.040 ug/l	0.022
Benzo(b)fluoranthene	0.6774 ug/l	< 0.043 ug/l	0.032	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.040 ug/l	0.030
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.043 ug/l	0.049	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.040 ug/l	0.046
Benzo(k)fluoranthene	0.6415 ug/l	< 0.043 ug/l	0.034	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.040 ug/l	0.031
Chrysene	2.042 ug/l	< 0.043 ug/l	0.011	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.040 ug/l	0.010
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.043 ug/l	0.076	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.040 ug/l	0.071
Fluoranthene	7.109 ug/l	< 0.043 ug/l	0.0030	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.040 ug/l	0.0028
Fluorene	39.9 ug/l	< 0.043 ug/l	0.00054	< 0.041 ug/l	0.00051	0.063 ug/l	0.0016	0.30 ug/l	0.0075	< 0.041 ug/l	0.00051	1.4 ug/l	0.035	0.98 ug/l	0.025
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.043 ug/l	0.078	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.040 ug/l	0.073
Naphthalene	193.5 ug/l	3.3 ug/l	0.017	2.3 ug/l	0.012	5.9 ug/l	0.030	0.49 ug/l	0.0025	< 0.041 ug/l	0.00011	74.0 ug/l	0.38	0.72 ug/l	0.0037
Phenanthrene	19.13 ug/l	< 0.043 ug/l	0.0011	< 0.041 ug/l	0.0011	< 0.041 ug/l	0.0011	< 0.041 ug/l	0.0011	< 0.041 ug/l	0.0011	0.70 ug/l	0.037	0.32 ug/l	0.017
Pyrene	10.11 ug/l	< 0.043 ug/l	0.0021	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.040 ug/l	0.0020
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.34		0.32		0.34		0.35		0.31		0.86		0.40	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		SB-PW-11		SB-PW-11		SB-PW-11		SB-PW-11A		SB-PW-12		SB-PW-12		SB-PW-12	
		6/23/2016		6/30/2016		9/09/2016		9/09/2016		6/23/2016		6/30/2016		9/09/2016	
		1.1 ft		3.0 ft		3.0 ft		1.1 ft		1.5 ft		3.0 ft		1.5 ft	
		N		N		N		N		N		N		N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter	EPA's FCVs														
Effective Date	03/24/2003														
SVOCs															
2-Methylnaphthalene	72.16 ug/l	1.6 ug/l	0.022	35.5 ug/l	0.49	2.8 * ug/l	0.039	0.060 ug/l	0.00083	32.5 ug/l	0.45	< 0.040 ug/l	0.00028	0.14 ug/l	0.0019
Acenaphthene	55.85 ug/l	1.7 ug/l	0.030	9.9 ug/l	0.18	1.2 ug/l	0.021	0.87 ug/l	0.016	12.9 ug/l	0.23	21.3 ug/l	0.38	3.6 ug/l	0.064
Acenaphthylene	306.9 ug/l	2.1 ug/l	0.0068	15.9 ug/l	0.052	1.6 ug/l	0.0052	0.36 ug/l	0.0012	2.4 ug/l	0.0078	0.38 ug/l	0.0012	0.34 ug/l	0.0011
Anthracene	20.73 ug/l	< 0.041 ug/l	0.00099	0.20 ug/l	0.0096	< 0.041 ug/l	0.00099	< 0.041 ug/l	0.00099	0.079 ug/l	0.0038	0.23 ug/l	0.011	< 0.041 ug/l	0.00099
Benzo(a)anthracene	2.227 ug/l	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.0092	< 0.040 ug/l	0.009	< 0.041 ug/l	0.0092
Benzo(a)pyrene	0.9008 ug/l	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.040 ug/l	0.022	< 0.041 ug/l	0.023
Benzo(b)fluoranthene	0.6774 ug/l	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.040 ug/l	0.030	< 0.041 ug/l	0.030
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.040 ug/l	0.046	< 0.041 ug/l	0.047
Benzo(k)fluoranthene	0.6415 ug/l	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.040 ug/l	0.031	< 0.041 ug/l	0.032
Chrysene	2.042 ug/l	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.040 ug/l	0.0098	< 0.041 ug/l	0.010
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.040 ug/l	0.071	< 0.041 ug/l	0.073
Fluoranthene	7.109 ug/l	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	< 0.041 ug/l	0.0029	0.27 ug/l	0.038	< 0.041 ug/l	0.0029
Fluorene	39.9 ug/l	0.28 ug/l	0.0070	6.4 ug/l	0.16	0.43 ug/l	0.011	0.10 ug/l	0.0025	3.9 ug/l	0.098	7.5 ug/l	0.19	1.2 ug/l	0.030
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.040 ug/l	0.073	< 0.041 ug/l	0.075
Naphthalene	193.5 ug/l	242 ug/l	1.3	815 ug/l	4.2	81.0 ug/l	0.42	30.1 ug/l	0.16	1380 ug/l	7.1	5.6 ug/l	0.029	94.8 ug/l	0.49
Phenanthrene	19.13 ug/l	< 0.041 ug/l	0.0011	2.2 ug/l	0.12	< 0.041 ug/l	0.0011	< 0.041 ug/l	0.0011	1.1 ug/l	0.058	0.28 ug/l	0.015	0.33 ug/l	0.017
Pyrene	10.11 ug/l	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	< 0.041 ug/l	0.0020	0.11 ug/l	0.011	< 0.041 ug/l	0.0020
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)			1.7		5.5		0.80		0.48		8.3		0.97		0.91

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		SB-PW-12		SB-PW-13		SB-PW-13		SB-PW-13		SB-PW-13		SW-PW-01		SW-PW-01	
		9/09/2016		6/23/2016		6/30/2016		9/09/2016		9/09/2016		11/06/2013		10/31/2014	
		3.0 ft		1.5 ft		3.0 ft		2.0 ft		3.0 ft					
		N		N		N		N		N		N		N	
		Sample Concentration	Concentration/FCV ratio	Sample Concentration	Concentration/FCV ratio	Sample Concentration	Concentration/FCV ratio	Sample Concentration	Concentration/FCV ratio	Sample Concentration	Concentration/FCV ratio	Sample Concentration	Concentration/FCV ratio	Sample Concentration	Concentration/FCV ratio
Parameter	EPA's FCVs														
Effective Date	03/24/2003														
SVOCs															
2-Methylnaphthalene	72.16 ug/l	< 0.041 ug/l	0.00028	9.2 ug/l	0.13	3.9 ug/l	0.054	4.7 ug/l	0.065	6.8	0.094	0.0088 j ug/l	0.00012 a	< 0.044 ug/l	0.00030
Acenaphthene	55.85 ug/l	26.4 ug/l	0.47	3.9 ug/l	0.07	1.6 ug/l	0.029	1.9 ug/l	0.034	2.4	0.043	< 0.0050 ug/l	0.000045	< 0.044 ug/l	0.00039
Acenaphthylene	306.9 ug/l	0.37 ug/l	0.0012	2.5 ug/l	0.0081	0.92 ug/l	0.0030	1.1 ug/l	0.0036	1.6	0.0052	< 0.0046 ug/l	0.0000075	< 0.044 ug/l	0.000072
Anthracene	20.73 ug/l	0.29 ug/l	0.014	0.23 ug/l	0.011	0.041 ug/l	0.0020	0.16 ug/l	0.0077	0.074	0.0036	< 0.0057 ug/l	0.00014	< 0.044 ug/l	0.0011
Benzo(a)anthracene	2.227 ug/l	< 0.041 ug/l	0.0092	< 0.041 ug/l	0.009	< 0.040 ug/l	0.0090	< 0.041 ug/l	0.0092	0.021	0.0092	< 0.0016 ug/l	0.00036	< 0.044 ug/l	0.0099
Benzo(a)pyrene	0.9008 ug/l	< 0.041 ug/l	0.023	< 0.041 ug/l	0.023	< 0.040 ug/l	0.022	< 0.041 ug/l	0.023	0.021	0.023	< 0.0010 ug/l	0.00056	< 0.044 ug/l	0.024
Benzo(b)fluoranthene	0.6774 ug/l	< 0.041 ug/l	0.030	< 0.041 ug/l	0.030	< 0.040 ug/l	0.030	< 0.041 ug/l	0.030	0.021	0.030	--	--	< 0.044 ug/l	0.032
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	--	--	--	--	--	--	--	--	< 0.0017 ug/l	0.0013	--	--
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.041 ug/l	0.047	< 0.041 ug/l	0.047	< 0.040 ug/l	0.046	< 0.041 ug/l	0.047	0.021	0.047	< 0.0019 ug/l	0.0022	< 0.044 ug/l	0.050
Benzo(k)fluoranthene	0.6415 ug/l	< 0.041 ug/l	0.032	< 0.041 ug/l	0.032	< 0.040 ug/l	0.031	< 0.041 ug/l	0.032	0.021	0.032	< 0.0033 ug/l	0.0026	< 0.044 ug/l	0.034
Chrysene	2.042 ug/l	< 0.041 ug/l	0.010	< 0.041 ug/l	0.010	< 0.040 ug/l	0.0098	< 0.041 ug/l	0.010	0.021	0.010	< 0.0015 ug/l	0.00037	< 0.044 ug/l	0.011
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.041 ug/l	0.073	< 0.041 ug/l	0.073	< 0.040 ug/l	0.071	< 0.041 ug/l	0.073	0.021	0.073	< 0.0015 ug/l	0.0027	< 0.044 ug/l	0.078
Fluoranthene	7.109 ug/l	0.65 ug/l	0.091	0.10 ug/l	0.014	< 0.040 ug/l	0.0028	0.099 ug/l	0.014	0.061	0.0086	< 0.0040 ug/l	0.00028	< 0.044 ug/l	0.0031
Fluorene	39.9 ug/l	9.2 ug/l	0.23	2.8 ug/l	0.07	0.82 ug/l	0.021	1.3 ug/l	0.033	1.0	0.025	< 0.0062 ug/l	0.000078	< 0.044 ug/l	0.00055
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.041 ug/l	0.075	< 0.041 ug/l	0.075	< 0.040 ug/l	0.073	< 0.041 ug/l	0.075	0.021	0.075	< 0.0019 ug/l	0.0035	< 0.044 ug/l	0.080
Naphthalene	193.5 ug/l	6.6 ug/l	0.034	165 ug/l	0.85	130 ug/l	0.67	118 ug/l	0.61	231	1.2	0.076 b ug/l	0.00039 a	< 0.044 ug/l	0.00011
Phenanthrene	19.13 ug/l	0.11 ug/l	0.0058	1.9 ug/l	0.099	0.49 ug/l	0.026	1.5 ug/l	0.078	0.74	0.039	< 0.0066 ug/l	0.00017	< 0.044 ug/l	0.0012
Pyrene	10.11 ug/l	0.32 ug/l	0.032	0.058 ug/l	0.006	< 0.040 ug/l	0.0020	0.057 ug/l	0.0056	0.021	0.0020	< 0.0041 ug/l	0.00020	< 0.044 ug/l	0.0022
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		1.2		1.6		1.1		1.1		1.7		0.015 a		0.33	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 1
Porewater Analytical Data Summary
SLRIDT Site
XIK Corporation

Location Date Depth Sample Type		SW-PW-01 6/03/2015		SW-PW-01 7/11/2016	
		N		N	
		Sample Concentration	Concentration/ FCV ratio	Sample Concentration	Concentration/ FCV ratio
Parameter		EPA's FCVs			
Effective Date		03/24/2003			
SVOCs					
2-Methylnaphthalene	72.16 ug/l	< 0.040 ug/l	0.00028	< 0.041 ug/l	0.00028
Acenaphthene	55.85 ug/l	< 0.040 ug/l	0.00036	< 0.041 ug/l	0.00037
Acenaphthylene	306.9 ug/l	< 0.040 ug/l	0.00007	< 0.041 ug/l	0.00007
Anthracene	20.73 ug/l	< 0.040 ug/l	0.0010	< 0.041 ug/l	0.0010
Benzo(a)anthracene	2.227 ug/l	< 0.040 ug/l	0.0090	< 0.041 ug/l	0.0092
Benzo(a)pyrene	0.9008 ug/l	< 0.040 ug/l	0.022	< 0.041 ug/l	0.023
Benzo(b)fluoranthene	0.6774 ug/l	< 0.040 ug/l	0.030	< 0.041 ug/l	0.030
Benzo(b&j)fluoranthene	0.6774 ug/l	--	--	--	--
Benzo(g,h,i)perylene	0.4391 ug/l	< 0.040 ug/l	0.046	< 0.041 ug/l	0.047
Benzo(k)fluoranthene	0.6415 ug/l	< 0.040 ug/l	0.031	< 0.041 ug/l	0.032
Chrysene	2.042 ug/l	< 0.040 ug/l	0.010	< 0.041 ug/l	0.010
Dibenz(a,h)anthracene	0.2825 ug/l	< 0.040 ug/l	0.071	< 0.041 ug/l	0.073
Fluoranthene	7.109 ug/l	< 0.040 ug/l	0.0028	< 0.041 ug/l	0.0029
Fluorene	39.9 ug/l	< 0.040 ug/l	0.00050	< 0.041 ug/l	0.00051
Indeno(1,2,3-cd)pyrene	0.275 ug/l	< 0.040 ug/l	0.073	< 0.041 ug/l	0.075
Naphthalene	193.5 ug/l	< 0.040 ug/l	0.00010	< 0.041 ug/l	0.00011
Phenanthrene	19.13 ug/l	< 0.040 ug/l	0.0010	< 0.041 ug/l	0.0011
Pyrene	10.11 ug/l	< 0.040 ug/l	0.0020	< 0.041 ug/l	0.0020
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)		0.30		0.31	

* = Estimated value, QA/QC criteria not met
a = Estimated value, calculated using some or all values that are estimates.
b = Potential false positive value based on blank data validation procedures.
j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.
N = Sample Type: Normal
FD = Sample Type: Field Duplicate

Table 2
Porewater Analytical Data - QA/QC
SLRIDT Site
XIK Corporation

Location Date Sample Type	QC 11/12/2013 Method Blank	QC 11/14/2013 Method Blank	QC 11/16/2013 Method Blank	QC 11/03/2014 Method Blank	QC 11/04/2014 Method Blank	QC 11/17/2014 Method Blank	QC 6/08/2015 Method Blank	QC 6/09/2015 Method Blank	QC 6/10/2015 Method Blank	QC 6/17/2015 Method Blank	QC 6/30/2016 Method Blank	QC 6/30/2016 Method Blank	QC 7/05/2016 Method Blank	QC 9/02/2016 Method Blank	QC 9/15/2016 Method Blank
Parameter															
SVOCs															
2-Methylnaphthalene	< 0.0049 ug/l	< 0.0049 ug/l	< 0.0049 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Acenaphthene	< 0.0050 ug/l	< 0.0050 ug/l	< 0.0050 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Acenaphthylene	< 0.0046 ug/l	< 0.0046 ug/l	< 0.0046 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Anthracene	< 0.0057 ug/l	< 0.0057 ug/l	< 0.0057 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Benz(a)anthracene	< 0.0016 ug/l	< 0.0016 ug/l	< 0.0016 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Benzo(a)pyrene	< 0.0010 ug/l	< 0.0010 ug/l	< 0.0010 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Benzo(b)fluoranthene	--	--	--	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Benzo(b&j)fluoranthene	< 0.0017 ug/l	< 0.0017 ug/l	< 0.0017 ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	< 0.0019 ug/l	< 0.0019 ug/l	< 0.0019 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Benzo(k)fluoranthene	< 0.0033 ug/l	< 0.0033 ug/l	< 0.0033 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Chrysene	< 0.0015 ug/l	< 0.0015 ug/l	< 0.0015 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Dibenz(a,h)anthracene	< 0.0015 ug/l	< 0.0015 ug/l	< 0.0015 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Fluoranthene	< 0.0040 ug/l	< 0.0040 ug/l	< 0.0040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Fluorene	< 0.0062 ug/l	< 0.0062 ug/l	< 0.0062 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Indeno(1,2,3-cd)pyrene	< 0.0019 ug/l	< 0.0019 ug/l	< 0.0019 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Naphthalene	0.0155 j ug/l	0.0163 j ug/l	0.0146 j ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Phenanthrene	< 0.0066 ug/l	< 0.0066 ug/l	< 0.0066 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l
Pyrene	< 0.0041 ug/l	< 0.0041 ug/l	< 0.0041 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l	< 0.040 ug/l

j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.

Table 3
Porewater Analytical Data
Relative Percent Difference
SLRIDT Site
XIK Corporation

Location		S6-PW-01			S7-PW-06			SB-PW-02			SB-PW-02			S7-PW-08			SB-PW-02			S7-PW-01		
Sample Date		10/30/2014			11/07/2013			10/31/2014			11/06/2013			06/04/2015			06/03/2015			06/24/2016		
Sample Type Code		N	FD	RPD %	N	FD	RPD %	N	FD	RPD %	N	FD	RPD %	N	FD	RPD %	N	FD	RPD %	N	FD	RPD %
Chemical Name	Analysis Location																					
SVOCs																						
2-Methylnaphthalene	Lab	0.79 ug/l	0.87 ug/l	9.6	22 * ug/l	25 ug/l	13	23.9 ug/l	25.5 ug/l	6.5	32 ug/l	35 ug/l	9.0	0.89 ug/l	1.0 ug/l		22.6 ug/l	22.9 ug/l		0.37 ug/l	0.38 ug/l	
Acenaphthene	Lab	0.25 ug/l	0.28 ug/l	11	12 * ug/l	10 ug/l	18	6.7 ug/l	7.0 ug/l	4.4	8.2 ug/l	8.2 ug/l	0	30.9 ug/l	29.9 ug/l	3.3	7.1 ug/l	7.0 ug/l	1.4	1.5 ug/l	1.5 ug/l	0
Acenaphthylene	Lab	0.67 ug/l	0.73 ug/l	8.6	33 * ug/l	34 * ug/l	3.0	9.4 ug/l	9.8 ug/l	4.2	14 * ug/l	14 * ug/l	0	1.1 ug/l	1.3 ug/l	17	8.3 ug/l	8.2 ug/l	1.2	0.17 ug/l	0.17 ug/l	0
Anthracene	Lab	< 0.044 ug/l	< 0.044 ug/l		0.091 * ug/l	0.2 * ug/l	75	0.48 ug/l	0.50 ug/l	4.1	0.31 ug/l	0.33 ug/l	6.3	0.060 ug/l	< 0.041 ug/l		0.36 ug/l	0.36 ug/l	0	0.21 ug/l	0.20 ug/l	4.9
Benz(a)anthracene	Lab	< 0.044 ug/l	< 0.044 ug/l		0.0080 j ug/l	< 0.0017 ug/l		< 0.044 ug/l	< 0.043 ug/l		< 0.0016 ug/l	< 0.0016 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l	
Benzo(a)pyrene	Lab	< 0.044 ug/l	< 0.044 ug/l		0.0026 j ug/l	< 0.0011 ug/l		< 0.044 ug/l	< 0.043 ug/l		< 0.0010 ug/l	< 0.0010 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l	
Benzo(b)fluoranthene	Lab	< 0.044 ug/l	< 0.044 ug/l		--	--		< 0.044 ug/l	< 0.043 ug/l		--	--		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l	
Benzo(b&j)fluoranthene	Lab	--	--		< 0.0019 ug/l	< 0.0018 ug/l		--	--		< 0.0017 ug/l	< 0.0017 ug/l		--	--		--	--		--	--	
Benzo(g,h,i)perylene	Lab	< 0.044 ug/l	< 0.044 ug/l		< 0.0022 ug/l	< 0.0021 ug/l		< 0.044 ug/l	< 0.043 ug/l		< 0.0019 ug/l	< 0.0019 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l	
Benzo(k)fluoranthene	Lab	< 0.044 ug/l	< 0.044 ug/l		< 0.0037 ug/l	< 0.0035 ug/l		< 0.044 ug/l	< 0.043 ug/l		< 0.0033 ug/l	< 0.0033 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l	
Chrysene	Lab	< 0.044 ug/l	< 0.044 ug/l		0.0043 j* ug/l	< 0.0016 ug/l		< 0.044 ug/l	< 0.043 ug/l		< 0.0015 ug/l	< 0.0015 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l	
Dibenz(a,h)anthracene	Lab	< 0.044 ug/l	< 0.044 ug/l		< 0.0017 ug/l	< 0.0016 ug/l		< 0.044 ug/l	< 0.043 ug/l		< 0.0015 ug/l	< 0.0015 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l	
Fluoranthene	Lab	< 0.044 ug/l	< 0.044 ug/l		< 0.0044 ug/l	< 0.0042 ug/l		< 0.044 ug/l	< 0.043 ug/l		< 0.0040 ug/l	< 0.0040 ug/l		< 0.041 ug/l	< 0.041 ug/l		0.060 ug/l	0.059 ug/l	1.7	0.29 ug/l	0.24 ug/l	19
Fluorene	Lab	0.19 ug/l	0.22 ug/l	15	3 * ug/l	3.2 ug/l	6.5	5.5 ug/l	5.7 ug/l	3.6	5.6 ug/l	5.9 ug/l	5.2	0.12 ug/l	0.12 ug/l	0	5.1 ug/l	5.0 ug/l	2.0	1.2 ug/l	1.2 ug/l	0
Indeno(1,2,3-cd)pyrene	Lab	< 0.044 ug/l	< 0.044 ug/l		< 0.0022 ug/l	< 0.0021 ug/l		< 0.044 ug/l	< 0.043 ug/l		< 0.0019 ug/l	< 0.0019 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l	
Naphthalene	Lab	50.7 ug/l	51.4 ug/l	1.4	1200 * ug/l	1200 ug/l	0	610 ug/l	659 ug/l	7.7	750 ug/l	710 ug/l	5.5	657 ug/l	664 ug/l	1.1	801 ug/l	848 ug/l	5.7	39.1 ug/l	41.6 ug/l	6.2
Phenanthrene	Lab	0.070 ug/l	0.092 ug/l	27	1.8 * ug/l	1.3 ug/l	32	3.3 ug/l	3.5 ug/l	5.9	2.4 ug/l	2.6 ug/l	8.0	0.051 ug/l	0.047 ug/l	8.2	3.2 ug/l	3.2 ug/l	0	0.64 ug/l	0.57 ug/l	12
Pyrene	Lab	< 0.044 ug/l	< 0.044 ug/l		< 0.0046 ug/l	< 0.0044 ug/l		< 0.044 ug/l	< 0.043 ug/l		< 0.0041 ug/l	< 0.0041 ug/l		< 0.041 ug/l	< 0.041 ug/l		< 0.041 ug/l	< 0.041 ug/l		0.16 ug/l	0.14 ug/l	13
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)	Barr Calculation	0.61 ug/l	0.62 ug/l	1.6	7.0 a ug/l	7.0 a ug/l	0	4.3 ug/l	4.6 ug/l	6.7	4.8 a ug/l	4.7 a ug/l	2.1	4.3 ug/l	4.3 ug/l	0	5.2 ug/l	5.4 ug/l	3.8	0.66 ug/l	0.66 ug/l	0

* = Estimated value, QA/QC criteria not met.

a = Estimated value, calculated using some or all values that are estimates.

j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.

N = Sample Type: Normal

FD = Sample Type: Field Duplicate

Table 3
Porewater Analytical Data
Relative Percent Difference
SLRIDT Site
XIK Corporation

Location		S7-PW-04			S7-PW-11		
Sample Date		06/24/2016			06/23/2016		
Sample Type Code		N	FD	RPD %	N	FD	RPD %
Chemical Name	Analysis Location						
SVOCs							
2-Methylnaphthalene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Acenaphthene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Acenaphthylene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Anthracene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Benz(a)anthracene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Benzo(a)pyrene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Benzo(b)fluoranthene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Benzo(b&j)fluoranthene	Lab	--	--		--	--	
Benzo(g,h,i)perylene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Benzo(k)fluoranthene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Chrysene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Dibenz(a,h)anthracene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Fluoranthene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Fluorene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Indeno(1,2,3-cd)pyrene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Naphthalene	Lab	0.27 * ug/l	0.42 ug/l	43 a	< 0.040 ug/l	< 0.041 ug/l	
Phenanthrene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
Pyrene	Lab	< 0.041 ug/l	< 0.040 ug/l		< 0.040 ug/l	< 0.041 ug/l	
PAH Ratio (USEPA FCV) Additive Model Porewater Value (ND=1/2)	Barr Calculation	0.31 a ug/l	0.30 a ug/l	3.3	0.30 ug/l	0.31 ug/l	3.3

* = Estimated value, QA/QC criteria not met.

a = Estimated value, calculated using some or all values that are estimates.

j = Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.

N = Sample Type: Normal

FD = Sample Type: Field Duplicate

Table 4

Porewater Sample Depths, Bulk Sediment Core and Cap Thickness Information

SLRIDT Site

XIK Corporation

Location ID	Date	Cap depth (feet) determined in cores or probes	SedPt install depth (feet)	Comments, Sediment description (feet)					
SB-PW-01	6/21/2016	--	2.1						
SB-PW-02	6/21/2016	--	2.8						
SB-PW-02-1.5'	6/21/2016	--	1.5						
SB-PW-03	6/21/2016	--	2.6						
SB-PW-04	6/21/2016	--	1	3 attempts w/vibration					
SB-PW-05	6/21/2016	--	3						
SB-PW-06	6/21/2016	--	1	3 attempts					
SB-PW-07	--	--	--	not required 2016					
SB-PW-08	--	--	--	not required 2016					
SB-PW-09	--	--	--	not required 2016					
SB-PW-10	--	--	--	not required 2016					
SB-PW-11-1.1'	6/21/2016	--	1.1	3 attempts					
SB-PW-11-3.0'	6/29/2016		3.0	SedPoint later washed up on shore. Replaced 8/30/16					
SB-PW-11-3.0'	8/30/2016		3.0						
SB-PW-12-1.3'	6/21/2016	--	1.3	refusal w/vibration. SedPoint later washed up on shore. Replaced 8/30/16					
SB-PW-12-1.5'	8/30/2016		1.5						
SP-PW-12-3.0'	6/29/2016	--	3.0						
SB-PW-13-2.0'	6/21/2016	--	2.0						
SB-PW-13-3.0'	6/29/2016	--	3.0						
S6-PW-01	6/21/2016	--	3						
S6-PW-02	6/21/2016	--	3						
S6-PW-03	6/21/2016	--	6	Set in sand below envir. media, as fine grained media was clogging the SedPoint in prior years					
S6-PW-04	6/21/2016	--	3						
S6-PW-05	6/21/2016	--	3						
S6-PW-06	6/21/2016	--	3						
S7-PW-01	6/21/2016	--	1.5	7' water					
S7-PW-02	6/23/2016	--	1.5						
S7-PW-03	6/23/2016	--	1.5	21.4' water					
S7-PW-04	6/21/2016	--	1.5	13.4' water					
S7-PW-05	11/12/2014	--	3.0	sample point remained in place from previous year					
S7-PW-06	11/12/2014	--	3.0	sample point remained in place from previous year					
S7-PW-07	--	--	--	not required in 2016					
S7-PW-08	--	--	--	not required in 2016					
S7-PW-09	--	--	--	not required in 2016					
S7-PW-10	--	--	--	not required in 2016					
S7-PW-11-2'	6/22/2016	--	2.0						
S7-PW-11-1'	6/22/2016	--	1.0						
S7-PW-12-1.5'	6/22/2016	--	1.5						
S7-PW-12-2.5'	6/22/2016		2.5	refusal w/vibration					
S7-PW-13-1.5'	6/22/2016		1.5'						
S7-PW-13-2.0'	6/22/2016		2.0	refusal					
SW-PW-01	6/3/2015	--	3.0	sample point remained in place from previous year					
NW-PW-01	11/12/2014	--	3.0	sample point remained in place from previous year					
SB-CT-01	6/22/2016	4.38	--						
SB-CT-02	6/22/2016	5.09	--						
SB-CT-03	6/22/2016	2.58	--						
S6-CT-01	6/22/2016	6.3	--						
S6-CT-02	6/22/2016	5.1	--						
S6-CT-03	6/22/2016	5.59	--						
S6-CT-04	6/22/2016	4.96	--						
S7-CT-01	6/22/2016	3.43	--						
S7-CT-02	6/29/2016	--	--	3 attempts, 3 foot push, no recovery					
	6/30/2016			3' push, 2.1' recovery - 2.1' cap sand					
S7-CT-03	6/29/2016	--	--	3 attempts, 3 foot push, no recovery					
	6/30/2016			3' push, 1.6' recovery - 1.6' cap sand					
S7-CT-04	6/22/2016	3.37	--						

Table 5
Photo Location Numbers and Degrees
SLRIDT Site
XIK Corporation

Location #	Degrees	Degrees
1	150	225
2	150	220
3	30	330
4	255	330
5	165	240
6	50	120
7	145	215
8	50	130
9	145	215
10	55	125
11	140	215
12	170	245
13	50	130
14	145	215
15	190	260
16	50	125
17	190	260
18	100	170
19	35	320
20	35	320
21	190	270
22	145	215
23	145	215
24	235	330
25	145	215
26	235	330

Table 7 - Physical Characteristics by Location, 2016
SLRIDT - St. Louis River, Minnesota

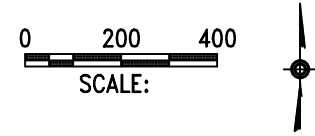
Station ID/ Water Body	Habitat	Substrate	Depth (feet)	Mean Depth (Feet)
North Bay				
NB-AA-01-N	open water, river	fine silt with fine wood	3.6	
NB-AA-01-C	open water, river	fine silt with fine wood	4.0	
NB-AA-01-S	open water, river	fine silt with fine wood	3.2	
NB-AA-02-S	open water, river	fine silt with sand	4.1	
NB-AA-02-C	open water, river	fine silt with sand	6.3	
NB-AA-02-N	open water, river	fine silt with very fine wood	6.1	
NB-AA-03-N	open water, river	fine silt with very fine wood	6.7	
NB-AA-03-C	open water, river	fine silt with very fine wood	6.9	
NB-AA-03-S	open water, river	fine silt, very very fine wood	4.5	
NB-AA-04-S	open water, river	silty, sandy	4.1	
NB-AA-04-C	open water, river	silty, sandy	5.1	
NB-AA-04-N	open water, river	silty, sandy	6.4	
Summary		Range = 3.2 - 6.9		5.1
Stryker Bay				
SB-AA-01-W	open water, lily pads	silt, detritus	5.8	
SB-AA-01-C	open water, lily pads	fine sand, silt, detritus	2.8	
SB-AA-01-E	open water, lily pads	fine sand, limestone bits	3.1	
SB-AA-02-W	open water, river	fine sand, some small rocks	5.0	
SB-AA-02-C	open water, river	fine silt	5.8	
SB-AA-02-E	open water, river	fine silt	3.0	
SB-AA-03-W	open water, river	fine silt	6.4	
SB-AA-03-C	open water, river	fine silt and fine sand	3.4	
SB-AA-03-E	open water, river	fine silt, sand, gravel	3.0	
SB-AA-04-W	open water, river	fine silt, fine sand	7.3	
SB-AA-04-C	open water, river	very fine silt	7.1	
SB-AA-04-E	open water, river	very fine silt with limestone gravel	2.9	
SB-AA-05-W	open water, river	very fine silt	6.9	
SB-AA-05-C	open water, river	very fine silt with detritus	6.5	
SB-AA-05-E	open water, river	fine silt with limestone	4.2	
SB-AA-06-W	open water, river	fine silt with detritus	5.5	
SB-AA-06-C	open water, river	fine silt, sand, fine detritus	4.6	
SB-AA-06-E	open water, river	fine silt, sand, fine detritus	5.1	
Summary		Range = 2.8 - 7.3		4.9

Table 7 - Physical Characteristics by Location, 2016
SLRIDT - St. Louis River, Minnesota

Station ID/ Water Body	Habitat	Substrate	Depth (feet)	Mean Depth (Feet)
Slip 6				
S6-AA-01-W	open water, river	fine silt	6.5	
S6-AA-01-C	open water, river	fine silt	6.8	
S6-AA-01-E	open water, river	coarse sand, some limestone	4.6	
S6-AA-02-W	open water, river	coarse sand, some limestone	5.7	
S6-AA-02-C	open water, river	fine silt	4.9	
S6-AA-02-E	open water, river	coarse sand, silt	4.0	
S6-AA-03-W	open water, river	silty, with woody debris	6.0	
S6-AA-03-C	open water, river	fine silt	6.3	
S6-AA-03-E	open water, river	fine silt and sand	6.9	
S6-AA-04-W	open water, river	fine silt	5.0	
S6-AA-04-C	open water, river	fine silt	5.4	
S6-AA-04-E	open water, river	fine silt	5.9	
S6-AA-05-W	open water, river	fine silt with sand	4.2	
S6-AA-05-C	open water, river	fine silt	4.6	
S6-AA-05-E	open water, river	fine silt	3.0	
S6-AA-06-W	open water, river	fine silt with sand	3.6	
S6-AA-06-C	open water, river	fine silt	4.0	
S6-AA-06-E	open water, river	fine silt	3.5	
S6-AA-07-W	open water, river	fine silt with sand	4.5	
S6-AA-07-C	open water, river	fine silt	4.5	
S6-AA-07-E	open water, river	fine silt	4.6	
Summary		Range = 3.0 - 6.9		5.0
Slip 7				
S7-AA-01-W	open water, river	sandy, with clay chunks	7.0	
S7-AA-01-C	open water, river	silty/sandy, some woody debris	10.3	
S7-AA-01-E	open water, river	fine sand, silt	12.2	
S7-AA-02-W	open water, river	coarse sand	9.1	
S7-AA-02-C	open water, river	fine sand, silt	14.5	
S7-AA-02-E	open water, river	fine sand, silt	17.3	
S7-AA-03-W	open water, river	coarse sand, silt	8.5	
S7-AA-03-C	open water, river	silt	19.1	
S7-AA-03-E	open water, river	fine silt, woody debris	19.0	
S7-AA-04-W	open water, river	coarse sand, silt	12.9	
S7-AA-04-C	open water, river	fine silt	16.5	
S7-AA-04-E	open water, river	fine silt	20.2	
Summary		Range = 7.0 - 20.2		13.9

Figures

CADD USER: Brian L. Jurek FILE: M:\CAD\23690B77 SLRIDT\2016\LTM\2016 REPORT FIGURES\FIGURE 2 - PORE WATER AND CAP THICKNESS SURVEY LOCATIONS 2016.DWG PLOT SCALE: 1:2 PLOT DATE: 11/15/2016 12:44 PM

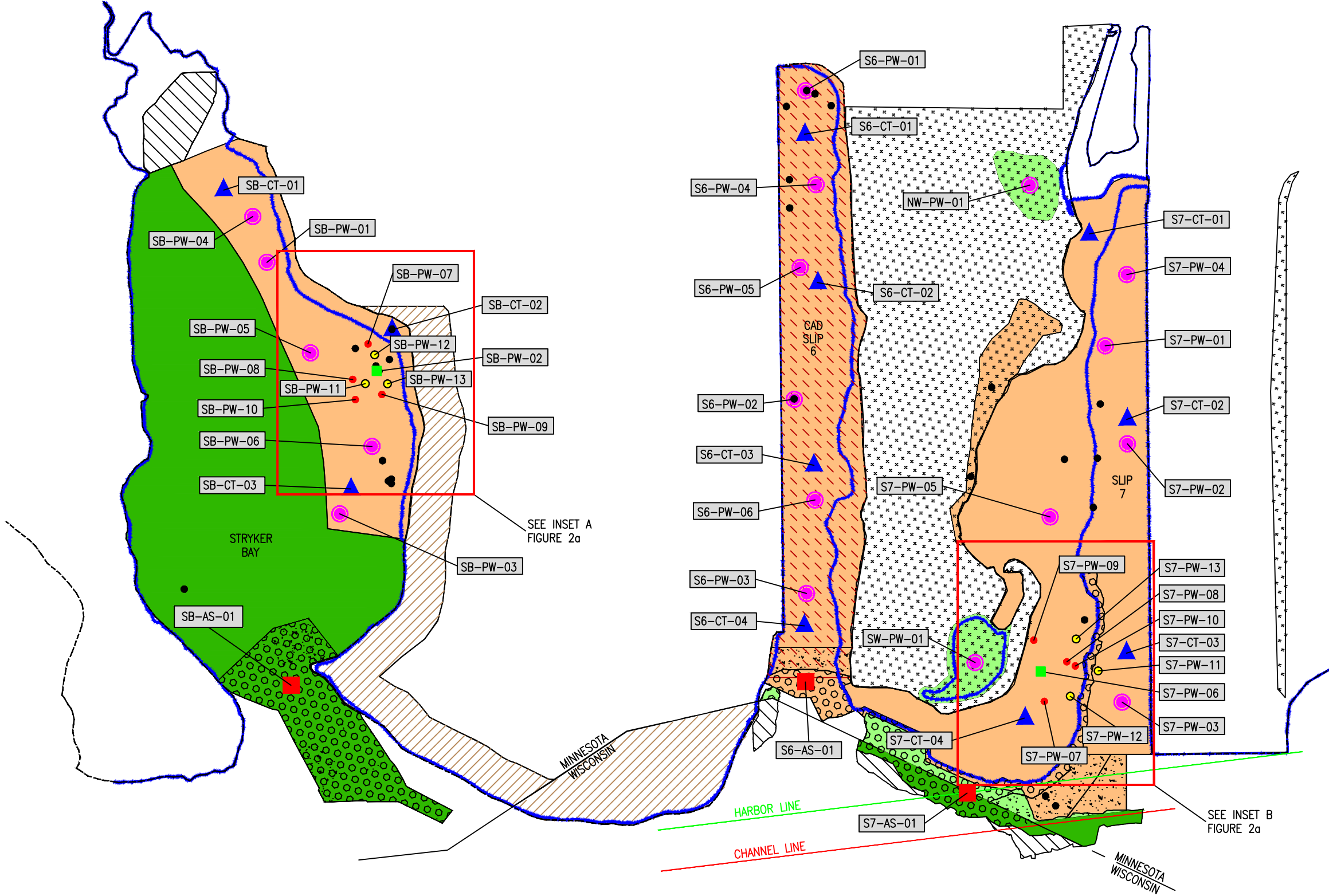


NOTE: 0.3 = FCV SUM OF RATIOS OF ALL PAHs

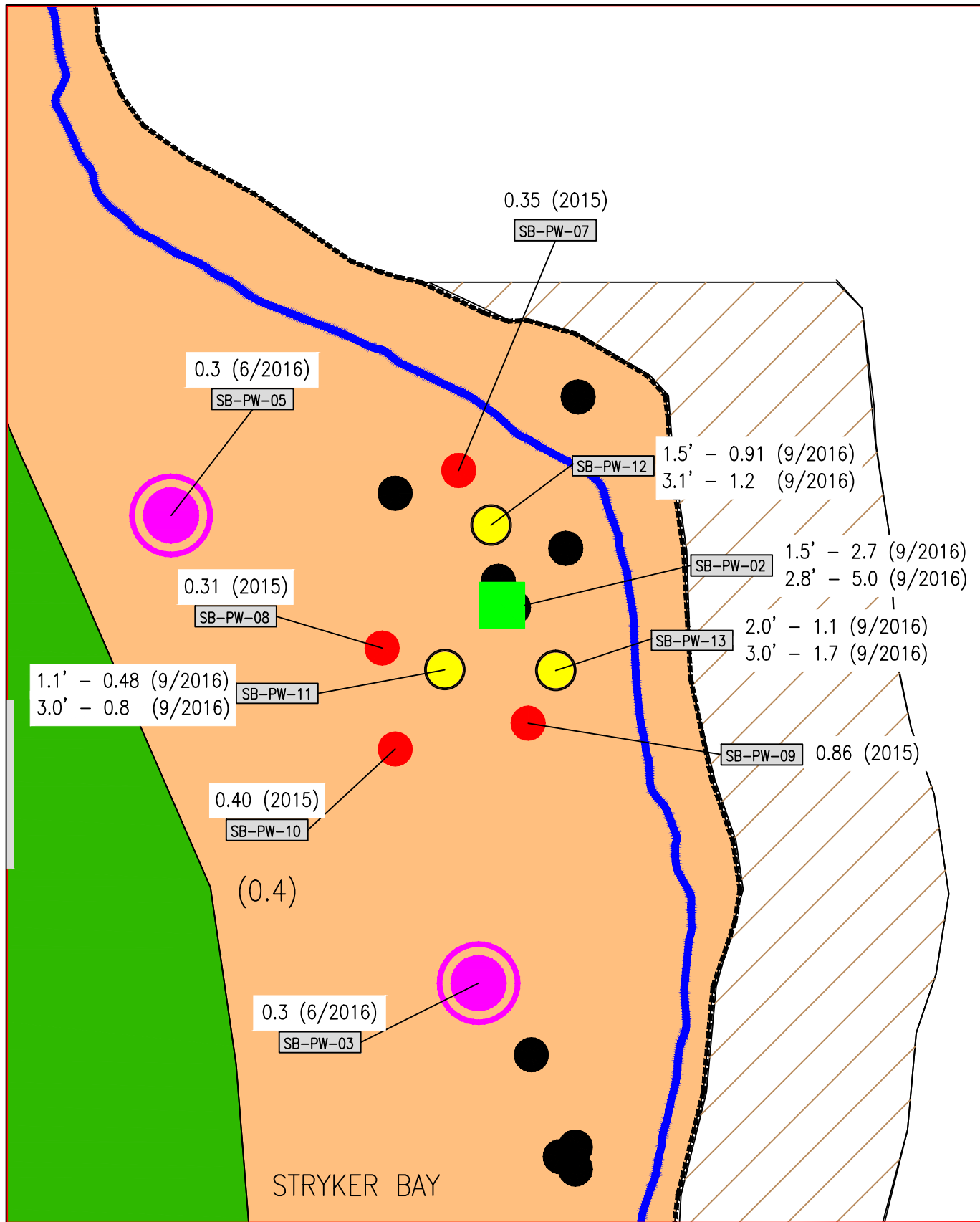
LEGEND

- ▲ CAP THICKNESS SURVEY LOCATION
- AGGREGATE SURVEY CONFIRMATION LOCATION
- BULK SEDIMENT & PORE WATER SAMPLE LOCATION
- CONFIRMED LOCATION WHERE TIER I LEVEL EXCEEDED
- PRE-RAs NAPHTHALENE SEDIMENT >1000 ppm
- TIER II POREWATER SAMPLING LOCATIONS IN 2015
- TIER II POREWATER SAMPLING LOCATIONS FOR 2016

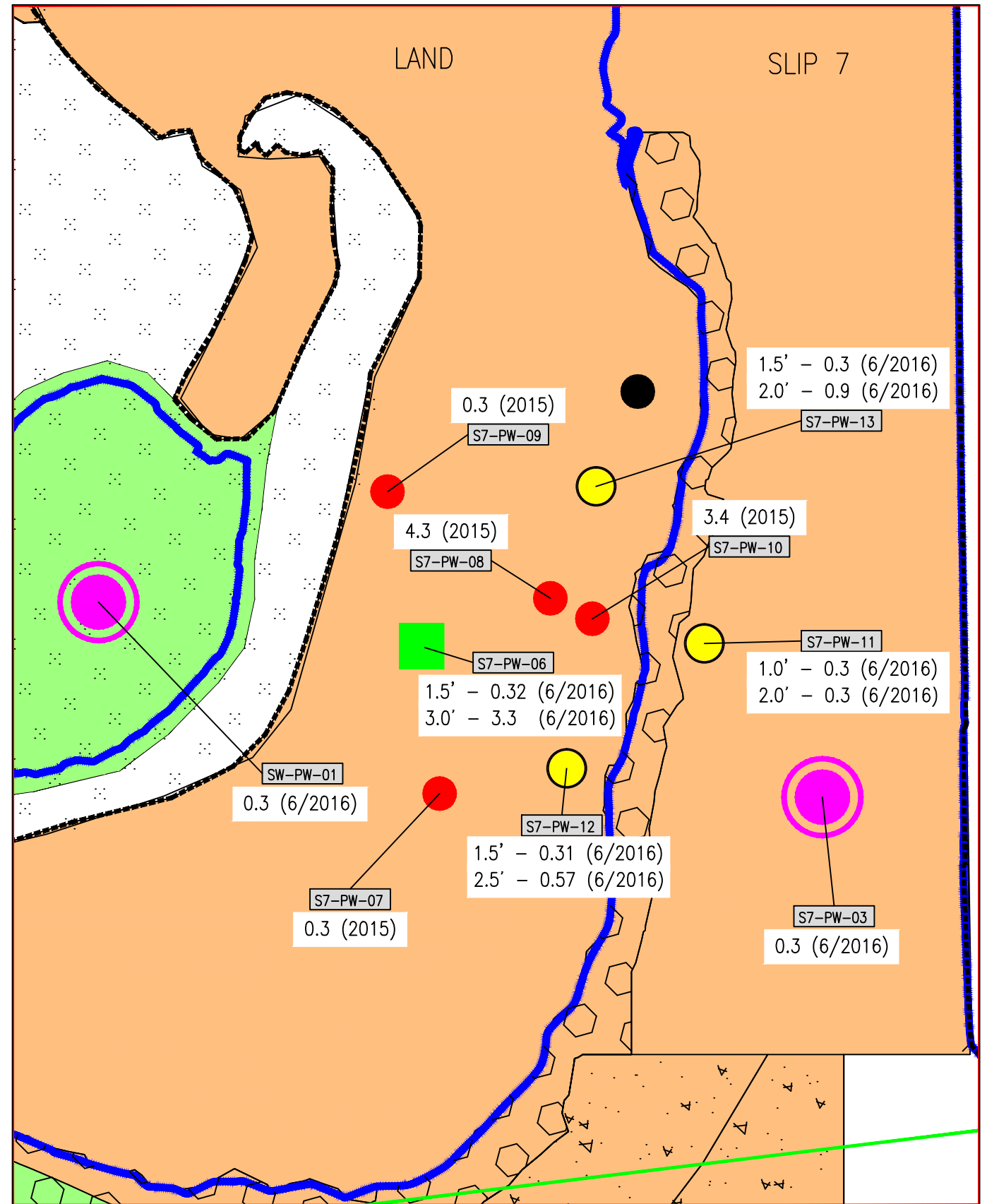
- COBBLES (FILL MATERIAL)
- DREDGED & COVERED
- DREDGED & CAPPED
- CAD (CONTAINED AQUATIC DISPOSAL FILLED WITH DREDGE MATERIAL)
- CAP IN PLACE (FILLED)
- DREDGE
- GRAVEL
- RIPARIAN BUFFER ZONE ON HALLETT PROPERTY
- RIPARIAN BUFFER ZONE ON XIK PROPERTY
- PRE RESPONSE ACTION SHORELINE
- POST RESPONSE ACTION SHORELINE



7/12/12 DRAFT SUBMITTED												SLRIDT DULUTH, MN				BARR PROJECT No. 23690B77	
																CLIENT PROJECT No.	
																DWG. No.	REV. No.
NO. BY CHK APP DATE REVISION DESCRIPTION												XIK CORPORATION DULUTH, MN				FIGURE 2 - PORE WATER AND CAP THICKNESS SURVEY LOCATIONS 2016	



INSET A



INSET B

CARD				7/12/12	DRAFT SUBMITTED
USER	E				
PRIN	D				
	C				
	B				
	A				
NO.	BY	CHK	APP	DATE	REVISION DESCRIPTION

[illegible]

XIK CORPORATION
DULUTH, MN

SLRIDT
DULUTH, MN
FIGURE 2a – PORE WATER SAMPLE
LOCATIONS 2016 EXPANDED VIEW OF
STRYKER BAY AND SLIP 7

BARR PROJECT No. 23690B77	
CLIENT PROJECT No.	
DWG. No.	REV. No.

STRYKER
BAY

59th
PENINSULA

54th
PENINSULA

SLIP
7

CAD

KINGSBURY
BAY

HARBOR LINE

CHANNEL LINE

MINNESOTA
WISCONSIN

SLRIDT
DULUTH, MN

FIGURE 3 – ANNUAL PHOTO LOCATIONS

BARR PROJECT No.	23690B77
CLIENT PROJECT No.	

DWG. No.	REV. No.
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XIK CORPORATION
DULUTH, MN

CADD USER: Brian L. Jurek FILE: E:\SLRDT BACKUP\BLJ\CIVIL 3D PROJECTS\SLRDT\2011\LTM\FIGURES\FIGURE 4 - ANNUAL PHOTO LOCATIONS.DWG PLOT SCALE: 1:2 PLOT DATE: 4/2/2012 11:55 AM

ROAD USER: Brian L.					5/31/11	DRAFT SUBMITTED
					4/02/12	REVISED PHOTO LOCATIONS
	NO.	BY	CHK	APP.	DATE	REVISION DESCRIPTION





- Benthic Monitoring Survey Location August 2016
- Shoreline
- Transect
- Minnesota Rail Lines
- Stryker Bay Remediation**
 - BOUNDARY - CAP IN PLACE
 - BOUNDARY - DREDGED
 - BOUNDARY - DREDGED AND COVERED

Imagery; 2013 St. Louis County Pictometry

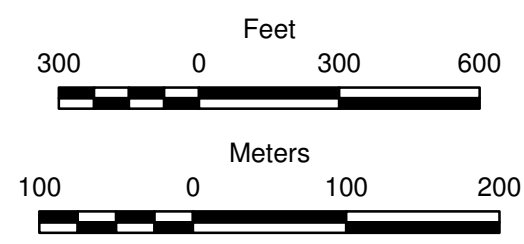


Figure 5

BENTHIC MONITORING PLAN

STRYKER BAY, SLIP 6, SLIP 7

SLRIDT
XIK Corporation
Duluth, Minnesota



- Benthic Monitoring Survey Location June 2016
- North Bay Shoreline
- Transect

Imagery; 2013 St. Louis County Pictometry

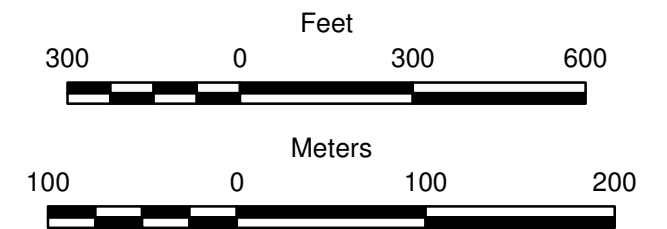


Figure 6
BENTHIC MONITORING PLAN
NORTH BAY
SLIRD
XIK Corporation
Duluth, Minnesota

Appendices

Appendix A

QA/QC Evaluation and Analytical Reports

August 04, 2016

Andrea Nord
Barr Engineering
4300 MarketPointe Drive
Suite 200
Minneapolis, MN 55435

RE: Project: 23690B77 SLRIDT LTMM REV
Pace Project No.: 10353400

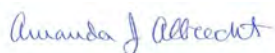
Dear Andrea Nord:

Enclosed are the analytical results for sample(s) received by the laboratory on June 24, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

This report was revised on August 4, 2016 to remove 1-methylnaphthalene from the report, per client request.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Amanda Albrecht
amanda.albrecht@pacelabs.com
Project Manager

Enclosures

cc: BarrDM, Barr Engineering



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 23690B77 SLRIDT LTMM REV
Pace Project No.: 10353400

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #: 14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10353400001	S7-PW-02	Water	06/24/16 08:15	06/24/16 18:20
10353400002	S7-PW-04 MSMSD	Water	06/24/16 08:40	06/24/16 18:20
10353400003	SB-PW-03	Water	06/23/16 13:45	06/24/16 18:20
10353400004	S7-PW-01 MSMSD	Water	06/24/16 08:50	06/24/16 18:20
10353400005	S7-PW-11.5	Water	06/24/16 09:20	06/24/16 18:20
10353400006	S7-PW-01	Water	06/24/16 08:50	06/24/16 18:20
10353400007	S6-PW-06	Water	06/23/16 14:00	06/24/16 18:20
10353400008	S6-PW-03	Water	06/23/16 18:05	06/24/16 18:20
10353400009	DUP-1	Water	06/23/16 00:00	06/24/16 18:20
10353400010	SB-PW-02.5	Water	06/23/16 16:10	06/24/16 18:20
10353400011	SB-PW-12	Water	06/23/16 16:35	06/24/16 18:20
10353400012	SB-PW-02	Water	06/23/16 14:25	06/24/16 18:20
10353400013	S6-PW-01	Water	06/23/16 17:15	06/24/16 18:20
10353400014	S6-PW-04	Water	06/23/16 17:25	06/24/16 18:20
10353400015	S6-PW-02	Water	06/23/16 17:40	06/24/16 18:20
10353400016	S6-PW-05	Water	06/23/16 17:30	06/24/16 18:20
10353400017	S7-PW-05	Water	06/24/16 11:00	06/24/16 18:20
10353400018	DUP-2	Water	06/24/16 00:00	06/24/16 18:20
10353400019	S7-PW-12.5	Water	06/24/16 09:50	06/24/16 18:20
10353400020	S7-PW-12	Water	06/24/16 09:40	06/24/16 18:20
10353400021	S7-PW-06	Water	06/24/16 10:00	06/24/16 18:20
10353400022	S7-PW-13	Water	06/24/16 10:20	06/24/16 18:20
10353400023	S7-PW-13.5	Water	06/24/16 10:30	06/24/16 18:20
10353400024	S7-PW-06.5	Water	06/24/16 10:10	06/24/16 18:20
10353400025	SB-PW-04	Water	06/23/16 12:45	06/24/16 18:20
10353400026	SB-PW-13	Water	06/23/16 15:50	06/24/16 18:20
10353400027	SB-PW-11	Water	06/23/16 15:30	06/24/16 18:20
10353400028	S7-PW-04	Water	06/24/16 08:40	06/24/16 18:20
10353400029	SB-PW-06	Water	06/23/16 14:00	06/24/16 18:20
10353400030	SB-PW-05	Water	06/23/16 13:25	06/24/16 18:20
10353400031	S7-PW-11	Water	06/23/16 11:45	06/24/16 18:20
10353400032	SB-PW-01	Water	06/23/16 13:20	06/24/16 18:20

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SAMPLE ANALYTE COUNT

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10353400001	S7-PW-02	EPA 8270D by SIM	AS1	19
10353400002	S7-PW-04 MSMSD	EPA 8270D by SIM	AS1	19
10353400003	SB-PW-03	EPA 8270D by SIM	AS1	19
10353400004	S7-PW-01 MSMSD	EPA 8270D by SIM	AS1	19
10353400005	S7-PW-11.5	EPA 8270D by SIM	AS1	19
10353400006	S7-PW-01	EPA 8270D by SIM	AS1	19
10353400007	S6-PW-06	EPA 8270D by SIM	AS1	19
10353400008	S6-PW-03	EPA 8270D by SIM	AS1	19
10353400009	DUP-1	EPA 8270D by SIM	AS1	19
10353400010	SB-PW-02.5	EPA 8270D by SIM	AS1	19
10353400011	SB-PW-12	EPA 8270D by SIM	AS1	19
10353400012	SB-PW-02	EPA 8270D by SIM	AS1	19
10353400013	S6-PW-01	EPA 8270D by SIM	AS1	19
10353400014	S6-PW-04	EPA 8270D by SIM	AS1	19
10353400015	S6-PW-02	EPA 8270D by SIM	AS1	19
10353400016	S6-PW-05	EPA 8270D by SIM	AS1	19
10353400017	S7-PW-05	EPA 8270D by SIM	AS1	19
10353400018	DUP-2	EPA 8270D by SIM	AS1	19
10353400019	S7-PW-12.5	EPA 8270D by SIM	AS1	19
10353400020	S7-PW-12	EPA 8270D by SIM	AS1	19
10353400021	S7-PW-06	EPA 8270D by SIM	AS1	19
10353400022	S7-PW-13	EPA 8270D by SIM	AS1	19
10353400023	S7-PW-13.5	EPA 8270D by SIM	AS1	19
10353400024	S7-PW-06.5	EPA 8270D by SIM	AS1	19
10353400025	SB-PW-04	EPA 8270D by SIM	AS1	19
10353400026	SB-PW-13	EPA 8270D by SIM	AS1	19
10353400027	SB-PW-11	EPA 8270D by SIM	AS1	19
10353400028	S7-PW-04	EPA 8270D by SIM	AS1	19
10353400029	SB-PW-06	EPA 8270D by SIM	AS1	19
10353400030	SB-PW-05	EPA 8270D by SIM	AS1	19
10353400031	S7-PW-11	EPA 8270D by SIM	AS1	19
10353400032	SB-PW-01	EPA 8270D by SIM	AS1	19

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-02		Lab ID: 10353400001		Collected: 06/24/16 08:15		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/05/16 21:59	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0074	1	06/30/16 11:31	07/05/16 21:59	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 11:31	07/05/16 21:59	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 11:31	07/05/16 21:59	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 11:31	07/05/16 21:59	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 11:31	07/05/16 21:59	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/05/16 21:59	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 11:31	07/05/16 21:59	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/05/16 21:59	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/05/16 21:59	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 11:31	07/05/16 21:59	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0045	1	06/30/16 11:31	07/05/16 21:59	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 11:31	07/05/16 21:59	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0070	1	06/30/16 11:31	07/05/16 21:59	91-57-6	
Naphthalene	<0.041	ug/L	0.041	0.0049	1	06/30/16 11:31	07/05/16 21:59	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	06/30/16 11:31	07/05/16 21:59	85-01-8	L2
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 11:31	07/05/16 21:59	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	56	%	53-125		1	06/30/16 11:31	07/05/16 21:59	321-60-8	
p-Terphenyl-d14 (S)	79	%	57-125		1	06/30/16 11:31	07/05/16 21:59	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-04 MSMSD		Lab ID: 10353400002		Collected: 06/24/16 08:40		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/05/16 22:20	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0074	1	06/30/16 11:31	07/05/16 22:20	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 11:31	07/05/16 22:20	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 11:31	07/05/16 22:20	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 11:31	07/05/16 22:20	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 11:31	07/05/16 22:20	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/05/16 22:20	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 11:31	07/05/16 22:20	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/05/16 22:20	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/05/16 22:20	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 11:31	07/05/16 22:20	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0045	1	06/30/16 11:31	07/05/16 22:20	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 11:31	07/05/16 22:20	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0070	1	06/30/16 11:31	07/05/16 22:20	91-57-6	
Naphthalene	0.27	ug/L	0.041	0.0049	1	06/30/16 11:31	07/05/16 22:20	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	06/30/16 11:31	07/05/16 22:20	85-01-8	L2
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 11:31	07/05/16 22:20	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	67	%	53-125		1	06/30/16 11:31	07/05/16 22:20	321-60-8	
p-Terphenyl-d14 (S)	101	%	57-125		1	06/30/16 11:31	07/05/16 22:20	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: SB-PW-03		Lab ID: 10353400003		Collected: 06/23/16 13:45		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 18:27	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0075	1	06/30/16 08:12	07/01/16 18:27	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 18:27	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 18:27	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 18:27	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 18:27	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 18:27	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 18:27	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 18:27	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 18:27	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0060	1	06/30/16 08:12	07/01/16 18:27	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 18:27	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 18:27	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0071	1	06/30/16 08:12	07/01/16 18:27	91-57-6	
Naphthalene	<0.041	ug/L	0.041	0.0050	1	06/30/16 08:12	07/01/16 18:27	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0065	1	06/30/16 08:12	07/01/16 18:27	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0055	1	06/30/16 08:12	07/01/16 18:27	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	61	%	53-125		1	06/30/16 08:12	07/01/16 18:27	321-60-8	
p-Terphenyl-d14 (S)	94	%	57-125		1	06/30/16 08:12	07/01/16 18:27	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-01 MSMSD		Lab ID: 10353400004		Collected: 06/24/16 08:50		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	1.5	ug/L	0.041	0.0037	1	06/30/16 11:31	07/05/16 22:42	83-32-9	
Acenaphthylene	0.17	ug/L	0.041	0.0074	1	06/30/16 11:31	07/05/16 22:42	208-96-8	
Anthracene	0.21	ug/L	0.041	0.0044	1	06/30/16 11:31	07/05/16 22:42	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 11:31	07/05/16 22:42	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 11:31	07/05/16 22:42	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 11:31	07/05/16 22:42	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/05/16 22:42	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 11:31	07/05/16 22:42	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/05/16 22:42	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/05/16 22:42	53-70-3	
Fluoranthene	0.29	ug/L	0.041	0.0059	1	06/30/16 11:31	07/05/16 22:42	206-44-0	
Fluorene	1.2	ug/L	0.041	0.0045	1	06/30/16 11:31	07/05/16 22:42	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 11:31	07/05/16 22:42	193-39-5	
2-Methylnaphthalene	0.37	ug/L	0.041	0.0070	1	06/30/16 11:31	07/05/16 22:42	91-57-6	
Naphthalene	39.1	ug/L	0.41	0.049	10	06/30/16 11:31	07/07/16 00:30	91-20-3	
Phenanthrene	0.64	ug/L	0.041	0.0064	1	06/30/16 11:31	07/05/16 22:42	85-01-8	L2
Pyrene	0.16	ug/L	0.041	0.0054	1	06/30/16 11:31	07/05/16 22:42	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	65	%.	53-125		1	06/30/16 11:31	07/05/16 22:42	321-60-8	
p-Terphenyl-d14 (S)	90	%.	57-125		1	06/30/16 11:31	07/05/16 22:42	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-11.5		Lab ID: 10353400005		Collected: 06/24/16 09:20		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/05/16 23:03	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0074	1	06/30/16 11:31	07/05/16 23:03	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 11:31	07/05/16 23:03	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 11:31	07/05/16 23:03	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 11:31	07/05/16 23:03	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 11:31	07/05/16 23:03	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/05/16 23:03	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 11:31	07/05/16 23:03	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/05/16 23:03	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/05/16 23:03	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 11:31	07/05/16 23:03	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0045	1	06/30/16 11:31	07/05/16 23:03	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 11:31	07/05/16 23:03	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0070	1	06/30/16 11:31	07/05/16 23:03	91-57-6	
Naphthalene	<0.041	ug/L	0.041	0.0049	1	06/30/16 11:31	07/05/16 23:03	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	06/30/16 11:31	07/05/16 23:03	85-01-8	L2
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 11:31	07/05/16 23:03	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	69	%.	53-125		1	06/30/16 11:31	07/05/16 23:03	321-60-8	
p-Terphenyl-d14 (S)	102	%.	57-125		1	06/30/16 11:31	07/05/16 23:03	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-01		Lab ID: 10353400006		Collected: 06/24/16 08:50		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	1.5	ug/L	0.041	0.0038	1	06/30/16 11:31	07/05/16 23:24	83-32-9	
Acenaphthylene	0.17	ug/L	0.041	0.0074	1	06/30/16 11:31	07/05/16 23:24	208-96-8	
Anthracene	0.20	ug/L	0.041	0.0044	1	06/30/16 11:31	07/05/16 23:24	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 11:31	07/05/16 23:24	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 11:31	07/05/16 23:24	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 11:31	07/05/16 23:24	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/05/16 23:24	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 11:31	07/05/16 23:24	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	06/30/16 11:31	07/05/16 23:24	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/05/16 23:24	53-70-3	
Fluoranthene	0.24	ug/L	0.041	0.0059	1	06/30/16 11:31	07/05/16 23:24	206-44-0	
Fluorene	1.2	ug/L	0.041	0.0045	1	06/30/16 11:31	07/05/16 23:24	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 11:31	07/05/16 23:24	193-39-5	
2-Methylnaphthalene	0.38	ug/L	0.041	0.0070	1	06/30/16 11:31	07/05/16 23:24	91-57-6	
Naphthalene	41.6	ug/L	0.41	0.049	10	06/30/16 11:31	07/07/16 00:51	91-20-3	
Phenanthrene	0.57	ug/L	0.041	0.0064	1	06/30/16 11:31	07/05/16 23:24	85-01-8	L2
Pyrene	0.14	ug/L	0.041	0.0054	1	06/30/16 11:31	07/05/16 23:24	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	77	%	53-125		1	06/30/16 11:31	07/05/16 23:24	321-60-8	
p-Terphenyl-d14 (S)	99	%	57-125		1	06/30/16 11:31	07/05/16 23:24	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S6-PW-06		Lab ID: 10353400007		Collected: 06/23/16 14:00		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 18:49	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0074	1	06/30/16 08:12	07/01/16 18:49	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 18:49	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 18:49	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 08:12	07/01/16 18:49	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 18:49	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 18:49	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 18:49	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 18:49	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 18:49	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 08:12	07/01/16 18:49	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0045	1	06/30/16 08:12	07/01/16 18:49	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 18:49	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0070	1	06/30/16 08:12	07/01/16 18:49	91-57-6	
Naphthalene	<0.041	ug/L	0.041	0.0049	1	06/30/16 08:12	07/01/16 18:49	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	06/30/16 08:12	07/01/16 18:49	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 18:49	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	66	%.	53-125		1	06/30/16 08:12	07/01/16 18:49	321-60-8	
p-Terphenyl-d14 (S)	95	%.	57-125		1	06/30/16 08:12	07/01/16 18:49	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S6-PW-03		Lab ID: 10353400008		Collected: 06/23/16 18:05		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	0.37	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 19:10	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0074	1	06/30/16 08:12	07/01/16 19:10	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 19:10	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 19:10	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 08:12	07/01/16 19:10	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 19:10	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 19:10	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 19:10	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 19:10	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 19:10	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 08:12	07/01/16 19:10	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0045	1	06/30/16 08:12	07/01/16 19:10	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 19:10	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0070	1	06/30/16 08:12	07/01/16 19:10	91-57-6	
Naphthalene	<0.041	ug/L	0.041	0.0049	1	06/30/16 08:12	07/01/16 19:10	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	06/30/16 08:12	07/01/16 19:10	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 19:10	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	65	%.	53-125		1	06/30/16 08:12	07/01/16 19:10	321-60-8	
p-Terphenyl-d14 (S)	93	%.	57-125		1	06/30/16 08:12	07/01/16 19:10	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: DUP-1		Lab ID: 10353400009		Collected: 06/23/16 00:00		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 19:31	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0075	1	06/30/16 08:12	07/01/16 19:31	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 19:31	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 19:31	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 19:31	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 19:31	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 19:31	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 19:31	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 19:31	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 19:31	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0060	1	06/30/16 08:12	07/01/16 19:31	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 19:31	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 19:31	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0071	1	06/30/16 08:12	07/01/16 19:31	91-57-6	
Naphthalene	<0.041	ug/L	0.041	0.0050	1	06/30/16 08:12	07/01/16 19:31	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0065	1	06/30/16 08:12	07/01/16 19:31	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0055	1	06/30/16 08:12	07/01/16 19:31	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	65	%.	53-125		1	06/30/16 08:12	07/01/16 19:31	321-60-8	
p-Terphenyl-d14 (S)	84	%.	57-125		1	06/30/16 08:12	07/01/16 19:31	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: SB-PW-02.5		Lab ID: 10353400010		Collected: 06/23/16 16:10		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	2.4	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 19:53	83-32-9	
Acenaphthylene	3.6	ug/L	0.041	0.0074	1	06/30/16 08:12	07/01/16 19:53	208-96-8	
Anthracene	0.093	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 19:53	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 19:53	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 08:12	07/01/16 19:53	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 19:53	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 19:53	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 19:53	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 19:53	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 19:53	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 08:12	07/01/16 19:53	206-44-0	
Fluorene	1.0	ug/L	0.041	0.0045	1	06/30/16 08:12	07/01/16 19:53	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 19:53	193-39-5	
2-Methylnaphthalene	6.2	ug/L	0.041	0.0070	1	06/30/16 08:12	07/01/16 19:53	91-57-6	
Naphthalene	355	ug/L	2.0	0.24	50	06/30/16 08:12	07/05/16 17:19	91-20-3	
Phenanthrene	0.099	ug/L	0.041	0.0064	1	06/30/16 08:12	07/01/16 19:53	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 19:53	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	83	%	53-125		1	06/30/16 08:12	07/01/16 19:53	321-60-8	
p-Terphenyl-d14 (S)	95	%	57-125		1	06/30/16 08:12	07/01/16 19:53	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: SB-PW-12		Lab ID: 10353400011		Collected: 06/23/16 16:35		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	12.9	ug/L	0.81	0.075	20	06/30/16 08:12	07/05/16 17:41	83-32-9	
Acenaphthylene	2.4	ug/L	0.041	0.0074	1	06/30/16 08:12	07/01/16 20:14	208-96-8	
Anthracene	0.079	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 20:14	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 20:14	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 08:12	07/01/16 20:14	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 20:14	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 20:14	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 20:14	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 20:14	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 20:14	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 08:12	07/01/16 20:14	206-44-0	
Fluorene	3.9	ug/L	0.041	0.0045	1	06/30/16 08:12	07/01/16 20:14	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 20:14	193-39-5	
2-Methylnaphthalene	32.5	ug/L	0.81	0.14	20	06/30/16 08:12	07/05/16 17:41	91-57-6	
Naphthalene	1380	ug/L	8.1	0.98	200	06/30/16 08:12	07/05/16 18:02	91-20-3	
Phenanthrene	1.1	ug/L	0.041	0.0064	1	06/30/16 08:12	07/01/16 20:14	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 20:14	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	90	%.	53-125		1	06/30/16 08:12	07/01/16 20:14	321-60-8	
p-Terphenyl-d14 (S)	93	%.	57-125		1	06/30/16 08:12	07/01/16 20:14	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: SB-PW-02		Lab ID: 10353400012		Collected: 06/23/16 14:25		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 20:36	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0074	1	06/30/16 08:12	07/01/16 20:36	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 20:36	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 20:36	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 08:12	07/01/16 20:36	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 20:36	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 20:36	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 20:36	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 20:36	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 20:36	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 08:12	07/01/16 20:36	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0045	1	06/30/16 08:12	07/01/16 20:36	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 20:36	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0070	1	06/30/16 08:12	07/01/16 20:36	91-57-6	
Naphthalene	<0.041	ug/L	0.041	0.0049	1	06/30/16 08:12	07/01/16 20:36	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	06/30/16 08:12	07/01/16 20:36	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 20:36	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	72	%.	53-125		1	06/30/16 08:12	07/01/16 20:36	321-60-8	
p-Terphenyl-d14 (S)	95	%.	57-125		1	06/30/16 08:12	07/01/16 20:36	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S6-PW-01		Lab ID: 10353400013		Collected: 06/23/16 17:15		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	0.12	ug/L	0.040	0.0037	1	06/30/16 08:12	07/01/16 20:57	83-32-9	
Acenaphthylene	0.23	ug/L	0.040	0.0073	1	06/30/16 08:12	07/01/16 20:57	208-96-8	
Anthracene	<0.040	ug/L	0.040	0.0043	1	06/30/16 08:12	07/01/16 20:57	120-12-7	
Benzo(a)anthracene	<0.040	ug/L	0.040	0.0038	1	06/30/16 08:12	07/01/16 20:57	56-55-3	
Benzo(a)pyrene	<0.040	ug/L	0.040	0.0052	1	06/30/16 08:12	07/01/16 20:57	50-32-8	
Benzo(b)fluoranthene	<0.040	ug/L	0.040	0.0045	1	06/30/16 08:12	07/01/16 20:57	205-99-2	
Benzo(g,h,i)perylene	<0.040	ug/L	0.040	0.0037	1	06/30/16 08:12	07/01/16 20:57	191-24-2	
Benzo(k)fluoranthene	<0.040	ug/L	0.040	0.0040	1	06/30/16 08:12	07/01/16 20:57	207-08-9	
Chrysene	<0.040	ug/L	0.040	0.0038	1	06/30/16 08:12	07/01/16 20:57	218-01-9	
Dibenz(a,h)anthracene	<0.040	ug/L	0.040	0.0038	1	06/30/16 08:12	07/01/16 20:57	53-70-3	
Fluoranthene	<0.040	ug/L	0.040	0.0059	1	06/30/16 08:12	07/01/16 20:57	206-44-0	
Fluorene	0.082	ug/L	0.040	0.0045	1	06/30/16 08:12	07/01/16 20:57	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.040	ug/L	0.040	0.0039	1	06/30/16 08:12	07/01/16 20:57	193-39-5	
2-Methylnaphthalene	0.25	ug/L	0.040	0.0069	1	06/30/16 08:12	07/01/16 20:57	91-57-6	
Naphthalene	27.4	ug/L	0.20	0.024	5	06/30/16 08:12	07/05/16 18:24	91-20-3	
Phenanthrene	0.064	ug/L	0.040	0.0063	1	06/30/16 08:12	07/01/16 20:57	85-01-8	
Pyrene	<0.040	ug/L	0.040	0.0053	1	06/30/16 08:12	07/01/16 20:57	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	79	%.	53-125		1	06/30/16 08:12	07/01/16 20:57	321-60-8	
p-Terphenyl-d14 (S)	98	%.	57-125		1	06/30/16 08:12	07/01/16 20:57	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S6-PW-04		Lab ID: 10353400014		Collected: 06/23/16 17:25		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 21:19	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0074	1	06/30/16 08:12	07/01/16 21:19	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 21:19	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 21:19	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 08:12	07/01/16 21:19	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 21:19	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 21:19	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 21:19	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 21:19	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 21:19	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 08:12	07/01/16 21:19	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0045	1	06/30/16 08:12	07/01/16 21:19	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 21:19	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0070	1	06/30/16 08:12	07/01/16 21:19	91-57-6	
Naphthalene	<0.041	ug/L	0.041	0.0049	1	06/30/16 08:12	07/01/16 21:19	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	06/30/16 08:12	07/01/16 21:19	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 21:19	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	63	%	53-125		1	06/30/16 08:12	07/01/16 21:19	321-60-8	
p-Terphenyl-d14 (S)	93	%	57-125		1	06/30/16 08:12	07/01/16 21:19	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S6-PW-02		Lab ID: 10353400015		Collected: 06/23/16 17:40		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	4.8	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 21:40	83-32-9	
Acenaphthylene	7.4	ug/L	0.041	0.0075	1	06/30/16 08:12	07/01/16 21:40	208-96-8	
Anthracene	0.24	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 21:40	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 21:40	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 21:40	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 21:40	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 21:40	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 21:40	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 21:40	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 21:40	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0060	1	06/30/16 08:12	07/01/16 21:40	206-44-0	
Fluorene	3.0	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 21:40	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 21:40	193-39-5	
2-Methylnaphthalene	20.8	ug/L	0.41	0.071	10	06/30/16 08:12	07/05/16 18:45	91-57-6	
Naphthalene	662	ug/L	4.1	0.50	100	06/30/16 08:12	07/05/16 19:07	91-20-3	
Phenanthrene	2.0	ug/L	0.041	0.0065	1	06/30/16 08:12	07/01/16 21:40	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0055	1	06/30/16 08:12	07/01/16 21:40	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	80	%.	53-125		1	06/30/16 08:12	07/01/16 21:40	321-60-8	
p-Terphenyl-d14 (S)	92	%.	57-125		1	06/30/16 08:12	07/01/16 21:40	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S6-PW-05		Lab ID: 10353400016		Collected: 06/23/16 17:30		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 22:02	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0074	1	06/30/16 08:12	07/01/16 22:02	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 22:02	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 22:02	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 08:12	07/01/16 22:02	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 22:02	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 22:02	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 22:02	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 22:02	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 22:02	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 08:12	07/01/16 22:02	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0045	1	06/30/16 08:12	07/01/16 22:02	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 22:02	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0070	1	06/30/16 08:12	07/01/16 22:02	91-57-6	
Naphthalene	<0.041	ug/L	0.041	0.0049	1	06/30/16 08:12	07/01/16 22:02	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	06/30/16 08:12	07/01/16 22:02	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 22:02	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	74	%	53-125		1	06/30/16 08:12	07/01/16 22:02	321-60-8	
p-Terphenyl-d14 (S)	97	%	57-125		1	06/30/16 08:12	07/01/16 22:02	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-05		Lab ID: 10353400017		Collected: 06/24/16 11:00		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/05/16 23:46	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0074	1	06/30/16 11:31	07/05/16 23:46	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 11:31	07/05/16 23:46	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 11:31	07/05/16 23:46	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 11:31	07/05/16 23:46	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 11:31	07/05/16 23:46	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/05/16 23:46	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 11:31	07/05/16 23:46	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/05/16 23:46	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/05/16 23:46	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 11:31	07/05/16 23:46	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0045	1	06/30/16 11:31	07/05/16 23:46	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 11:31	07/05/16 23:46	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0070	1	06/30/16 11:31	07/05/16 23:46	91-57-6	
Naphthalene	0.32	ug/L	0.041	0.0049	1	06/30/16 11:31	07/05/16 23:46	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	06/30/16 11:31	07/05/16 23:46	85-01-8	L2
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 11:31	07/05/16 23:46	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	72	%	53-125		1	06/30/16 11:31	07/05/16 23:46	321-60-8	
p-Terphenyl-d14 (S)	105	%	57-125		1	06/30/16 11:31	07/05/16 23:46	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: DUP-2		Lab ID: 10353400018		Collected: 06/24/16 00:00		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.042	ug/L	0.042	0.0038	1	06/30/16 11:31	07/06/16 00:07	83-32-9	
Acenaphthylene	<0.042	ug/L	0.042	0.0076	1	06/30/16 11:31	07/06/16 00:07	208-96-8	
Anthracene	<0.042	ug/L	0.042	0.0045	1	06/30/16 11:31	07/06/16 00:07	120-12-7	
Benzo(a)anthracene	<0.042	ug/L	0.042	0.0040	1	06/30/16 11:31	07/06/16 00:07	56-55-3	
Benzo(a)pyrene	<0.042	ug/L	0.042	0.0054	1	06/30/16 11:31	07/06/16 00:07	50-32-8	
Benzo(b)fluoranthene	<0.042	ug/L	0.042	0.0047	1	06/30/16 11:31	07/06/16 00:07	205-99-2	
Benzo(g,h,i)perylene	<0.042	ug/L	0.042	0.0038	1	06/30/16 11:31	07/06/16 00:07	191-24-2	
Benzo(k)fluoranthene	<0.042	ug/L	0.042	0.0042	1	06/30/16 11:31	07/06/16 00:07	207-08-9	
Chrysene	<0.042	ug/L	0.042	0.0039	1	06/30/16 11:31	07/06/16 00:07	218-01-9	
Dibenz(a,h)anthracene	<0.042	ug/L	0.042	0.0039	1	06/30/16 11:31	07/06/16 00:07	53-70-3	
Fluoranthene	<0.042	ug/L	0.042	0.0061	1	06/30/16 11:31	07/06/16 00:07	206-44-0	
Fluorene	<0.042	ug/L	0.042	0.0046	1	06/30/16 11:31	07/06/16 00:07	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.042	ug/L	0.042	0.0041	1	06/30/16 11:31	07/06/16 00:07	193-39-5	
2-Methylnaphthalene	<0.042	ug/L	0.042	0.0072	1	06/30/16 11:31	07/06/16 00:07	91-57-6	
Naphthalene	<0.042	ug/L	0.042	0.0050	1	06/30/16 11:31	07/06/16 00:07	91-20-3	
Phenanthrene	<0.042	ug/L	0.042	0.0066	1	06/30/16 11:31	07/06/16 00:07	85-01-8	L2
Pyrene	<0.042	ug/L	0.042	0.0055	1	06/30/16 11:31	07/06/16 00:07	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	63	%.	53-125		1	06/30/16 11:31	07/06/16 00:07	321-60-8	
p-Terphenyl-d14 (S)	99	%.	57-125		1	06/30/16 11:31	07/06/16 00:07	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-12.5		Lab ID: 10353400019		Collected: 06/24/16 09:50		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	0.044	ug/L	0.041	0.0037	1	06/30/16 11:31	07/06/16 00:29	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0074	1	06/30/16 11:31	07/06/16 00:29	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 11:31	07/06/16 00:29	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 11:31	07/06/16 00:29	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 11:31	07/06/16 00:29	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 11:31	07/06/16 00:29	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/06/16 00:29	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 11:31	07/06/16 00:29	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/06/16 00:29	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/06/16 00:29	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 11:31	07/06/16 00:29	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0045	1	06/30/16 11:31	07/06/16 00:29	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 11:31	07/06/16 00:29	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0070	1	06/30/16 11:31	07/06/16 00:29	91-57-6	
Naphthalene	0.073	ug/L	0.041	0.0049	1	06/30/16 11:31	07/06/16 00:29	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	06/30/16 11:31	07/06/16 00:29	85-01-8	L2
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 11:31	07/06/16 00:29	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	82	%	53-125		1	06/30/16 11:31	07/06/16 00:29	321-60-8	
p-Terphenyl-d14 (S)	111	%	57-125		1	06/30/16 11:31	07/06/16 00:29	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-12		Lab ID: 10353400020		Collected: 06/24/16 09:40		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	2.2	ug/L	0.040	0.0037	1	06/30/16 11:31	07/06/16 00:50	83-32-9	
Acenaphthylene	1.1	ug/L	0.040	0.0073	1	06/30/16 11:31	07/06/16 00:50	208-96-8	
Anthracene	0.066	ug/L	0.040	0.0043	1	06/30/16 11:31	07/06/16 00:50	120-12-7	
Benzo(a)anthracene	<0.040	ug/L	0.040	0.0038	1	06/30/16 11:31	07/06/16 00:50	56-55-3	
Benzo(a)pyrene	<0.040	ug/L	0.040	0.0052	1	06/30/16 11:31	07/06/16 00:50	50-32-8	
Benzo(b)fluoranthene	<0.040	ug/L	0.040	0.0045	1	06/30/16 11:31	07/06/16 00:50	205-99-2	
Benzo(g,h,i)perylene	<0.040	ug/L	0.040	0.0036	1	06/30/16 11:31	07/06/16 00:50	191-24-2	
Benzo(k)fluoranthene	<0.040	ug/L	0.040	0.0040	1	06/30/16 11:31	07/06/16 00:50	207-08-9	
Chrysene	<0.040	ug/L	0.040	0.0038	1	06/30/16 11:31	07/06/16 00:50	218-01-9	
Dibenz(a,h)anthracene	<0.040	ug/L	0.040	0.0038	1	06/30/16 11:31	07/06/16 00:50	53-70-3	
Fluoranthene	<0.040	ug/L	0.040	0.0058	1	06/30/16 11:31	07/06/16 00:50	206-44-0	
Fluorene	0.44	ug/L	0.040	0.0044	1	06/30/16 11:31	07/06/16 00:50	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.040	ug/L	0.040	0.0039	1	06/30/16 11:31	07/06/16 00:50	193-39-5	
2-Methylnaphthalene	1.1	ug/L	0.040	0.0069	1	06/30/16 11:31	07/06/16 00:50	91-57-6	
Naphthalene	26.1	ug/L	0.20	0.024	5	06/30/16 11:31	07/07/16 01:13	91-20-3	
Phenanthrene	0.18	ug/L	0.040	0.0063	1	06/30/16 11:31	07/06/16 00:50	85-01-8	L2
Pyrene	<0.040	ug/L	0.040	0.0053	1	06/30/16 11:31	07/06/16 00:50	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	62	%.	53-125		1	06/30/16 11:31	07/06/16 00:50	321-60-8	
p-Terphenyl-d14 (S)	89	%.	57-125		1	06/30/16 11:31	07/06/16 00:50	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-06		Lab ID: 10353400021		Collected: 06/24/16 10:00		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	11.3	ug/L	4.1	0.37	100	06/30/16 11:31	07/07/16 01:34	83-32-9	
Acenaphthylene	1.1	ug/L	0.041	0.0074	1	06/30/16 11:31	07/06/16 01:11	208-96-8	
Anthracene	0.059	ug/L	0.041	0.0044	1	06/30/16 11:31	07/06/16 01:11	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 11:31	07/06/16 01:11	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 11:31	07/06/16 01:11	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 11:31	07/06/16 01:11	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/06/16 01:11	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 11:31	07/06/16 01:11	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/06/16 01:11	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/06/16 01:11	53-70-3	
Fluoranthene	0.049	ug/L	0.041	0.0059	1	06/30/16 11:31	07/06/16 01:11	206-44-0	
Fluorene	0.20	ug/L	0.041	0.0045	1	06/30/16 11:31	07/06/16 01:11	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 11:31	07/06/16 01:11	193-39-5	
2-Methylnaphthalene	3.0	ug/L	0.041	0.0070	1	06/30/16 11:31	07/06/16 01:11	91-57-6	
Naphthalene	519	ug/L	4.1	0.49	100	06/30/16 11:31	07/07/16 01:34	91-20-3	
Phenanthrene	0.13	ug/L	0.041	0.0064	1	06/30/16 11:31	07/06/16 01:11	85-01-8	L2
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 11:31	07/06/16 01:11	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	73	%	53-125		1	06/30/16 11:31	07/06/16 01:11	321-60-8	
p-Terphenyl-d14 (S)	89	%	57-125		1	06/30/16 11:31	07/06/16 01:11	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-13		Lab ID: 10353400022		Collected: 06/24/16 10:20		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	1.1	ug/L	0.040	0.0037	1	06/30/16 11:31	07/06/16 01:33	83-32-9	
Acenaphthylene	0.39	ug/L	0.040	0.0073	1	06/30/16 11:31	07/06/16 01:33	208-96-8	
Anthracene	<0.040	ug/L	0.040	0.0043	1	06/30/16 11:31	07/06/16 01:33	120-12-7	
Benzo(a)anthracene	<0.040	ug/L	0.040	0.0038	1	06/30/16 11:31	07/06/16 01:33	56-55-3	
Benzo(a)pyrene	<0.040	ug/L	0.040	0.0052	1	06/30/16 11:31	07/06/16 01:33	50-32-8	
Benzo(b)fluoranthene	<0.040	ug/L	0.040	0.0045	1	06/30/16 11:31	07/06/16 01:33	205-99-2	
Benzo(g,h,i)perylene	<0.040	ug/L	0.040	0.0037	1	06/30/16 11:31	07/06/16 01:33	191-24-2	
Benzo(k)fluoranthene	<0.040	ug/L	0.040	0.0040	1	06/30/16 11:31	07/06/16 01:33	207-08-9	
Chrysene	<0.040	ug/L	0.040	0.0038	1	06/30/16 11:31	07/06/16 01:33	218-01-9	
Dibenz(a,h)anthracene	<0.040	ug/L	0.040	0.0038	1	06/30/16 11:31	07/06/16 01:33	53-70-3	
Fluoranthene	<0.040	ug/L	0.040	0.0059	1	06/30/16 11:31	07/06/16 01:33	206-44-0	
Fluorene	0.20	ug/L	0.040	0.0045	1	06/30/16 11:31	07/06/16 01:33	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.040	ug/L	0.040	0.0039	1	06/30/16 11:31	07/06/16 01:33	193-39-5	
2-Methylnaphthalene	0.063	ug/L	0.040	0.0069	1	06/30/16 11:31	07/06/16 01:33	91-57-6	
Naphthalene	111	ug/L	0.80	0.097	20	06/30/16 11:31	07/07/16 01:56	91-20-3	
Phenanthrene	<0.040	ug/L	0.040	0.0063	1	06/30/16 11:31	07/06/16 01:33	85-01-8	L2
Pyrene	<0.040	ug/L	0.040	0.0053	1	06/30/16 11:31	07/06/16 01:33	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	74	%	53-125		1	06/30/16 11:31	07/06/16 01:33	321-60-8	
p-Terphenyl-d14 (S)	96	%	57-125		1	06/30/16 11:31	07/06/16 01:33	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-13.5		Lab ID: 10353400023		Collected: 06/24/16 10:30		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.040	ug/L	0.040	0.0037	1	06/30/16 11:31	07/06/16 01:54	83-32-9	
Acenaphthylene	<0.040	ug/L	0.040	0.0074	1	06/30/16 11:31	07/06/16 01:54	208-96-8	
Anthracene	<0.040	ug/L	0.040	0.0043	1	06/30/16 11:31	07/06/16 01:54	120-12-7	
Benzo(a)anthracene	<0.040	ug/L	0.040	0.0039	1	06/30/16 11:31	07/06/16 01:54	56-55-3	
Benzo(a)pyrene	<0.040	ug/L	0.040	0.0052	1	06/30/16 11:31	07/06/16 01:54	50-32-8	
Benzo(b)fluoranthene	<0.040	ug/L	0.040	0.0045	1	06/30/16 11:31	07/06/16 01:54	205-99-2	
Benzo(g,h,i)perylene	<0.040	ug/L	0.040	0.0037	1	06/30/16 11:31	07/06/16 01:54	191-24-2	
Benzo(k)fluoranthene	<0.040	ug/L	0.040	0.0040	1	06/30/16 11:31	07/06/16 01:54	207-08-9	
Chrysene	<0.040	ug/L	0.040	0.0038	1	06/30/16 11:31	07/06/16 01:54	218-01-9	
Dibenz(a,h)anthracene	<0.040	ug/L	0.040	0.0038	1	06/30/16 11:31	07/06/16 01:54	53-70-3	
Fluoranthene	<0.040	ug/L	0.040	0.0059	1	06/30/16 11:31	07/06/16 01:54	206-44-0	
Fluorene	<0.040	ug/L	0.040	0.0045	1	06/30/16 11:31	07/06/16 01:54	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.040	ug/L	0.040	0.0039	1	06/30/16 11:31	07/06/16 01:54	193-39-5	
2-Methylnaphthalene	<0.040	ug/L	0.040	0.0070	1	06/30/16 11:31	07/06/16 01:54	91-57-6	
Naphthalene	1.7	ug/L	0.040	0.0049	1	06/30/16 11:31	07/06/16 01:54	91-20-3	
Phenanthrene	<0.040	ug/L	0.040	0.0064	1	06/30/16 11:31	07/06/16 01:54	85-01-8	L2
Pyrene	<0.040	ug/L	0.040	0.0053	1	06/30/16 11:31	07/06/16 01:54	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	56	%	53-125		1	06/30/16 11:31	07/06/16 01:54	321-60-8	
p-Terphenyl-d14 (S)	84	%	57-125		1	06/30/16 11:31	07/06/16 01:54	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-06.5		Lab ID: 10353400024		Collected: 06/24/16 10:10		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/06/16 02:16	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0074	1	06/30/16 11:31	07/06/16 02:16	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 11:31	07/06/16 02:16	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 11:31	07/06/16 02:16	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 11:31	07/06/16 02:16	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 11:31	07/06/16 02:16	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 11:31	07/06/16 02:16	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 11:31	07/06/16 02:16	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/06/16 02:16	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 11:31	07/06/16 02:16	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 11:31	07/06/16 02:16	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0045	1	06/30/16 11:31	07/06/16 02:16	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 11:31	07/06/16 02:16	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0070	1	06/30/16 11:31	07/06/16 02:16	91-57-6	
Naphthalene	1.6	ug/L	0.041	0.0049	1	06/30/16 11:31	07/06/16 02:16	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	06/30/16 11:31	07/06/16 02:16	85-01-8	L2
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 11:31	07/06/16 02:16	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	68	%	53-125		1	06/30/16 11:31	07/06/16 02:16	321-60-8	
p-Terphenyl-d14 (S)	97	%	57-125		1	06/30/16 11:31	07/06/16 02:16	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: SB-PW-04		Lab ID: 10353400025		Collected: 06/23/16 12:45		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.040	ug/L	0.040	0.0037	1	06/30/16 08:12	07/01/16 22:23	83-32-9	
Acenaphthylene	<0.040	ug/L	0.040	0.0073	1	06/30/16 08:12	07/01/16 22:23	208-96-8	
Anthracene	<0.040	ug/L	0.040	0.0043	1	06/30/16 08:12	07/01/16 22:23	120-12-7	
Benzo(a)anthracene	<0.040	ug/L	0.040	0.0038	1	06/30/16 08:12	07/01/16 22:23	56-55-3	
Benzo(a)pyrene	<0.040	ug/L	0.040	0.0052	1	06/30/16 08:12	07/01/16 22:23	50-32-8	
Benzo(b)fluoranthene	<0.040	ug/L	0.040	0.0045	1	06/30/16 08:12	07/01/16 22:23	205-99-2	
Benzo(g,h,i)perylene	<0.040	ug/L	0.040	0.0036	1	06/30/16 08:12	07/01/16 22:23	191-24-2	
Benzo(k)fluoranthene	<0.040	ug/L	0.040	0.0040	1	06/30/16 08:12	07/01/16 22:23	207-08-9	
Chrysene	<0.040	ug/L	0.040	0.0038	1	06/30/16 08:12	07/01/16 22:23	218-01-9	
Dibenz(a,h)anthracene	<0.040	ug/L	0.040	0.0038	1	06/30/16 08:12	07/01/16 22:23	53-70-3	
Fluoranthene	<0.040	ug/L	0.040	0.0058	1	06/30/16 08:12	07/01/16 22:23	206-44-0	
Fluorene	<0.040	ug/L	0.040	0.0044	1	06/30/16 08:12	07/01/16 22:23	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.040	ug/L	0.040	0.0039	1	06/30/16 08:12	07/01/16 22:23	193-39-5	
2-Methylnaphthalene	<0.040	ug/L	0.040	0.0069	1	06/30/16 08:12	07/01/16 22:23	91-57-6	
Naphthalene	<0.040	ug/L	0.040	0.0048	1	06/30/16 08:12	07/01/16 22:23	91-20-3	
Phenanthrene	<0.040	ug/L	0.040	0.0063	1	06/30/16 08:12	07/01/16 22:23	85-01-8	
Pyrene	<0.040	ug/L	0.040	0.0053	1	06/30/16 08:12	07/01/16 22:23	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	68	%.	53-125		1	06/30/16 08:12	07/01/16 22:23	321-60-8	
p-Terphenyl-d14 (S)	95	%.	57-125		1	06/30/16 08:12	07/01/16 22:23	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: SB-PW-13		Lab ID: 10353400026		Collected: 06/23/16 15:50		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	3.9	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 22:45	83-32-9	
Acenaphthylene	2.5	ug/L	0.041	0.0074	1	06/30/16 08:12	07/01/16 22:45	208-96-8	
Anthracene	0.23	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 22:45	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 22:45	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 08:12	07/01/16 22:45	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 22:45	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 22:45	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 22:45	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 22:45	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 22:45	53-70-3	
Fluoranthene	0.10	ug/L	0.041	0.0059	1	06/30/16 08:12	07/01/16 22:45	206-44-0	
Fluorene	2.8	ug/L	0.041	0.0045	1	06/30/16 08:12	07/01/16 22:45	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 22:45	193-39-5	
2-Methylnaphthalene	9.2	ug/L	0.041	0.0070	1	06/30/16 08:12	07/01/16 22:45	91-57-6	
Naphthalene	165	ug/L	2.0	0.25	50	06/30/16 08:12	07/05/16 19:28	91-20-3	
Phenanthrene	1.9	ug/L	0.041	0.0064	1	06/30/16 08:12	07/01/16 22:45	85-01-8	
Pyrene	0.058	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 22:45	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	68	%	53-125		1	06/30/16 08:12	07/01/16 22:45	321-60-8	
p-Terphenyl-d14 (S)	90	%	57-125		1	06/30/16 08:12	07/01/16 22:45	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: SB-PW-11		Lab ID: 10353400027		Collected: 06/23/16 15:30		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	1.7	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 23:06	83-32-9	
Acenaphthylene	2.1	ug/L	0.041	0.0074	1	06/30/16 08:12	07/01/16 23:06	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 23:06	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 23:06	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 08:12	07/01/16 23:06	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 23:06	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 23:06	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 23:06	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 23:06	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 23:06	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 08:12	07/01/16 23:06	206-44-0	
Fluorene	0.28	ug/L	0.041	0.0045	1	06/30/16 08:12	07/01/16 23:06	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 23:06	193-39-5	
2-Methylnaphthalene	1.6	ug/L	0.041	0.0070	1	06/30/16 08:12	07/01/16 23:06	91-57-6	
Naphthalene	242	ug/L	2.0	0.24	50	06/30/16 08:12	07/05/16 19:50	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	06/30/16 08:12	07/01/16 23:06	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 23:06	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	81	%	53-125		1	06/30/16 08:12	07/01/16 23:06	321-60-8	
p-Terphenyl-d14 (S)	90	%	57-125		1	06/30/16 08:12	07/01/16 23:06	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-04		Lab ID: 10353400028		Collected: 06/24/16 08:40		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.040	ug/L	0.040	0.0037	1	06/30/16 11:31	07/06/16 02:37	83-32-9	
Acenaphthylene	<0.040	ug/L	0.040	0.0074	1	06/30/16 11:31	07/06/16 02:37	208-96-8	
Anthracene	<0.040	ug/L	0.040	0.0043	1	06/30/16 11:31	07/06/16 02:37	120-12-7	
Benzo(a)anthracene	<0.040	ug/L	0.040	0.0039	1	06/30/16 11:31	07/06/16 02:37	56-55-3	
Benzo(a)pyrene	<0.040	ug/L	0.040	0.0052	1	06/30/16 11:31	07/06/16 02:37	50-32-8	
Benzo(b)fluoranthene	<0.040	ug/L	0.040	0.0045	1	06/30/16 11:31	07/06/16 02:37	205-99-2	
Benzo(g,h,i)perylene	<0.040	ug/L	0.040	0.0037	1	06/30/16 11:31	07/06/16 02:37	191-24-2	
Benzo(k)fluoranthene	<0.040	ug/L	0.040	0.0040	1	06/30/16 11:31	07/06/16 02:37	207-08-9	
Chrysene	<0.040	ug/L	0.040	0.0038	1	06/30/16 11:31	07/06/16 02:37	218-01-9	
Dibenz(a,h)anthracene	<0.040	ug/L	0.040	0.0038	1	06/30/16 11:31	07/06/16 02:37	53-70-3	
Fluoranthene	<0.040	ug/L	0.040	0.0059	1	06/30/16 11:31	07/06/16 02:37	206-44-0	
Fluorene	<0.040	ug/L	0.040	0.0045	1	06/30/16 11:31	07/06/16 02:37	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.040	ug/L	0.040	0.0039	1	06/30/16 11:31	07/06/16 02:37	193-39-5	
2-Methylnaphthalene	<0.040	ug/L	0.040	0.0070	1	06/30/16 11:31	07/06/16 02:37	91-57-6	
Naphthalene	0.42	ug/L	0.040	0.0049	1	06/30/16 11:31	07/06/16 02:37	91-20-3	
Phenanthrene	<0.040	ug/L	0.040	0.0064	1	06/30/16 11:31	07/06/16 02:37	85-01-8	L2
Pyrene	<0.040	ug/L	0.040	0.0053	1	06/30/16 11:31	07/06/16 02:37	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	72	%	53-125		1	06/30/16 11:31	07/06/16 02:37	321-60-8	
p-Terphenyl-d14 (S)	96	%	57-125		1	06/30/16 11:31	07/06/16 02:37	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: SB-PW-06		Lab ID: 10353400029		Collected: 06/23/16 14:00		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	0.16	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 23:27	83-32-9	
Acenaphthylene	0.086	ug/L	0.041	0.0074	1	06/30/16 08:12	07/01/16 23:27	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 23:27	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 23:27	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	06/30/16 08:12	07/01/16 23:27	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 23:27	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	06/30/16 08:12	07/01/16 23:27	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 23:27	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 23:27	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 23:27	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	06/30/16 08:12	07/01/16 23:27	206-44-0	
Fluorene	0.063	ug/L	0.041	0.0045	1	06/30/16 08:12	07/01/16 23:27	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 23:27	193-39-5	
2-Methylnaphthalene	0.20	ug/L	0.041	0.0070	1	06/30/16 08:12	07/01/16 23:27	91-57-6	
Naphthalene	5.9	ug/L	0.041	0.0049	1	06/30/16 08:12	07/01/16 23:27	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	06/30/16 08:12	07/01/16 23:27	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 23:27	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	66	%	53-125		1	06/30/16 08:12	07/01/16 23:27	321-60-8	
p-Terphenyl-d14 (S)	90	%	57-125		1	06/30/16 08:12	07/01/16 23:27	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: SB-PW-05		Lab ID: 10353400030		Collected: 06/23/16 13:25		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 23:49	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0075	1	06/30/16 08:12	07/01/16 23:49	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	06/30/16 08:12	07/01/16 23:49	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 23:49	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0054	1	06/30/16 08:12	07/01/16 23:49	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 23:49	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0038	1	06/30/16 08:12	07/01/16 23:49	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	06/30/16 08:12	07/01/16 23:49	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 23:49	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0039	1	06/30/16 08:12	07/01/16 23:49	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0060	1	06/30/16 08:12	07/01/16 23:49	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0046	1	06/30/16 08:12	07/01/16 23:49	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	06/30/16 08:12	07/01/16 23:49	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0071	1	06/30/16 08:12	07/01/16 23:49	91-57-6	
Naphthalene	0.079	ug/L	0.041	0.0050	1	06/30/16 08:12	07/01/16 23:49	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0065	1	06/30/16 08:12	07/01/16 23:49	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0055	1	06/30/16 08:12	07/01/16 23:49	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	61	%	53-125		1	06/30/16 08:12	07/01/16 23:49	321-60-8	
p-Terphenyl-d14 (S)	88	%	57-125		1	06/30/16 08:12	07/01/16 23:49	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: S7-PW-11		Lab ID: 10353400031		Collected: 06/23/16 11:45		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.040	ug/L	0.040	0.0037	1	06/30/16 08:12	07/02/16 00:10	83-32-9	
Acenaphthylene	<0.040	ug/L	0.040	0.0074	1	06/30/16 08:12	07/02/16 00:10	208-96-8	
Anthracene	<0.040	ug/L	0.040	0.0043	1	06/30/16 08:12	07/02/16 00:10	120-12-7	
Benzo(a)anthracene	<0.040	ug/L	0.040	0.0039	1	06/30/16 08:12	07/02/16 00:10	56-55-3	
Benzo(a)pyrene	<0.040	ug/L	0.040	0.0052	1	06/30/16 08:12	07/02/16 00:10	50-32-8	
Benzo(b)fluoranthene	<0.040	ug/L	0.040	0.0045	1	06/30/16 08:12	07/02/16 00:10	205-99-2	
Benzo(g,h,i)perylene	<0.040	ug/L	0.040	0.0037	1	06/30/16 08:12	07/02/16 00:10	191-24-2	
Benzo(k)fluoranthene	<0.040	ug/L	0.040	0.0040	1	06/30/16 08:12	07/02/16 00:10	207-08-9	
Chrysene	<0.040	ug/L	0.040	0.0038	1	06/30/16 08:12	07/02/16 00:10	218-01-9	
Dibenz(a,h)anthracene	<0.040	ug/L	0.040	0.0038	1	06/30/16 08:12	07/02/16 00:10	53-70-3	
Fluoranthene	<0.040	ug/L	0.040	0.0059	1	06/30/16 08:12	07/02/16 00:10	206-44-0	
Fluorene	<0.040	ug/L	0.040	0.0045	1	06/30/16 08:12	07/02/16 00:10	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.040	ug/L	0.040	0.0039	1	06/30/16 08:12	07/02/16 00:10	193-39-5	
2-Methylnaphthalene	<0.040	ug/L	0.040	0.0070	1	06/30/16 08:12	07/02/16 00:10	91-57-6	
Naphthalene	<0.040	ug/L	0.040	0.0049	1	06/30/16 08:12	07/02/16 00:10	91-20-3	
Phenanthrene	<0.040	ug/L	0.040	0.0064	1	06/30/16 08:12	07/02/16 00:10	85-01-8	
Pyrene	<0.040	ug/L	0.040	0.0053	1	06/30/16 08:12	07/02/16 00:10	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	60	%.	53-125		1	06/30/16 08:12	07/02/16 00:10	321-60-8	
p-Terphenyl-d14 (S)	87	%.	57-125		1	06/30/16 08:12	07/02/16 00:10	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Sample: SB-PW-01		Lab ID: 10353400032		Collected: 06/23/16 13:20		Received: 06/24/16 18:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	0.079	ug/L	0.040	0.0037	1	06/30/16 08:12	07/02/16 00:32	83-32-9	
Acenaphthylene	<0.040	ug/L	0.040	0.0074	1	06/30/16 08:12	07/02/16 00:32	208-96-8	
Anthracene	<0.040	ug/L	0.040	0.0043	1	06/30/16 08:12	07/02/16 00:32	120-12-7	
Benzo(a)anthracene	<0.040	ug/L	0.040	0.0039	1	06/30/16 08:12	07/02/16 00:32	56-55-3	
Benzo(a)pyrene	<0.040	ug/L	0.040	0.0052	1	06/30/16 08:12	07/02/16 00:32	50-32-8	
Benzo(b)fluoranthene	<0.040	ug/L	0.040	0.0045	1	06/30/16 08:12	07/02/16 00:32	205-99-2	
Benzo(g,h,i)perylene	<0.040	ug/L	0.040	0.0037	1	06/30/16 08:12	07/02/16 00:32	191-24-2	
Benzo(k)fluoranthene	<0.040	ug/L	0.040	0.0040	1	06/30/16 08:12	07/02/16 00:32	207-08-9	
Chrysene	<0.040	ug/L	0.040	0.0038	1	06/30/16 08:12	07/02/16 00:32	218-01-9	
Dibenz(a,h)anthracene	<0.040	ug/L	0.040	0.0038	1	06/30/16 08:12	07/02/16 00:32	53-70-3	
Fluoranthene	<0.040	ug/L	0.040	0.0059	1	06/30/16 08:12	07/02/16 00:32	206-44-0	
Fluorene	<0.040	ug/L	0.040	0.0045	1	06/30/16 08:12	07/02/16 00:32	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.040	ug/L	0.040	0.0039	1	06/30/16 08:12	07/02/16 00:32	193-39-5	
2-Methylnaphthalene	<0.040	ug/L	0.040	0.0070	1	06/30/16 08:12	07/02/16 00:32	91-57-6	
Naphthalene	<0.040	ug/L	0.040	0.0049	1	06/30/16 08:12	07/02/16 00:32	91-20-3	
Phenanthrene	<0.040	ug/L	0.040	0.0064	1	06/30/16 08:12	07/02/16 00:32	85-01-8	
Pyrene	<0.040	ug/L	0.040	0.0053	1	06/30/16 08:12	07/02/16 00:32	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	67	%.	53-125		1	06/30/16 08:12	07/02/16 00:32	321-60-8	
p-Terphenyl-d14 (S)	93	%.	57-125		1	06/30/16 08:12	07/02/16 00:32	1718-51-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 23690B77 SLRIDT LTMM REV
Pace Project No.: 10353400

QC Batch:	422980	Analysis Method:	EPA 8270D by SIM
QC Batch Method:	EPA 3510C	Analysis Description:	8270D PAH by SIM MSSV
Associated Lab Samples:	10353400003, 10353400007, 10353400008, 10353400009, 10353400010, 10353400011, 10353400012, 10353400013, 10353400014, 10353400015, 10353400016, 10353400025, 10353400026, 10353400027, 10353400029, 10353400030, 10353400031, 10353400032		

METHOD BLANK:	2301937	Matrix:	Water
Associated Lab Samples:	10353400003, 10353400007, 10353400008, 10353400009, 10353400010, 10353400011, 10353400012, 10353400013, 10353400014, 10353400015, 10353400016, 10353400025, 10353400026, 10353400027, 10353400029, 10353400030, 10353400031, 10353400032		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
2-Methylnaphthalene	ug/L	<0.040	0.040	0.0069	07/01/16 17:01	
Acenaphthene	ug/L	<0.040	0.040	0.0037	07/01/16 17:01	
Acenaphthylene	ug/L	<0.040	0.040	0.0073	07/01/16 17:01	
Anthracene	ug/L	<0.040	0.040	0.0043	07/01/16 17:01	
Benzo(a)anthracene	ug/L	<0.040	0.040	0.0038	07/01/16 17:01	
Benzo(a)pyrene	ug/L	<0.040	0.040	0.0052	07/01/16 17:01	
Benzo(b)fluoranthene	ug/L	<0.040	0.040	0.0045	07/01/16 17:01	
Benzo(g,h,i)perylene	ug/L	<0.040	0.040	0.0036	07/01/16 17:01	
Benzo(k)fluoranthene	ug/L	<0.040	0.040	0.0040	07/01/16 17:01	
Chrysene	ug/L	<0.040	0.040	0.0038	07/01/16 17:01	
Dibenz(a,h)anthracene	ug/L	<0.040	0.040	0.0038	07/01/16 17:01	
Fluoranthene	ug/L	<0.040	0.040	0.0058	07/01/16 17:01	
Fluorene	ug/L	<0.040	0.040	0.0044	07/01/16 17:01	
Indeno(1,2,3-cd)pyrene	ug/L	<0.040	0.040	0.0039	07/01/16 17:01	
Naphthalene	ug/L	<0.040	0.040	0.0048	07/01/16 17:01	
Phenanthrene	ug/L	<0.040	0.040	0.0063	07/01/16 17:01	
Pyrene	ug/L	<0.040	0.040	0.0053	07/01/16 17:01	
2-Fluorobiphenyl (S)	%	74	53-125		07/01/16 17:01	
p-Terphenyl-d14 (S)	%	98	57-125		07/01/16 17:01	

LABORATORY CONTROL SAMPLE & LCSD:		2301938 2301939								
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2-Methylnaphthalene	ug/L	1	0.75	0.79	75	79	54-125	5	20	
Acenaphthene	ug/L	1	0.73	0.76	73	76	55-125	4	20	
Acenaphthylene	ug/L	1	0.74	0.77	74	77	55-125	4	20	
Anthracene	ug/L	1	0.94	0.99	94	99	66-125	6	20	
Benzo(a)anthracene	ug/L	1	0.74	0.78	74	78	66-125	5	20	
Benzo(a)pyrene	ug/L	1	0.91	0.94	91	94	74-125	4	20	
Benzo(b)fluoranthene	ug/L	1	0.71	0.76	71	76	65-125	6	20	
Benzo(g,h,i)perylene	ug/L	1	0.75	0.77	75	77	68-125	3	20	
Benzo(k)fluoranthene	ug/L	1	1.0	1.1	103	107	72-125	3	20	
Chrysene	ug/L	1	0.84	0.92	84	92	69-125	8	20	
Dibenz(a,h)anthracene	ug/L	1	0.69	0.70	69	70	61-125	1	20	
Fluoranthene	ug/L	1	0.85	0.92	85	92	75-125	8	20	
Fluorene	ug/L	1	0.82	0.85	82	85	63-125	3	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

LABORATORY CONTROL SAMPLE & LCSD: 2301938			2301939							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Indeno(1,2,3-cd)pyrene	ug/L	1	0.77	0.79	77	79	66-125	3	20	
Naphthalene	ug/L	1	0.72	0.74	72	74	51-125	3	20	
Phenanthrene	ug/L	1	0.70	0.77	70	77	64-125	10	20	
Pyrene	ug/L	1	0.82	0.87	82	87	72-125	7	20	
2-Fluorobiphenyl (S)	%.				74	76	53-125			
p-Terphenyl-d14 (S)	%.				91	93	57-125			

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QUALITY CONTROL DATA

Project: 23690B77 SLRIDT LTMM REV
Pace Project No.: 10353400

QC Batch:	423043	Analysis Method:	EPA 8270D by SIM
QC Batch Method:	EPA 3510C	Analysis Description:	8270D PAH by SIM MSSV
Associated Lab Samples:	10353400001, 10353400002, 10353400004, 10353400005, 10353400006, 10353400017, 10353400018, 10353400019, 10353400020, 10353400021, 10353400022, 10353400023, 10353400024, 10353400028		

METHOD BLANK: 2302171 Matrix: Water
Associated Lab Samples: 10353400001, 10353400002, 10353400004, 10353400005, 10353400006, 10353400017, 10353400018, 10353400019, 10353400020, 10353400021, 10353400022, 10353400023, 10353400024, 10353400028

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
2-Methylnaphthalene	ug/L	<0.040	0.040	0.0069	07/05/16 20:11	
Acenaphthene	ug/L	<0.040	0.040	0.0037	07/05/16 20:11	
Acenaphthylene	ug/L	<0.040	0.040	0.0073	07/05/16 20:11	
Anthracene	ug/L	<0.040	0.040	0.0043	07/05/16 20:11	
Benzo(a)anthracene	ug/L	<0.040	0.040	0.0038	07/05/16 20:11	
Benzo(a)pyrene	ug/L	<0.040	0.040	0.0052	07/05/16 20:11	
Benzo(b)fluoranthene	ug/L	<0.040	0.040	0.0045	07/05/16 20:11	
Benzo(g,h,i)perylene	ug/L	<0.040	0.040	0.0036	07/05/16 20:11	
Benzo(k)fluoranthene	ug/L	<0.040	0.040	0.0040	07/05/16 20:11	
Chrysene	ug/L	<0.040	0.040	0.0038	07/05/16 20:11	
Dibenz(a,h)anthracene	ug/L	<0.040	0.040	0.0038	07/05/16 20:11	
Fluoranthene	ug/L	<0.040	0.040	0.0058	07/05/16 20:11	
Fluorene	ug/L	<0.040	0.040	0.0044	07/05/16 20:11	
Indeno(1,2,3-cd)pyrene	ug/L	<0.040	0.040	0.0039	07/05/16 20:11	
Naphthalene	ug/L	<0.040	0.040	0.0048	07/05/16 20:11	
Phenanthrene	ug/L	<0.040	0.040	0.0063	07/05/16 20:11	
Pyrene	ug/L	<0.040	0.040	0.0053	07/05/16 20:11	
2-Fluorobiphenyl (S)	%	66	53-125		07/05/16 20:11	
p-Terphenyl-d14 (S)	%	93	57-125		07/05/16 20:11	

LABORATORY CONTROL SAMPLE & LCSD: 2302172		2302173									
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers	
2-Methylnaphthalene	ug/L	1	0.67	0.57	67	57	54-125	16	20		
Acenaphthene	ug/L	1	0.67	0.59	67	59	55-125	12	20		
Acenaphthylene	ug/L	1	0.66	0.58	66	58	55-125	11	20		
Anthracene	ug/L	1	0.95	0.89	95	89	66-125	7	20		
Benzo(a)anthracene	ug/L	1	0.70	0.73	70	73	66-125	4	20		
Benzo(a)pyrene	ug/L	1	0.90	0.88	90	88	74-125	2	20		
Benzo(b)fluoranthene	ug/L	1	0.68	0.67	68	67	65-125	2	20		
Benzo(g,h,i)perylene	ug/L	1	0.73	0.72	73	72	68-125	0	20		
Benzo(k)fluoranthene	ug/L	1	1.1	1.0	105	104	72-125	1	20		
Chrysene	ug/L	1	0.96	0.95	96	95	69-125	2	20		
Dibenz(a,h)anthracene	ug/L	1	0.66	0.63	66	63	61-125	5	20		
Fluoranthene	ug/L	1	0.87	0.86	87	86	75-125	1	20		
Fluorene	ug/L	1	0.77	0.67	77	67	63-125	13	20		
Indeno(1,2,3-cd)pyrene	ug/L	1	0.74	0.72	74	72	66-125	2	20		
Naphthalene	ug/L	1	0.64	0.56	64	56	51-125	14	20		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

LABORATORY CONTROL SAMPLE & LCSD: 2302172			2302173							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Phenanthrene	ug/L	1	0.67	0.63	67	63	64-125	6	20	L0
Pyrene	ug/L	1	0.82	0.81	82	81	72-125	2	20	
2-Fluorobiphenyl (S)	%.				65	56	53-125			
p-Terphenyl-d14 (S)	%.				96	95	57-125			

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 23690B77 SLRIDT LTMM REV
Pace Project No.: 10353400

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

BATCH QUALIFIERS

Batch: 423385

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: 423790

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

L0 Analyte recovery in the laboratory control sample (LCS) was outside QC limits.

L2 Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results may be biased low.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10353400

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10353400001	S7-PW-02	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400002	S7-PW-04 MSMSD	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400003	SB-PW-03	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400004	S7-PW-01 MSMSD	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400005	S7-PW-11.5	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400006	S7-PW-01	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400007	S6-PW-06	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400008	S6-PW-03	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400009	DUP-1	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400010	SB-PW-02.5	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400011	SB-PW-12	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400012	SB-PW-02	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400013	S6-PW-01	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400014	S6-PW-04	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400015	S6-PW-02	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400016	S6-PW-05	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400017	S7-PW-05	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400018	DUP-2	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400019	S7-PW-12.5	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400020	S7-PW-12	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400021	S7-PW-06	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400022	S7-PW-13	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400023	S7-PW-13.5	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400024	S7-PW-06.5	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400025	SB-PW-04	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400026	SB-PW-13	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400027	SB-PW-11	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400028	S7-PW-04	EPA 3510C	423043	EPA 8270D by SIM	423790
10353400029	SB-PW-06	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400030	SB-PW-05	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400031	S7-PW-11	EPA 3510C	422980	EPA 8270D by SIM	423385
10353400032	SB-PW-01	EPA 3510C	422980	EPA 8270D by SIM	423385

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Chain of Custody

4700 West 77th Street
Minneapolis, MN 55435-4803
(952) 832-2600

1033400

Project Number: 23690B77

Project Name: SLRDT LTMM

Sample Origination State MN (use two letter postal state abbreviation)

COC Number: **No 43609**

Location	Start Depth	Stop Depth	Depth Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix			Type			VOCs (HCl) #1	SVOCs (unpreserved) #2	Dissolved Metals (HNO ₃)	Total Metals (HNO ₃)	General (unpreserved) #3	Diesel Range Organics (HCl)	Nutrients (H ₂ SO ₄) #4	SLRDT 17 PAHs	VOCs (tared MeOH) #1	GRO, BTEX (tared MeOH) #1	DRO (tared unpreserved)	Metals (unpreserved)	SVOCs (unpreserved) #2	% Solids (plastic vial, unpres.)	Total Number Of Containers	
						Water	Soil		Grab	Comp.	QC																
1. S7-PW-02				6-24-16	0815														X							1	001
2. S7-PW-04 MSMSD				6/24/16	0840																					1	002
3. SB-PW-03				6-23-16	1345																					1	003
4. S7-PW-01 MSMSD				6/24/16	0850																					1	004
5. S7-PW-11.5				6/24/16	0920																					1	005
6. S7-PW-01				6/24/16	0850																					1	006
7. S6-PW-06				6/23/16	1400																					1	007
8. S6-PW-03				6/23/16	1805																					1	008
9. Trip Blank																										1	
10.																											

Common Parameter/Container - Preservation Key

- #1 - Volatile Organics = BTEX, GRO, TPH, 8260 Full List
 #2 - Semivolatile Organics = PAHs, PCP, Dioxins, 8270 Full List, Herbicide/Pesticide/PCBs
 #3 - General = pH, Chloride, Fluoride, Alkalinity, TSS, TDS, TS, Sulfate
 #4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Relinquished By:	On Ice? ☒ N	Date 6-24-16	Time 1400	Received by:	Date 6/24/16	Time 1820
Relinquished By:	On Ice? ☐ Y ☐ N	Date	Time	Received by:	Date	Time
Samples Shipped VIA: ☐ Air Freight ☐ Federal Express ☐ Sampler ☐ Other: _____				Air Bill Number:		

Distribution: White-Original Accompanies Shipment to Lab; Yellow - Field Copy; Pink - Lab Coordinator T=2.3



Chain of Custody

4700 West 77th Street
Minneapolis, MN 55435-4803
(952) 832-2600

Project Number:

~~20~~ 23690377

Project Name:

SLRDT LTMM

Sample Origination State MN (use two letter postal state abbreviation)

COC Number:

No 43611

Location	Start Depth	Stop Depth	Depth Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix			Type		VOCs (HCl) #1	SVOCs (unpreserved) #2	Dissolved Metals (HNO ₃)	Total Metals (HNO ₃)	General (unpreserved) #3	Diesel Range Organics (HCl)	Nutrients (H ₂ SO ₄) #4	VOCs (tared MeOH) #1	GRO, BTEX (tared MeOH) #1	DRO (tared unpreserved)	Metals (unpreserved)	SVOCs (unpreserved) #2	% Solids (plastic vial, unpres.)	Total Number Of Containers	COC <u>2</u> of <u>4</u>	Project Manager: <u>GMP</u>	Project QC Contact: <u>AAN</u>	Sampled by: <u>3TS & BLJ</u>	Laboratory: <u>PACE</u>
						Water	Soil		Grab	Comp.	QC																		
1. <u>Rep -1</u>				<u>6/23/2016</u>																				1					<u>009</u>
2. <u>SB-PW-02.5</u>				<u>6/23/2016</u>	<u>1610</u>																			1					<u>010</u>
3. <u>SB-PW-12</u>				<u>6/23/2016</u>	<u>1635</u>																			1					<u>011</u>
4. <u>SB-PW-02</u>				<u>6/23/2016</u>	<u>1425</u>																			1					<u>012</u>
5. <u>SL6-PW-01</u>				<u>6/23/16</u>	<u>1715</u>																			1					<u>013</u>
6. <u>SL6-PW-04</u>				<u>6/23/16</u>	<u>1725</u>																			1					<u>014</u>
7. <u>SL6-PW-02</u>				<u>6/23/16</u>	<u>1740</u>																			1					<u>015</u>
8. <u>SL6-PW-05</u>				<u>6/23/16</u>	<u>1730</u>																			1					<u>016</u>
9. <u>Trip Blank</u>																								1					
10.																													

Common Parameter/Container - Preservation Key

- #1 - Volatile Organics = BTEX, GRO, TPH, 8260 Full List
#2 - Semivolatile Organics = PAHs, PCP, Dioxins, 8270 Full List, Herbicide/Pesticide/PCBs
#3 - General = pH, Chloride, Fluoride, Alkalinity, TSS, TDS, TS, Sulfate
#4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Relinquished By: [Signature]

On Ice? X N

Date 6-24-16

Time 1400

Received by: [Signature]

Date 6/24/16

Time 18:20

Relinquished By: [Signature]

On Ice? Y N

Date

Time

Received by:

Date

Time

Samples Shipped VIA: ☐ Air Freight ☐ Federal Express ☐ Sampler

☐ Other: _____

Air Bill Number:

Distribution: White-Original Accompanies Shipment to Lab; Yellow - Field Copy; Pink - Lab Coordinator

T=20.



Chain of Custody

4700 West 77th Street
Minneapolis, MN 55435-4803
(952) 832-2600

Project Number: 23690377

Project Name: SLRDT LTMM

Sample Origination State MN (use two letter postal state abbreviation)

COC Number: Nº 43610

Location	Start Depth	Stop Depth	Depth Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix			Type					
						Water	Soil		Grab	Comp.	QC			
1. S7-PW-05				6/24/16	1100									
2. DUP-2				6/24/16										
3. S7-PW-12.5				6/24/16	0950									
4. S7-PW-12				6/24/16	0940									
5. S7-PW-06				6/24/16	1000									
6. S7-PW-13				6/24/16	1020									
7. S7-PW-13.5				6/24/16	1030									
8. Trip Blank														
9. S7-PW-06.5				2/24/2016	1010									
10.														

Number of Containers/Preservative																		COC <u>3</u> of <u>4</u>									
Water									Soil																		
																										Project Manager: <u>GMP</u> Project QC Contact: <u>AAN</u> Sampled by: <u>STS/BLT</u> Laboratory: <u>PACE</u>	

Common Parameter/Container - Preservation Key

#1 - Volatile Organics = BTEX, GRO, TPH, 8260 Full List

#2 - Semivolatile Organics = PAHs, PCP, Dioxins, 8270 Full List, Herbicide/Pesticide/PCBs

#3 - General = pH, Chloride, Fluoride, Alkalinity, TSS, TDS, TS, Sulfate

#4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Relinquished By: <u>[Signature]</u>	On Ice? <u>Y</u> N	Date <u>6/24/16</u>	Time <u>1400</u>	Received by: <u>[Signature]</u>	Date <u>6/24/16</u>	Time <u>18:20</u>
Relinquished By: <u>[Signature]</u>	On Ice? <u>Y</u> N	Date	Time	Received by:	Date	Time
Samples Shipped VIA: ☐ Air Freight ☐ Federal Express ☐ Sampler ☐ Other: _____				Air Bill Number:		

Distribution: White-Original Accompanies Shipment to Lab; Yellow - Field Copy; Pink - Lab Coordinator T=1.9



Chain of Custody

4700 West 77th Street
Minneapolis, MN 55435-4803
(952) 832-2600

Project Number: 23690B77
Project Name: SLRDT LTMM
Sample Origination State MN (use two letter postal state abbreviation)
COC Number: Nº 43608

Location	Start Depth	Stop Depth	Depth Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix		Type			VOCs (HCl) #1	SVOCs (unpreserved) #2	Dissolved Metals (HNO ₃)	Total Metals (HNO ₃)	General (unpreserved) #3	Diesel Range Organics (HCl)	Nutrients (H ₂ SO ₄) #4	SLRDT 17 PAHs	VOCs (tared MeOH) #1	GRO, BTEX (tared MeOH) #1	DRO (tared unpreserved)	Metals (unpreserved)	SVOCs (unpreserved) #2	% Solids (plastic vial, unpres.)	Total Number Of Containers	COC <u>4</u> of <u>4</u>	Project Manager: <u>GMP</u>	Project QC Contact: <u>AAW</u>	Sampled by: <u>STS & BLJ</u>	Laboratory: <u>PACE</u>
						Water	Soil	Grab	Comp.	QC																				
1. SB-PW-04				06/23/2016	1245													X							1					025
2. SB-PW-13				6/23/2016	1550																				1					026
3. SB-PW-11				6/23/2016	1530																				1					027
4. ST-PW-04				6/24/2016	0840																				1					028
5. SB-PW-06				6/23/2016	1400																				1					029
6. SB-PW-05				6/23/2016	1325																				1					030
7. ST-PW-11				6/23/2016	1145																				1					031
8. SB-PW-01				6/23/2016	1320																				1					032
9. Trip Blank																									1					
10.																														

Common Parameter/Container - Preservation Key

- #1 - Volatile Organics = BTEX, GRO, TPH, 8260 Full List
#2 - Semivolatile Organics = PAHs, PCP, Dioxins, 8270 Full List, Herbicide/Pesticide/PCBs
#3 - General = pH, Chloride, Fluoride, Alkalinity, TSS, TDS, TS, Sulfate
#4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Relinquished By: <u>[Signature]</u>	On Ice? <u>8 N</u>	Date <u>6-24-16</u>	Time <u>1400</u>	Received by: <u>[Signature]</u>	Date <u>6/24/16</u>	Time <u>18:20</u>
Relinquished By:	On Ice? <u>Y N</u>	Date	Time	Received by:	Date	Time
Samples Shipped VIA: ☐ Air Freight ☐ Federal Express ☐ Sampler ☐ Other: _____				Air Bill Number:		

Distribution: White-Original Accompanies Shipment to Lab; Yellow - Field Copy; Pink - Lab Coordinator T=1.8

	Document Name:	Document Revised: 04Apr2016
	Sample Condition Upon Receipt Form	Page 1 of 1
	Document No.: F-MN-L-213-rev.16	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name:

Project #:

WO#: 10353400



10353400

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☒ Pace ☐ Speedee ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No Seals Intact? ☐ Yes ☒ No Optional: Proj. Due Date: Proj. Name: _____

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☒ Yes ☐ No

Thermometer ☐ 151401163 ☒ B88A912167504 ☐ B88A0143310098
 Used: ☐ 151401164 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 2.2 Cooler Temp Corrected (°C): 2.3 Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A
 Temp should be above freezing to 6°C Correction Factor: +0.1 Date and Initials of Person Examining Contents: GS 6/24/16

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? ☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out? ☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished? ☒ Yes ☐ No ☐ N/A	3.
Sampler Name and/or Signature on COC? ☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time? ☒ Yes ☐ No ☐ N/A	5.
Short Hold Time Analysis (<72 hr)? ☐ Yes ☒ No ☐ N/A	6.
Rush Turn Around Time Requested? ☐ Yes ☒ No ☐ N/A	7.
Sufficient Volume? ☒ Yes ☐ No ☐ N/A	8. <u>AAI</u> 07/08/16
Correct Containers Used? ☒ Yes ☐ No ☐ N/A	9.
-Pace Containers Used? ☒ Yes ☐ No ☐ N/A	
Containers Intact? ☒ Yes ☐ No ☐ N/A	10.
Filtered Volume Received for Dissolved Tests? ☐ Yes ☐ No ☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? ☒ Yes ☐ No ☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
All containers needing acid/base preservation have been checked? ☐ Yes ☐ No ☒ N/A	13. ☐ HNO ₃ ☐ H ₂ SO ₄ ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH >12 Cyanide) ☐ Yes ☐ No ☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC ☐ Yes ☐ No ☒ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)? ☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present? ☐ Yes ☐ No ☒ N/A	15.
Trip Blank Custody Seals Present? ☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased): _____	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: Andrea Nord Date/Time: 07/01/16
 Comments/Resolution: Not enough volume for MS/MSD AAI

Project Manager Review:

Veneta Segovia

Date: 6/29/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Barr Engineering Company
Routine Level Quality Control Report

1663

Project # 2369 0817.00 2016 010
 Laboratory Pace
 Lab Report # 16353400
 Report Date 7/11/16 Rev 8/4/16
 Holding Times Met ☒ Yes ☐ No
 If no, comments _____

Project Name SLR1DT
 COC(s)/Event _____
 Matrix WT
 Review Date 7/13/16
 Reviewed By AD
 Posted to QC Track? ☐
 Revised Report? ☒ Rev # 1-8/4/16
 Data Report Request # _____

Temps on Receipt (°C) 2.3 1.9 2.0

Method Blanks

SVOC x2 - OK

LCS/LCSD

SVOC 90R + RPD - OK
 SVOC batch 0EXT 34095
 phenanthrene OK, 63 (64-125)
 RPD - OK NAN@slight

Field Blanks

MS/MSD

Trip Blanks (VOCs Only)

Field Duplicates (if applicable)

RPD 140

DUP -1 = 57-PW-11
 SVOC ND ND = NC

~~57-PW-04 MS/MSD = 57-PW-04~~
~~57-PW-04 MS/MSD = 57-PW-04~~

57-PW-04 MS/MSD = 57-PW-04
 naphthalene 0.27 0.42 = (43.3)

Surrogates (if applicable)

SVOC - OK

Lab Duplicates (if applicable)

*qual

Additional Notes (include historical comparison, if appropriate)

Samples SB PW02 SB PW02 + DUP-2 rejected
DO not report in EQUIS. See attached. Likely mislabeled.
Will resample in Aug 2016.

Data is accepted once 9 qualifiers are adjusted.

Rw 8/4/16 - Removed 1-methylnaphthalene - non target
analyte from results.

Qualifier Summary		Qualifier Changes		
Sample Name	Parameter	Added	Removed	Retained
S7 PW 02	phenanthrene		L2	
S7 PW 04 msmsD			L2	
S7 PW 01 msmsD			L2	
S7 PW 11.5			L2	
S7 PW 01			L2	
S7 PW 05			L2	
DUP 2			L2	
S7 PW 12.5			L2	
S7 PW 12			L2	
S7 PW 06			L2	
S7 PW 13			L2	
S7 PW 13.5			L2	
S7 PW 06.5			L2	
S7 PW 04			L2	
↓	naphthalene	*		
S7 PW 04 msmsD	↓	*		

Additional Notes to DM

See attached email re: rejected sample data. + Gold Dubs.
info

For DM Use Only

EQUIS Y / N

Facility ID:

Data Tech Init:

Date entered into Equis:

2063

Barr Engineering Company
Routine Level Quality Control Report

Project # _____
 Laboratory Pace
 Lab Report # 10353400
 Report Date 7/11/16
 Holding Times Met Yes No
 If no, comments _____

Project Name SLR1DT
 COC(s)/Event _____
 Matrix _____
 Review Date _____
 Reviewed By _____
 Posted to QC Track? ☐
 Revised Report? ☐ Rev # _____
 Data Report Request # _____

Temps on Receipt (°C) _____

Method Blanks

Field Blanks

Trip Blanks (VOCs Only)

Field Duplicates (if applicable)

RPD 40
 57 PWD1 msmsD = 57 PWD1
 acenaphthene 1.5 1.5 = 0
 acenaphthylene 0.17 0.17 = 0
 anthracene 0.21 0.20 = 4.9
 fluoranthene 0.29 0.24 = 18.9
 fluorene 1.2 1.2 = 0
 1-methyl n 1.6 1.6 = 0
 2-methyl n 0.37 0.38 = 2.7
 naphthalene 39.1 41.6 = 6.2
 phenanthrene 0.64 0.57 = 11.6
 pyrene 0.16 0.14 = 13.3

LCS/LCSD

MS/MSD

Surrogates (if applicable)

Lab Duplicates (if applicable)

Project # _____

Laboratory _____ *Pace*

Lab Report # _____ *10353400*

Report Date _____ *7/11/16*

Holding Times Met ☒ Yes ☐ No

If no, comments _____

Project Name SLR1DT

COC(s)/Event _____

Matrix _____

Review Date _____

Reviewed By _____

Posted to QC Track? ☐

Revised Report? ☐ Rev # _____

Data Report Request # _____

Temps on Receipt (°C)

[illegible][illegible]

DUP - 2 = 56 - PW - 02

SUOC	ND	
Acenaphthene	ND	4.8 = NC
Acenaphthylene	ND	7.4 = NC
Anthracene	ND	0.24 = NC
fluorene	ND	3.0 = NC
1-methylnaphthene	ND	15.5 = NC
2-methylnaphthene	ND	20.8 = NC
naphthalene	ND	662 = NC
phenanthrene	ND	2.0 = NC

This image shows a completely blank white rectangular area enclosed within a thin black border. There are no markings, text, or illustrations present on the page.This image shows a blank page from a document or book. The page is mostly white with some minor scanning artifacts. There are dark borders along the top, bottom, and left edges, and a lighter, yellowish border along the right edge, suggesting it might be part of a bound volume. No text or other markings are present on the page.

1. *Journal of the American Medical Association*, 1997; 277: 1039-1043.

SAMPLE SUMMARY

Project: 23690B77 SLRIDT LTMM
Pace Project No.: 10353400

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10353400001	S7-PW-02	Water	06/24/16 08:15	06/24/16 18:20
10353400002	S7-PW-04 MSMSD	Water	06/24/16 08:40	06/24/16 18:20
10353400003	SB-PW-03	Water	06/23/16 13:45	06/24/16 18:20
10353400004	S7-PW-01 MSMSD	Water	06/24/16 08:50	06/24/16 18:20
10353400005	S7-PW-11.5	Water	06/24/16 09:20	06/24/16 18:20
10353400006	S7-PW-01	Water	06/24/16 08:50	06/24/16 18:20
10353400007	S6-PW-06	Water	06/23/16 14:00	06/24/16 18:20
10353400008	S6-PW-03	Water	06/23/16 18:05	06/24/16 18:20
10353400009	DUP-1	Water	06/23/16 00:00	06/24/16 18:20
10353400010	SB-PW-02.5	Water	06/23/16 16:10	06/24/16 18:20
10353400011	SB-PW-12	Water	06/23/16 16:35	06/24/16 18:20
10353400012	SB-PW-02	Water	06/23/16 14:25	06/24/16 18:20
10353400013	S6-PW-01	Water	06/23/16 17:15	06/24/16 18:20
10353400014	S6-PW-04	Water	06/23/16 17:25	06/24/16 18:20
10353400015	S6-PW-02 - Dup-2	Water	06/23/16 17:40	06/24/16 18:20
10353400016	S6-PW-05	Water	06/23/16 17:30	06/24/16 18:20
10353400017	S7-PW-05	Water	06/24/16 11:00	06/24/16 18:20
10353400018	DUP-2	Water	06/24/16 00:00	06/24/16 18:20
10353400019	S7-PW-12.5	Water	06/24/16 09:50	06/24/16 18:20
10353400020	S7-PW-12	Water	06/24/16 09:40	06/24/16 18:20
10353400021	S7-PW-06	Water	06/24/16 10:00	06/24/16 18:20
10353400022	S7-PW-13	Water	06/24/16 10:20	06/24/16 18:20
10353400023	S7-PW-13.5	Water	06/24/16 10:30	06/24/16 18:20
10353400024	S7-PW-06.5	Water	06/24/16 10:10	06/24/16 18:20
10353400025	SB-PW-04	Water	06/23/16 12:45	06/24/16 18:20
10353400026	SB-PW-13	Water	06/23/16 15:50	06/24/16 18:20
10353400027	SB-PW-11	Water	06/23/16 15:30	06/24/16 18:20
10353400028	S7-PW-04	Water	06/24/16 08:40	06/24/16 18:20
10353400029	SB-PW-06	Water	06/23/16 14:00	06/24/16 18:20
10353400030	SB-PW-05	Water	06/23/16 13:25	06/24/16 18:20
10353400031	S7-PW-11 - Dup1	Water	06/23/16 11:45	06/24/16 18:20
10353400032	SB-PW-01	Water	06/23/16 13:20	06/24/16 18:20

REPORT OF LABORATORY ANALYSIS

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Andrea A. Nord

From: Andrea A. Nord
Sent: Friday, August 05, 2016 11:48 AM
To: Kelly Caddy
Subject: FW: DUP-2 ??? -- RE: Duplicate Location Information Needed (XIK/SLRIDT - 23/69-0B77.00 2016 010)
Attachments: 06-23-16_COCS 43609, 43611, 43610, 43608.pdf; 10353400_frc.pdf

Kelly,
The SLRIDT team has made some decisions regarding the June data set and will be resampling select locations in August 2016. Please follow these instructions for EQUIS data entry.

1. Set the following Pace sample #s to "DO NOT REPORT" in EQUIS, so the data is in there but never shows up on data tables in the future. They are samples:

- 10353400012 SB-PW-02
- 10353400015 S6-PW-02
- 10353400018 DUP-2

Include an notation in EQUIS that these samples are "considered suspect and potentially mislabeled."

2. The following samples should be entered in as sample type "field duplicates" and have RPDs calculated on the results.
Pace samples:

- 10353400002 S7-PW-04 MS/MSD and its pair 10353400028 S7-PW-04
- 10353400004 S7-PW-01 MS/MSD and its pair 10353400006 S7-PW-01

Andrea A. Nord

Senior Data Quality Specialist
Barr Engineering Co.
4300 MarketPointe Drive, Suite 200
Minneapolis, MN 55435

office: 952.832.2893
toll-free: 800.632.2277

anord@barr.com
www.barr.com

resourceful. naturally.



From: Andrea A. Nord
Sent: Monday, July 18, 2016 4:13 PM
To: Irvin G. Mossberger; Guy M. Partch; Jon Aspie; Sam T. Schoenmann
Subject: FW: DUP-2 ??? -- RE: Duplicate Location Information Needed (XIK/SLRIDT - 23/69-0B77.00 2016 010)

More food for thought for the SLRIDT PAH samples:

August 04, 2016

Andrea Nord
Barr Engineering
4300 MarketPointe Drive
Suite 200
Minneapolis, MN 55435

RE: Project: 23690B77 SLRIDT LTMM REV
Pace Project No.: 10354120

Dear Andrea Nord:

Enclosed are the analytical results for sample(s) received by the laboratory on June 30, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

This report was revised on August 4, 2016 to remove 1-methylnaphthalene from the report, per client request.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Amanda Albrecht
amanda.albrecht@pacelabs.com
Project Manager

Enclosures

cc: BarrDM, Barr Engineering



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10354120

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

525 N 8th Street, Salina, KS 67401

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #: 14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Virginia/VELAP Certification #: Pace

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10354120

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10354120001	S7-PW-03	Water	06/29/16 08:40	06/30/16 19:00
10354120002	SB-PW-11	Water	06/30/16 11:20	06/30/16 19:00
10354120003	SB-PW-13	Water	06/30/16 11:25	06/30/16 19:00
10354120004	SB-PW-12	Water	06/30/16 11:35	06/30/16 19:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10354120

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10354120001	S7-PW-03	EPA 8270D by SIM	AS1	19
10354120002	SB-PW-11	EPA 8270D by SIM	AS1	19
10354120003	SB-PW-13	EPA 8270D by SIM	AS1	19
10354120004	SB-PW-12	EPA 8270D by SIM	AS1	19

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10354120

Sample: S7-PW-03		Lab ID: 10354120001		Collected: 06/29/16 08:40		Received: 06/30/16 19:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	0.048	ug/L	0.040	0.0037	1	07/05/16 13:13	07/07/16 20:58	83-32-9	
Acenaphthylene	<0.040	ug/L	0.040	0.0073	1	07/05/16 13:13	07/07/16 20:58	208-96-8	
Anthracene	<0.040	ug/L	0.040	0.0043	1	07/05/16 13:13	07/07/16 20:58	120-12-7	
Benzo(a)anthracene	<0.040	ug/L	0.040	0.0038	1	07/05/16 13:13	07/07/16 20:58	56-55-3	
Benzo(a)pyrene	<0.040	ug/L	0.040	0.0052	1	07/05/16 13:13	07/07/16 20:58	50-32-8	
Benzo(b)fluoranthene	<0.040	ug/L	0.040	0.0045	1	07/05/16 13:13	07/07/16 20:58	205-99-2	
Benzo(g,h,i)perylene	<0.040	ug/L	0.040	0.0036	1	07/05/16 13:13	07/07/16 20:58	191-24-2	
Benzo(k)fluoranthene	<0.040	ug/L	0.040	0.0040	1	07/05/16 13:13	07/07/16 20:58	207-08-9	
Chrysene	<0.040	ug/L	0.040	0.0038	1	07/05/16 13:13	07/07/16 20:58	218-01-9	
Dibenz(a,h)anthracene	<0.040	ug/L	0.040	0.0038	1	07/05/16 13:13	07/07/16 20:58	53-70-3	
Fluoranthene	<0.040	ug/L	0.040	0.0058	1	07/05/16 13:13	07/07/16 20:58	206-44-0	
Fluorene	<0.040	ug/L	0.040	0.0044	1	07/05/16 13:13	07/07/16 20:58	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.040	ug/L	0.040	0.0039	1	07/05/16 13:13	07/07/16 20:58	193-39-5	
2-Methylnaphthalene	0.079	ug/L	0.040	0.0069	1	07/05/16 13:13	07/07/16 20:58	91-57-6	
Naphthalene	0.15	ug/L	0.040	0.0048	1	07/05/16 13:13	07/07/16 20:58	91-20-3	
Phenanthrene	<0.040	ug/L	0.040	0.0063	1	07/05/16 13:13	07/07/16 20:58	85-01-8	
Pyrene	<0.040	ug/L	0.040	0.0053	1	07/05/16 13:13	07/07/16 20:58	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	76	%.	53-125		1	07/05/16 13:13	07/07/16 20:58	321-60-8	
p-Terphenyl-d14 (S)	82	%.	57-125		1	07/05/16 13:13	07/07/16 20:58	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10354120

Sample: SB-PW-11		Lab ID: 10354120002		Collected: 06/30/16 11:20		Received: 06/30/16 19:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	9.9	ug/L	0.041	0.0038	1	07/05/16 13:13	07/08/16 17:06	83-32-9	
Acenaphthylene	15.9	ug/L	2.0	0.37	50	07/05/16 13:13	07/08/16 18:54	208-96-8	
Anthracene	0.20	ug/L	0.041	0.0044	1	07/05/16 13:13	07/08/16 17:06	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	07/05/16 13:13	07/08/16 17:06	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	07/05/16 13:13	07/08/16 17:06	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	07/05/16 13:13	07/08/16 17:06	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	07/05/16 13:13	07/08/16 17:06	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	07/05/16 13:13	07/08/16 17:06	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	07/05/16 13:13	07/08/16 17:06	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	07/05/16 13:13	07/08/16 17:06	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	07/05/16 13:13	07/08/16 17:06	206-44-0	
Fluorene	6.4	ug/L	0.041	0.0045	1	07/05/16 13:13	07/08/16 17:06	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	07/05/16 13:13	07/08/16 17:06	193-39-5	
2-Methylnaphthalene	35.5	ug/L	2.0	0.35	50	07/05/16 13:13	07/08/16 18:54	91-57-6	
Naphthalene	815	ug/L	10.2	1.2	250	07/05/16 13:13	07/08/16 20:21	91-20-3	
Phenanthrene	2.2	ug/L	0.041	0.0064	1	07/05/16 13:13	07/08/16 17:06	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	07/05/16 13:13	07/08/16 17:06	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	79	%.	53-125		1	07/05/16 13:13	07/08/16 17:06	321-60-8	
p-Terphenyl-d14 (S)	83	%.	57-125		1	07/05/16 13:13	07/08/16 17:06	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10354120

Sample: SB-PW-13		Lab ID: 10354120003		Collected: 06/30/16 11:25		Received: 06/30/16 19:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	1.6	ug/L	0.040	0.0037	1	07/05/16 13:13	07/08/16 17:28	83-32-9	
Acenaphthylene	0.92	ug/L	0.040	0.0074	1	07/05/16 13:13	07/08/16 17:28	208-96-8	
Anthracene	0.041	ug/L	0.040	0.0043	1	07/05/16 13:13	07/08/16 17:28	120-12-7	
Benzo(a)anthracene	<0.040	ug/L	0.040	0.0039	1	07/05/16 13:13	07/08/16 17:28	56-55-3	
Benzo(a)pyrene	<0.040	ug/L	0.040	0.0052	1	07/05/16 13:13	07/08/16 17:28	50-32-8	
Benzo(b)fluoranthene	<0.040	ug/L	0.040	0.0045	1	07/05/16 13:13	07/08/16 17:28	205-99-2	
Benzo(g,h,i)perylene	<0.040	ug/L	0.040	0.0037	1	07/05/16 13:13	07/08/16 17:28	191-24-2	
Benzo(k)fluoranthene	<0.040	ug/L	0.040	0.0040	1	07/05/16 13:13	07/08/16 17:28	207-08-9	
Chrysene	<0.040	ug/L	0.040	0.0038	1	07/05/16 13:13	07/08/16 17:28	218-01-9	
Dibenz(a,h)anthracene	<0.040	ug/L	0.040	0.0038	1	07/05/16 13:13	07/08/16 17:28	53-70-3	
Fluoranthene	<0.040	ug/L	0.040	0.0059	1	07/05/16 13:13	07/08/16 17:28	206-44-0	
Fluorene	0.82	ug/L	0.040	0.0045	1	07/05/16 13:13	07/08/16 17:28	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.040	ug/L	0.040	0.0039	1	07/05/16 13:13	07/08/16 17:28	193-39-5	
2-Methylnaphthalene	3.9	ug/L	0.040	0.0070	1	07/05/16 13:13	07/08/16 17:28	91-57-6	
Naphthalene	130	ug/L	0.81	0.097	20	07/05/16 13:13	07/08/16 20:43	91-20-3	
Phenanthrene	0.49	ug/L	0.040	0.0064	1	07/05/16 13:13	07/08/16 17:28	85-01-8	
Pyrene	<0.040	ug/L	0.040	0.0053	1	07/05/16 13:13	07/08/16 17:28	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	66	%.	53-125		1	07/05/16 13:13	07/08/16 17:28	321-60-8	
p-Terphenyl-d14 (S)	86	%.	57-125		1	07/05/16 13:13	07/08/16 17:28	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10354120

Sample: SB-PW-12		Lab ID: 10354120004		Collected: 06/30/16 11:35		Received: 06/30/16 19:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	21.3	ug/L	0.20	0.018	5	07/05/16 13:13	07/08/16 19:38	83-32-9	
Acenaphthylene	0.38	ug/L	0.040	0.0073	1	07/05/16 13:13	07/08/16 17:49	208-96-8	
Anthracene	0.23	ug/L	0.040	0.0043	1	07/05/16 13:13	07/08/16 17:49	120-12-7	
Benzo(a)anthracene	<0.040	ug/L	0.040	0.0038	1	07/05/16 13:13	07/08/16 17:49	56-55-3	
Benzo(a)pyrene	<0.040	ug/L	0.040	0.0052	1	07/05/16 13:13	07/08/16 17:49	50-32-8	
Benzo(b)fluoranthene	<0.040	ug/L	0.040	0.0045	1	07/05/16 13:13	07/08/16 17:49	205-99-2	
Benzo(g,h,i)perylene	<0.040	ug/L	0.040	0.0037	1	07/05/16 13:13	07/08/16 17:49	191-24-2	
Benzo(k)fluoranthene	<0.040	ug/L	0.040	0.0040	1	07/05/16 13:13	07/08/16 17:49	207-08-9	
Chrysene	<0.040	ug/L	0.040	0.0038	1	07/05/16 13:13	07/08/16 17:49	218-01-9	
Dibenz(a,h)anthracene	<0.040	ug/L	0.040	0.0038	1	07/05/16 13:13	07/08/16 17:49	53-70-3	
Fluoranthene	0.27	ug/L	0.040	0.0059	1	07/05/16 13:13	07/08/16 17:49	206-44-0	
Fluorene	7.5	ug/L	0.040	0.0045	1	07/05/16 13:13	07/08/16 17:49	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.040	ug/L	0.040	0.0039	1	07/05/16 13:13	07/08/16 17:49	193-39-5	
2-Methylnaphthalene	<0.040	ug/L	0.040	0.0069	1	07/05/16 13:13	07/08/16 17:49	91-57-6	
Naphthalene	5.6	ug/L	0.040	0.0048	1	07/05/16 13:13	07/08/16 17:49	91-20-3	
Phenanthrene	0.28	ug/L	0.040	0.0063	1	07/05/16 13:13	07/08/16 17:49	85-01-8	
Pyrene	0.11	ug/L	0.040	0.0053	1	07/05/16 13:13	07/08/16 17:49	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	70	%	53-125		1	07/05/16 13:13	07/08/16 17:49	321-60-8	
p-Terphenyl-d14 (S)	84	%	57-125		1	07/05/16 13:13	07/08/16 17:49	1718-51-0	

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QUALITY CONTROL DATA

Project: 23690B77 SLRIDT LTMM REV
Pace Project No.: 10354120

QC Batch: 423567 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3510C Analysis Description: 8270D PAH by SIM MSSV
Associated Lab Samples: 10354120001, 10354120002, 10354120003, 10354120004

METHOD BLANK: 2306673 Matrix: Water
Associated Lab Samples: 10354120001, 10354120002, 10354120003, 10354120004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
2-Methylnaphthalene	ug/L	<0.040	0.040	0.0069	07/07/16 16:15	
Acenaphthene	ug/L	<0.040	0.040	0.0037	07/07/16 16:15	
Acenaphthylene	ug/L	<0.040	0.040	0.0073	07/07/16 16:15	
Anthracene	ug/L	<0.040	0.040	0.0043	07/07/16 16:15	
Benzo(a)anthracene	ug/L	<0.040	0.040	0.0038	07/07/16 16:15	
Benzo(a)pyrene	ug/L	<0.040	0.040	0.0052	07/07/16 16:15	
Benzo(b)fluoranthene	ug/L	<0.040	0.040	0.0045	07/07/16 16:15	
Benzo(g,h,i)perylene	ug/L	<0.040	0.040	0.0036	07/07/16 16:15	
Benzo(k)fluoranthene	ug/L	<0.040	0.040	0.0040	07/07/16 16:15	
Chrysene	ug/L	<0.040	0.040	0.0038	07/07/16 16:15	
Dibenz(a,h)anthracene	ug/L	<0.040	0.040	0.0038	07/07/16 16:15	
Fluoranthene	ug/L	<0.040	0.040	0.0058	07/07/16 16:15	
Fluorene	ug/L	<0.040	0.040	0.0044	07/07/16 16:15	
Indeno(1,2,3-cd)pyrene	ug/L	<0.040	0.040	0.0039	07/07/16 16:15	
Naphthalene	ug/L	<0.040	0.040	0.0048	07/07/16 16:15	
Phenanthrene	ug/L	<0.040	0.040	0.0063	07/07/16 16:15	
Pyrene	ug/L	<0.040	0.040	0.0053	07/07/16 16:15	
2-Fluorobiphenyl (S)	%	79	53-125		07/07/16 16:15	
p-Terphenyl-d14 (S)	%	90	57-125		07/07/16 16:15	

LABORATORY CONTROL SAMPLE: 2306674

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Methylnaphthalene	ug/L	1	0.77	77	54-125	
Acenaphthene	ug/L	1	0.69	69	55-125	
Acenaphthylene	ug/L	1	0.68	68	55-125	
Anthracene	ug/L	1	0.88	88	66-125	
Benzo(a)anthracene	ug/L	1	0.81	81	66-125	
Benzo(a)pyrene	ug/L	1	0.92	92	74-125	
Benzo(b)fluoranthene	ug/L	1	0.87	87	65-125	
Benzo(g,h,i)perylene	ug/L	1	0.81	81	68-125	
Benzo(k)fluoranthene	ug/L	1	0.95	95	72-125	
Chrysene	ug/L	1	0.86	86	69-125	
Dibenz(a,h)anthracene	ug/L	1	0.67	67	61-125	
Fluoranthene	ug/L	1	0.93	93	75-125	
Fluorene	ug/L	1	0.73	73	63-125	
Indeno(1,2,3-cd)pyrene	ug/L	1	0.86	86	66-125	
Naphthalene	ug/L	1	0.70	70	51-125	
Phenanthrene	ug/L	1	0.76	76	64-125	
Pyrene	ug/L	1	0.80	80	72-125	

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QUALITY CONTROL DATA

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10354120

LABORATORY CONTROL SAMPLE: 2306674

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Fluorobiphenyl (S)	%.			78	53-125	
p-Terphenyl-d14 (S)	%.			89	57-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2306675 2306676

Parameter	Units	92303601001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
2-Methylnaphthalene	ug/L	ND	1.1	1	0.86	0.68	79	68	53-125	23	30	
Acenaphthene	ug/L	ND	1.1	1	0.77	0.66	71	66	57-125	16	30	
Acenaphthylene	ug/L	ND	1.1	1	0.76	0.65	70	65	55-125	15	30	
Anthracene	ug/L	ND	1.1	1	0.91	0.89	83	89	66-125	2	30	
Benzo(a)anthracene	ug/L	ND	1.1	1	0.83	0.77	76	77	61-125	7	30	
Benzo(a)pyrene	ug/L	ND	1.1	1	0.93	0.87	85	87	63-125	6	30	
Benzo(b)fluoranthene	ug/L	ND	1.1	1	0.89	0.79	82	79	61-125	12	30	
Benzo(g,h,i)perylene	ug/L	ND	1.1	1	0.96	0.91	89	91	52-125	5	30	
Benzo(k)fluoranthene	ug/L	ND	1.1	1	0.95	0.87	87	87	58-125	9	30	
Chrysene	ug/L	ND	1.1	1	0.88	0.83	81	83	66-125	6	30	
Dibenz(a,h)anthracene	ug/L	ND	1.1	1	0.93	0.90	86	90	49-125	4	30	
Fluoranthene	ug/L	ND	1.1	1	1.0	0.95	95	95	67-125	8	30	
Fluorene	ug/L	ND	1.1	1	0.81	0.74	74	74	60-125	8	30	
Indeno(1,2,3-cd)pyrene	ug/L	ND	1.1	1	0.93	0.88	86	88	52-125	6	30	
Naphthalene	ug/L	ND	1.1	1	0.77	0.61	71	61	54-125	22	30	
Phenanthrene	ug/L	ND	1.1	1	0.83	0.77	73	74	59-125	8	30	
Pyrene	ug/L	ND	1.1	1	0.83	0.76	76	76	64-125	8	30	
2-Fluorobiphenyl (S)	%.						80	69	53-125			
p-Terphenyl-d14 (S)	%.						86	85	57-125			

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QUALIFIERS

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10354120

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 23690B77 SLRIDT LTMM REV

Pace Project No.: 10354120

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10354120001	S7-PW-03	EPA 3510C	423567	EPA 8270D by SIM	424110
10354120002	SB-PW-11	EPA 3510C	423567	EPA 8270D by SIM	424110
10354120003	SB-PW-13	EPA 3510C	423567	EPA 8270D by SIM	424110
10354120004	SB-PW-12	EPA 3510C	423567	EPA 8270D by SIM	424110

REPORT OF LABORATORY ANALYSIS

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Chain of Custody

BARR

4700 West 77th Street
Minneapolis, MN 55435-4803
(952) 832-2600

10354126

Project Number: 23690B77

Project Name: SLRDT LTM

Sample Origination State MN (use two letter postal state abbreviation)

COC Number: No 45436

Location	Start Depth	Stop Depth	Depth Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix		Type		VOCs (HCl) #1	SVOCs (unpreserved) #2	Dissolved Metals (HNO ₃)	Total Metals (HNO ₃)	General (unpreserved) #3	Diesel Range Organics (HCl)	Nutrients (H ₂ SO ₄) #4	VOCs (tared MeOH) #1	GRO, BTEX (tared MeOH) #1	DRO (tared unpreserved)	Metals (unpreserved)	SVOCs (unpreserved) #2	% Solids (plastic vial, unpres.)	Total Number Of Containers	COC <u>1</u> of <u>1</u>	Project Manager: <u>GMP</u>	Project QC Contact: <u>AAN</u>	Sampled by: <u>BLJ-JWJ</u>	Laboratory: <u>PAC</u>
						Water	Soil	Grab	Comp.																			
1. <u>S7-PW-03</u>				<u>6-29-16</u>	<u>0840</u>											<u>X</u>							<u>1</u>					<u>001</u>
2. <u>SB-PW-11</u>				<u>6-30-16</u>	<u>1120</u>											<u>X</u>							<u>1</u>					<u>002</u>
3. <u>SB-PW-13</u>				<u>6-30-16</u>	<u>1125</u>											<u>X</u>							<u>1</u>					<u>003</u>
4. <u>SB-PW-12</u>				<u>6-30-16</u>	<u>1135</u>											<u>X</u>							<u>1</u>					<u>004</u>
5.																												
6.																												
7.																												
8.																												
9.																												
10.																												

Common Parameter/Container - Preservation Key

- #1 - Volatile Organics = BTEX, GRO, TPH, 8260 Full List
- #2 - Semivolatile Organics = PAHs, PCP, Dioxins, 8270 Full List, Herbicide/Pesticide/PCBs
- #3 - General = pH, Chloride, Fluoride, Alkalinity, TSS, TDS, TS, Sulfate
- #4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Relinquished By: <u>Buer</u>	On Ice? <u>Y</u> N	Date <u>6-30-16</u>	Time <u>1330</u>	Received by: <u>Cliff Rane</u>	Date <u>6-30-16</u>	Time <u>19:00</u>
Relinquished By:	On Ice? Y N	Date	Time	Received by:	Date	Time
Samples Shipped VIA: ☐ Air Freight ☐ Federal Express ☐ Sampler ☐ Other: _____				Air Bill Number:		

Distribution: White-Original Accompanies Shipment to Lab; Yellow - Field Copy; Pink - Lab Coordinator

T= 1.5 C

	Document Name: Sample Condition Upon Receipt Form	Document Revised: 04Apr2016 Page 1 of 1
	Document No.: F-MN-L-213-rev.16	Issuing Authority: Pace Minnesota Quality Office

**Sample Condition
Upon Receipt**

Client Name:

Project #:

WO#: 10354120

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ SpeedDee ☐ Other: _____



10354120

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☒ Yes ☐ No

Thermometer ☐ 151401163 ☒ 888A912167504 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun
Used: ☐ 151401164 ☒ 888A0143310098

Cooler Temp Read (°C): 1.5 Cooler Temp Corrected (°C): 1.5 Biological Tissue Frozen? ☐ Yes ☒ No ☐ N/A
Temp should be above freezing to 6°C Correction Factor: True Date and Initials of Person Examining Contents: Chit 6-30-16

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes ☐ No ☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes ☐ No ☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes ☒ No ☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes ☒ No ☐ N/A	7.
Sufficient Volume?	☒ Yes ☐ No ☐ N/A	8.
Correct Containers Used?	☒ Yes ☐ No ☐ N/A	9.
-Pace Containers Used?	☒ Yes ☐ No ☐ N/A	
Containers Intact?	☒ Yes ☐ No ☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes ☐ No ☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☒ Yes ☐ No ☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
All containers needing acid/base preservation have been checked?	☐ Yes ☐ No ☒ N/A	13. ☐ HNO ₃ ☐ H ₂ SO ₄ ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes ☐ No ☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes ☐ No ☒ N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present?	☐ Yes ☐ No ☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased): _____		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: _____

Date/Time: _____

Comments/Resolution: _____

Project Manager Review:

Vanessa Segovia

Date: 1Jul2016

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Barr Engineering Company
Routine Level Quality Control Report

Project # 23690677.
Laboratory Yace
Lab Report # 16354120
Report Date 7/13/16 Rev 8/4/16
Holding Times Met ☒ Yes ☐ No
If no, comments _____

Project Name SLRIDT
COC(s)/Event _____
Matrix WT
Review Date 7/26/16
Reviewed By ST
Posted to QC Track? ☐
Revised Report? ☒ Rev # 1 - 8/4/16
Data Report Request # _____

Temps on Receipt (°C) 1.5

Method Blanks

PAH - OK

Field Blanks

Trip Blanks (VOCs Only)

Field Duplicates (if applicable)

LCS/LCSD

PAH - OK

MS/MSD

PAH 962 + RPD - OK NPS

Surrogates (if applicable)

8270 PAH - OK

Lab Duplicates (if applicable)

Additional Notes (include historical comparison, if appropriate)

Rev 8/4/16 - Removed 1-methylnaphthalene - non-target analyte from data.

Data is accepted as reported.

Data is accepted as reported.

Additional Notes to DM	
-------------------------------	--

For DM Use Only	
Equis Y / N	Data Tech Init:
Facility ID:	Date entered into Equis:

Data Tech Init:

Date entered into Equis:

August 04, 2016

Andrea Nord
Barr Engineering
4300 MarketPointe Drive
Suite 200
Minneapolis, MN 55435

RE: Project: 23690B77 SLRIDT LTM REV
Pace Project No.: 10355074

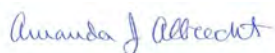
Dear Andrea Nord:

Enclosed are the analytical results for sample(s) received by the laboratory on July 11, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

This report was revised on August 4, 2016 to remove 1-methylnaphthalene from the report, per client request.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Amanda Albrecht
amanda.albrecht@pacelabs.com
Project Manager

Enclosures

cc: BarrDM, Barr Engineering



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 23690B77 SLRIDT LTM REV

Pace Project No.: 10355074

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

525 N 8th Street, Salina, KS 67401

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #: 14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Virginia/VELAP Certification #: Pace

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 23690B77 SLRIDT LTM REV

Pace Project No.: 10355074

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10355074001	SW-PW-01	Water	07/11/16 11:30	07/11/16 17:51
10355074002	NW-PW-01	Water	07/11/16 12:00	07/11/16 17:51

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 23690B77 SLRIDT LTM REV

Pace Project No.: 10355074

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10355074001	SW-PW-01	EPA 8270D by SIM	AS1	19
10355074002	NW-PW-01	EPA 8270D by SIM	AS1	19

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTM REV

Pace Project No.: 10355074

Sample: SW-PW-01		Lab ID: 10355074001		Collected: 07/11/16 11:30		Received: 07/11/16 17:51		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0038	1	07/13/16 13:47	07/20/16 00:28	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0075	1	07/13/16 13:47	07/20/16 00:28	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	07/13/16 13:47	07/20/16 00:28	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0040	1	07/13/16 13:47	07/20/16 00:28	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0054	1	07/13/16 13:47	07/20/16 00:28	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0047	1	07/13/16 13:47	07/20/16 00:28	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0038	1	07/13/16 13:47	07/20/16 00:28	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	07/13/16 13:47	07/20/16 00:28	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	07/13/16 13:47	07/20/16 00:28	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0039	1	07/13/16 13:47	07/20/16 00:28	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0060	1	07/13/16 13:47	07/20/16 00:28	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0046	1	07/13/16 13:47	07/20/16 00:28	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0041	1	07/13/16 13:47	07/20/16 00:28	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0072	1	07/13/16 13:47	07/20/16 00:28	91-57-6	
Naphthalene	<0.041	ug/L	0.041	0.0050	1	07/13/16 13:47	07/20/16 00:28	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0065	1	07/13/16 13:47	07/20/16 00:28	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0055	1	07/13/16 13:47	07/20/16 00:28	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	69	%.	53-125		1	07/13/16 13:47	07/20/16 00:28	321-60-8	
p-Terphenyl-d14 (S)	84	%.	57-125		1	07/13/16 13:47	07/20/16 00:28	1718-51-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 23690B77 SLRIDT LTM REV

Pace Project No.: 10355074

Sample: NW-PW-01		Lab ID: 10355074002		Collected: 07/11/16 12:00		Received: 07/11/16 17:51		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.042	ug/L	0.042	0.0038	1	07/13/16 13:47	07/20/16 00:50	83-32-9	
Acenaphthylene	<0.042	ug/L	0.042	0.0076	1	07/13/16 13:47	07/20/16 00:50	208-96-8	
Anthracene	<0.042	ug/L	0.042	0.0045	1	07/13/16 13:47	07/20/16 00:50	120-12-7	
Benzo(a)anthracene	<0.042	ug/L	0.042	0.0040	1	07/13/16 13:47	07/20/16 00:50	56-55-3	
Benzo(a)pyrene	<0.042	ug/L	0.042	0.0054	1	07/13/16 13:47	07/20/16 00:50	50-32-8	
Benzo(b)fluoranthene	<0.042	ug/L	0.042	0.0047	1	07/13/16 13:47	07/20/16 00:50	205-99-2	
Benzo(g,h,i)perylene	<0.042	ug/L	0.042	0.0038	1	07/13/16 13:47	07/20/16 00:50	191-24-2	
Benzo(k)fluoranthene	<0.042	ug/L	0.042	0.0042	1	07/13/16 13:47	07/20/16 00:50	207-08-9	
Chrysene	<0.042	ug/L	0.042	0.0039	1	07/13/16 13:47	07/20/16 00:50	218-01-9	
Dibenz(a,h)anthracene	<0.042	ug/L	0.042	0.0039	1	07/13/16 13:47	07/20/16 00:50	53-70-3	
Fluoranthene	<0.042	ug/L	0.042	0.0061	1	07/13/16 13:47	07/20/16 00:50	206-44-0	
Fluorene	<0.042	ug/L	0.042	0.0046	1	07/13/16 13:47	07/20/16 00:50	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.042	ug/L	0.042	0.0041	1	07/13/16 13:47	07/20/16 00:50	193-39-5	
2-Methylnaphthalene	<0.042	ug/L	0.042	0.0072	1	07/13/16 13:47	07/20/16 00:50	91-57-6	
Naphthalene	<0.042	ug/L	0.042	0.0050	1	07/13/16 13:47	07/20/16 00:50	91-20-3	
Phenanthrene	<0.042	ug/L	0.042	0.0066	1	07/13/16 13:47	07/20/16 00:50	85-01-8	
Pyrene	<0.042	ug/L	0.042	0.0055	1	07/13/16 13:47	07/20/16 00:50	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	67	%.	53-125		1	07/13/16 13:47	07/20/16 00:50	321-60-8	
p-Terphenyl-d14 (S)	82	%.	57-125		1	07/13/16 13:47	07/20/16 00:50	1718-51-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 23690B77 SLRIDT LTM REV

Pace Project No.: 10355074

QC Batch: 425098

Analysis Method: EPA 8270D by SIM

QC Batch Method: EPA 3510C

Analysis Description: 8270D PAH by SIM MSSV

Associated Lab Samples: 10355074001, 10355074002

METHOD BLANK: 2315446

Matrix: Water

Associated Lab Samples: 10355074001, 10355074002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
2-Methylnaphthalene	ug/L	<0.040	0.040	0.0069	07/19/16 20:50	
Acenaphthene	ug/L	<0.040	0.040	0.0037	07/19/16 20:50	
Acenaphthylene	ug/L	<0.040	0.040	0.0073	07/19/16 20:50	
Anthracene	ug/L	<0.040	0.040	0.0043	07/19/16 20:50	
Benzo(a)anthracene	ug/L	<0.040	0.040	0.0038	07/19/16 20:50	
Benzo(a)pyrene	ug/L	<0.040	0.040	0.0052	07/19/16 20:50	
Benzo(b)fluoranthene	ug/L	<0.040	0.040	0.0045	07/19/16 20:50	
Benzo(g,h,i)perylene	ug/L	<0.040	0.040	0.0036	07/19/16 20:50	
Benzo(k)fluoranthene	ug/L	<0.040	0.040	0.0040	07/19/16 20:50	
Chrysene	ug/L	<0.040	0.040	0.0038	07/19/16 20:50	
Dibenz(a,h)anthracene	ug/L	<0.040	0.040	0.0038	07/19/16 20:50	
Fluoranthene	ug/L	<0.040	0.040	0.0058	07/19/16 20:50	
Fluorene	ug/L	<0.040	0.040	0.0044	07/19/16 20:50	
Indeno(1,2,3-cd)pyrene	ug/L	<0.040	0.040	0.0039	07/19/16 20:50	
Naphthalene	ug/L	<0.040	0.040	0.0048	07/19/16 20:50	
Phenanthrene	ug/L	<0.040	0.040	0.0063	07/19/16 20:50	
Pyrene	ug/L	<0.040	0.040	0.0053	07/19/16 20:50	
2-Fluorobiphenyl (S)	%	60	53-125		07/19/16 20:50	
p-Terphenyl-d14 (S)	%	85	57-125		07/19/16 20:50	

LABORATORY CONTROL SAMPLE & LCSD: 2315447

2315448

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2-Methylnaphthalene	ug/L	1	0.64	0.75	64	75	54-125	16	20	
Acenaphthene	ug/L	1	0.65	0.71	65	71	55-125	9	20	
Acenaphthylene	ug/L	1	0.65	0.71	65	71	55-125	9	20	
Anthracene	ug/L	1	0.82	0.87	82	87	66-125	6	20	
Benzo(a)anthracene	ug/L	1	0.73	0.76	73	76	66-125	3	20	
Benzo(a)pyrene	ug/L	1	0.91	0.96	91	96	74-125	6	20	
Benzo(b)fluoranthene	ug/L	1	0.81	0.86	81	86	65-125	7	20	
Benzo(g,h,i)perylene	ug/L	1	0.81	0.90	81	90	68-125	10	20	
Benzo(k)fluoranthene	ug/L	1	1.0	1.1	103	106	72-125	3	20	
Chrysene	ug/L	1	0.91	0.94	91	94	69-125	3	20	
Dibenz(a,h)anthracene	ug/L	1	0.66	0.78	66	78	61-125	17	20	
Fluoranthene	ug/L	1	0.90	0.96	90	96	75-125	6	20	
Fluorene	ug/L	1	0.77	0.81	77	81	63-125	6	20	
Indeno(1,2,3-cd)pyrene	ug/L	1	0.85	0.93	85	93	66-125	9	20	
Naphthalene	ug/L	1	0.63	0.71	63	71	51-125	13	20	
Phenanthrene	ug/L	1	0.71	0.78	71	78	64-125	10	20	
Pyrene	ug/L	1	0.77	0.79	77	79	72-125	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 23690B77 SLRIDT LTM REV

Pace Project No.: 10355074

LABORATORY CONTROL SAMPLE & LCSD:		2315447		2315448							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers	
2-Fluorobiphenyl (S)	%.				62	78	53-125				
p-Terphenyl-d14 (S)	%.				80	83	57-125				

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 23690B77 SLRIDT LTM REV

Pace Project No.: 10355074

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

WORKORDER QUALIFIERS

WO: 10355074

[1] Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice, indicating the cool down process had begun.

BATCH QUALIFIERS

Batch: 426138

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 23690B77 SLRIDT LTM REV

Pace Project No.: 10355074

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10355074001	SW-PW-01	EPA 3510C	425098	EPA 8270D by SIM	426138
10355074002	NW-PW-01	EPA 3510C	425098	EPA 8270D by SIM	426138

REPORT OF LABORATORY ANALYSIS

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60355074

Project Number: 23690377

Project Name: SLRDT LTM

Sample Origination State AN (use two letter postal state abbreviation)

COC Number: No 45437

Location	Start Depth	Stop Depth	Depth Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix		Type	
						Water	Soil	Grab	Comp.
1. <u>SW-PW-01</u>				<u>7-11-16</u>	<u>11:30</u>				
2. <u>NW-PW-01</u>				<u>7-11-16</u>	<u>12:00</u>				
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									

Number of Containers/Preservative												COC <u>1</u> of <u>1</u>		
Water						Soil								
VOCs (HCl) #1	VOCs (unpreserved) #2	Dissolved Metals (HNO ₃)	Total Metals (HNO ₃)	General (unpreserved) #3	Diesel Range Organics (HCl)	Nutrients (H ₂ SO ₄) #4	VOCs (tared MeOH) #1	GRO, BTEX (tared MeOH) #1	DRO (tared unpreserved)	Metals (unpreserved)	SVOCS (unpreserved) #2	% Solids (plastic vial, unpres.)	Total Number Of Containers	Project Manager: <u>GMP</u>
														Project QC Contact: <u>AAN</u>
														Sampled by: <u>BLT-SIS</u>
														Laboratory: <u>PALE</u>

Common Parameter/Container - Preservation Key

#1 - Volatile Organics = BTEX, GRO, TPH, 8260 Full List

#2 - Semivolatile Organics = PAHs, PCB, Dioxins, 8270 Full List, Herbicide/Pesticide/PCBs

#3 - General = pH, Chloride, Fluoride, Alkalinity, TSS, TDS, TS, Sulfate

#4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Relinquished By: <u>[Signature]</u>	On Ice? ☒ N	Date <u>7/11/16</u>	Time <u>12:00</u>	Received by: <u>Kristina Polson</u>	Date <u>7/11/16</u>	Time <u>1300</u>
Relinquished By: <u>Kristina Polson</u>	On Ice? ☒ N	Date <u>7/11/16</u>	Time <u>14:00</u>	Received by: <u>[Signature]</u>	Date <u>7/11/16</u>	Time <u>17:51</u>
Samples Shipped VIA: ☐ Air Freight ☐ Federal Express ☐ Sampler ☐ Other: _____				Air Bill Number: _____		

Distribution: White-Original Accompanies Shipment to Lab; Yellow - Field Copy; Pink - Lab Coordinator

	Document Name: Sample Condition Upon Receipt Form	Document Revised: 22Jan2016 Page 1 of 1
	Document No.: F-DUL-C-001-Rev.01	Issuing Authority: Pace Virginia, Minnesota Quality Office

**Sample Condition
Upon Receipt**

Client Name:

Project #:

WO# : 10355074

Barr Engineering

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client
☐ Commercial ☐ Pace ☐ Other: _____



Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ B00051 Type of Ice: ☒ Wet ☐ Blue ☐ None ☒ Samples on ice, cooling process has begun

Cooler Temp Read °C: 11.5 Cooler Temp Corrected °C: 10.7 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA
Temp should be above freezing to 6°C Correction Factor: -0.8 °C Date and Initials of Person Examining Contents: 7/11/16 kp

			Comments:
Chain of Custody Present?	☒ Yes ☐ No ☐ N/A	1.	
Chain of Custody Filled Out?	☒ Yes ☐ No ☐ N/A	2.	
Chain of Custody Relinquished?	☒ Yes ☐ No ☐ N/A	3.	
Sampler Name and Signature on COC?	☒ Yes ☐ No ☐ N/A	4.	
Samples Arrived within Hold Time?	☒ Yes ☐ No ☐ N/A	5.	
Short Hold Time Analysis (<72 hr)?	☐ Yes ☒ No ☐ N/A	6.	
Rush Turn Around Time Requested?	☐ Yes ☒ No ☐ N/A	7.	
Sufficient Volume?	☒ Yes ☐ No ☐ N/A	8.	
Correct Containers Used?	☒ Yes ☐ No ☐ N/A	9.	
-Pace Containers Used?	☒ Yes ☐ No ☐ N/A		
Containers Intact?	☒ Yes ☐ No ☐ N/A	10.	
Filtered Volume Received for Dissolved Tests?	☐ Yes ☐ No ☒ N/A	11.	Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☒ Yes ☐ No ☐ N/A	12.	
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>			
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☐ Yes ☐ No ☒ N/A		See pH log for results and additional preservation documentation
Headspace in Methyi Mercury Container	☐ Yes ☐ No ☒ N/A	13.	
Headspace in VOA Vials (>6mm)?	☐ Yes ☐ No ☒ N/A	14.	
Trip Blank Present?	☐ Yes ☐ No ☒ N/A	15.	
Trip Blank Custody Seals Present?	☐ Yes ☐ No ☒ N/A		
Pace Trip Blank Lot # (if purchased):			

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: _____

Date/Time: _____

Comments/Resolution: Temp OK

FECAL WAIVER ON FILE Y N

TEMPERATURE WAIVER ON FILE Y N

Project Manager Review:

Amanda J. Albrecht

Date:

07/12/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

	Document Name: Sample Condition Upon Receipt Form	Document Revised: 04Apr2016 Page 1 of 1
	Document No.: F-MN-L-213-rev.16	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Barr

Project #: _____

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client
☐ Commercial ☐ Pace ☐ Speedee ☐ Other: _____

Tracking Number: _____

WO# : 10355074



10355074

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Optional:** Proj. Due Date: _____ Proj. Name: _____

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☒ Yes ☐ No

Thermometer ☐ 151401163 ☒ B88A912167504 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun
Used: ☐ 151401164 ☒ B88A0143310098

Cooler Temp Read (°C): 1.6 **Cooler Temp Corrected (°C):** 1.6 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A
Temp should be above freezing to 6°C **Correction Factor:** none **Date and Initials of Person Examining Contents:** 7-11-16 SA

USDA Regulated Soil (☒ N/A, water sample)
Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No **Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?** ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? ☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out? ☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished? ☒ Yes ☐ No ☐ N/A	3.
Sampler Name and/or Signature on COC? ☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time? ☒ Yes ☐ No ☐ N/A	5.
Short Hold Time Analysis (<72 hr)? ☐ Yes ☒ No ☐ N/A	6.
Rush Turn Around Time Requested? ☐ Yes ☒ No ☐ N/A	7.
Sufficient Volume? ☒ Yes ☐ No ☐ N/A	8.
Correct Containers Used? ☒ Yes ☐ No ☐ N/A	9.
-Pace Containers Used? ☒ Yes ☐ No ☐ N/A	
Containers Intact? ☒ Yes ☐ No ☐ N/A	10.
Filtered Volume Received for Dissolved Tests? ☐ Yes ☐ No ☒ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? ☒ Yes ☐ No ☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
All containers needing acid/base preservation have been checked? ☐ Yes ☐ No ☒ N/A	13. ☐ HNO ₃ ☐ H ₂ SO ₄ ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) ☐ Yes ☐ No ☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC ☐ Yes ☐ No ☒ N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)? ☐ Yes ☐ No ☒ N/A	14.
Trip Blank Present? ☐ Yes ☐ No ☒ N/A	15.
Trip Blank Custody Seals Present? ☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased): _____	

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____ **Date/Time:** _____ **Field Data Required?** ☐ Yes ☐ No

Comments/Resolution: _____

Project Manager Review: Amanda J. Albrecht

Date: 07/12/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Barr Engineering Company
Routine Level Quality Control Report

Project # 23690877.
 Laboratory Pace
 Lab Report # 10355074
 Report Date 7/25/16 Rev 8/4/16
 Holding Times Met Yes No
 If no, comments _____

Project Name SLR1DT
 COC(s)/Event _____
 Matrix WT
 Review Date 7/26/16
 Reviewed By 7/26/16 AJ
 Posted to QC Track? ☐

Revised Report? ☒ Rev # 1-8/4/16
 Data Report Request # _____

Temps on Receipt (°C) 10.7 on ice, 1.6
Same day

Method Blanks

PAH - OK

Field Blanks

Trip Blanks (VOCs Only)

Field Duplicates (if applicable)

LCS/LCSD

PAH 90R + RPD - OK

MS/MSD

Surrogates (if applicable)

Lab Duplicates (if applicable)

Additional Notes (include historical comparison, if appropriate)

Rev 8/4/16 Removed 1-methylnaphthalene - non target analyte from data.

Data is accepted as reported.

[illegible]

Additional Notes to DM

For DM Use Only

EQUIS	Y / N
-------	-------

Facility ID:

Data Tech Init:

Date entered into Equis:

September 07, 2016

Andrea Nord
Barr Engineering
4300 MarketPointe Drive
Suite 200
Minneapolis, MN 55435

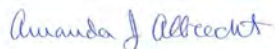
RE: Project: 23690B77.00 SLRIOT LTMM
Pace Project No.: 10361091

Dear Andrea Nord:

Enclosed are the analytical results for sample(s) received by the laboratory on August 31, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Amanda Albrecht
amanda.albrecht@pacelabs.com
Project Manager

Enclosures

cc: BarrDM, Barr Engineering



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 23690B77.00 SLRIOT LTMM

Pace Project No.: 10361091

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

525 N 8th Street, Salina, KS 67401

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #: 14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Virginia/VELAP Certification #: Pace

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 23690B77.00 SLRIOT LTMM

Pace Project No.: 10361091

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10361091001	S6-PW-02	Water	08/30/16 12:45	08/31/16 17:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 23690B77.00 SLRIOT LTMM

Pace Project No.: 10361091

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10361091001	S6-PW-02	EPA 8270D by SIM	AS1	19

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 23690B77.00 SLRIOT LTMM

Pace Project No.: 10361091

Sample: S6-PW-02		Lab ID: 10361091001		Collected: 08/30/16 12:45		Received: 08/31/16 17:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	<0.041	ug/L	0.041	0.0038	1	09/02/16 15:09	09/06/16 18:16	83-32-9	
Acenaphthylene	<0.041	ug/L	0.041	0.0074	1	09/02/16 15:09	09/06/16 18:16	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	09/02/16 15:09	09/06/16 18:16	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	09/02/16 15:09	09/06/16 18:16	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	09/02/16 15:09	09/06/16 18:16	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	09/02/16 15:09	09/06/16 18:16	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	09/02/16 15:09	09/06/16 18:16	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	09/02/16 15:09	09/06/16 18:16	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	09/02/16 15:09	09/06/16 18:16	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	09/02/16 15:09	09/06/16 18:16	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	09/02/16 15:09	09/06/16 18:16	206-44-0	
Fluorene	<0.041	ug/L	0.041	0.0045	1	09/02/16 15:09	09/06/16 18:16	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	09/02/16 15:09	09/06/16 18:16	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0070	1	09/02/16 15:09	09/06/16 18:16	91-57-6	
Naphthalene	<0.041	ug/L	0.041	0.0049	1	09/02/16 15:09	09/06/16 18:16	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0064	1	09/02/16 15:09	09/06/16 18:16	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	09/02/16 15:09	09/06/16 18:16	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	82	%.	53-125		1	09/02/16 15:09	09/06/16 18:16	321-60-8	
p-Terphenyl-d14 (S)	90	%.	57-125		1	09/02/16 15:09	09/06/16 18:16	1718-51-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 23690B77.00 SLRIOT LTMM
Pace Project No.: 10361091

QC Batch: 433947 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3510C Analysis Description: 8270D PAH by SIM MSSV
Associated Lab Samples: 10361091001

METHOD BLANK: 2359731 Matrix: Water
Associated Lab Samples: 10361091001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
2-Methylnaphthalene	ug/L	<0.040	0.040	0.0069	09/06/16 15:03	
Acenaphthene	ug/L	<0.040	0.040	0.0037	09/06/16 15:03	
Acenaphthylene	ug/L	<0.040	0.040	0.0073	09/06/16 15:03	
Anthracene	ug/L	<0.040	0.040	0.0043	09/06/16 15:03	
Benzo(a)anthracene	ug/L	<0.040	0.040	0.0038	09/06/16 15:03	
Benzo(a)pyrene	ug/L	<0.040	0.040	0.0052	09/06/16 15:03	
Benzo(b)fluoranthene	ug/L	<0.040	0.040	0.0045	09/06/16 15:03	
Benzo(g,h,i)perylene	ug/L	<0.040	0.040	0.0036	09/06/16 15:03	
Benzo(k)fluoranthene	ug/L	<0.040	0.040	0.0040	09/06/16 15:03	
Chrysene	ug/L	<0.040	0.040	0.0038	09/06/16 15:03	
Dibenz(a,h)anthracene	ug/L	<0.040	0.040	0.0038	09/06/16 15:03	
Fluoranthene	ug/L	<0.040	0.040	0.0058	09/06/16 15:03	
Fluorene	ug/L	<0.040	0.040	0.0044	09/06/16 15:03	
Indeno(1,2,3-cd)pyrene	ug/L	<0.040	0.040	0.0039	09/06/16 15:03	
Naphthalene	ug/L	<0.040	0.040	0.0048	09/06/16 15:03	
Phenanthrene	ug/L	<0.040	0.040	0.0063	09/06/16 15:03	
Pyrene	ug/L	<0.040	0.040	0.0053	09/06/16 15:03	
2-Fluorobiphenyl (S)	%	93	53-125		09/06/16 15:03	
p-Terphenyl-d14 (S)	%	97	57-125		09/06/16 15:03	

LABORATORY CONTROL SAMPLE & LCSD: 2359732

		2359733								
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2-Methylnaphthalene	ug/L	1	0.91	0.90	91	90	54-125	1	20	
Acenaphthene	ug/L	1	0.84	0.83	84	83	55-125	1	20	
Acenaphthylene	ug/L	1	0.87	0.86	87	86	55-125	2	20	
Anthracene	ug/L	1	0.91	0.92	91	92	66-125	1	20	
Benzo(a)anthracene	ug/L	1	0.78	0.76	78	76	66-125	3	20	
Benzo(a)pyrene	ug/L	1	0.94	0.93	94	93	74-125	2	20	
Benzo(b)fluoranthene	ug/L	1	0.95	0.91	95	91	65-125	4	20	
Benzo(g,h,i)perylene	ug/L	1	0.87	0.89	87	89	68-125	2	20	
Benzo(k)fluoranthene	ug/L	1	0.87	0.85	87	85	72-125	3	20	
Chrysene	ug/L	1	0.90	0.90	90	90	69-125	1	20	
Dibenz(a,h)anthracene	ug/L	1	0.79	0.82	79	82	61-125	3	20	
Fluoranthene	ug/L	1	0.81	0.80	81	80	75-125	1	20	
Fluorene	ug/L	1	0.89	0.86	89	86	63-125	4	20	
Indeno(1,2,3-cd)pyrene	ug/L	1	0.87	0.86	87	86	66-125	1	20	
Naphthalene	ug/L	1	0.83	0.83	83	83	51-125	0	20	
Phenanthrene	ug/L	1	0.77	0.75	77	75	64-125	2	20	
Pyrene	ug/L	1	0.90	0.88	90	88	72-125	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 23690B77.00 SLRIOT LTMM

Pace Project No.: 10361091

LABORATORY CONTROL SAMPLE & LCSD:		2359732		2359733						
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2-Fluorobiphenyl (S)	%.				85	85	53-125			
p-Terphenyl-d14 (S)	%.				90	89	57-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: 23690B77.00 SLRIOT LTMM

Pace Project No.: 10361091

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

BATCH QUALIFIERS

Batch: 434280

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 23690B77.00 SLRIOT LTMM

Pace Project No.: 10361091

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10361091001	S6-PW-02	EPA 3510C	433947	EPA 8270D by SIM	434280

REPORT OF LABORATORY ANALYSIS

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Barr Engineering Co. Chain of Custody



☐ Ann Arbor
 ☒ Duluth
 ☐ Jefferson City
☐ Bismarck
 ☐ Hibbing
 ☐ Minneapolis

Sample Origination State:

☐ KS
 ☐ MO
 ☐ WI
☐ MI
 ☐ ND
 Other: _____
☒ MN
 ☐ SD

10361699

COC Number: **Nº 48069**

COC 1 of 1

Matrix Code:
 GW = Groundwater
 SW = Surface Water
 WW = Waste Water
 DW = Drinking Water
 S = Soil/Solid
 SD = Sediment
 O = Other
 porewater

Preservative Code:
 A = None
 B = HCl
 C = HNO₃
 D = H₂SO₄
 E = NaOH
 F = MeOH
 G = NaHSO₄
 H = Na₂S₂O₃
 I = Ascorbic Acid
 J = NH₄Cl
 K = Zn Acetate
 O = Other

REPORT TO		INVOICE TO	
Company: BARR Engineering	Company: BARR Engineering		
Address: 4300 Market Pointe Dr.	Address: 325 Lake Ave. S., Suite 600	Duluth, MN 55802	
Name: Andrea Ward	Name: Jon Aspie		
email: AAN@Barr.com	email: JMA2@barr.com		
Copy to: datamgt@barr.com	P.O. 2369¢B77.00 2016 010		
Project Name: SLRIOT LITM	Barr Project No: 2369¢B77.00		

Location	Sample Depth			Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Perform	Total	Nu	S	A	Y																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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BARR USE ONLY		Relinquished by: <i>[Signature]</i>	On Ice? ☒ N	Date: 8/31/16	Time: 1445	Received by: Christina Polson 2.2	Date: 8/31/16	Time: 1445
Sampled by: IGM		Relinquished by: Christina Polson	On Ice? ☒ N	Date: 8/31/16	Time: 1450	Received by: <i>[Signature]</i>	Date: 8/31/16	Time: 1500
Barr Proj. Manager: JMA2		Samples Shipped VIA: ☒ Courier	☐ Federal Express		☐ Sampler		Air Bill Number:	
Barr DQ Manager: AAN		Requested Due Date: ☒ Standard Turn Around Time						
Lab Name: PACE		☐ Rush (mm/dd/yyyy)						
Lab Location: Minneapolis		Custody Seal Intact? ☐ Y ☐ N ☐ None						

Distribution - White-Original: Accompanies Shipment to Laboratory; Yellow Copy: Include in Field Documents; Pink Copy: Send to Data Management Administrators.

[Signature] 8/31/16 1730
[Signature] 8/31/16 1730

	Document Name: Sample Condition Upon Receipt Form	Document Revised: 02Aug2016 Page 1 of 2
	Document No.: F-MN-L-213-rev.17	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt	Client Name: <u>Barr Engineering</u>	Project #: WO# : 10361091
		

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☒ Pace ☐ SpeedDee ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No Seals Intact? ☐ Yes ☒ No Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 151401163 ☐ 151401164 ☐ B88A912167504 ☐ B88A0143310098 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 3.6 Cooler Temp Corrected (°C): 3.5 Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C Correction Factor: -0.1 Date and Initials of Person Examining Contents: 8/31/16 SG

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

			COMMENTS:
Chain of Custody Present?	☒ Yes ☐ No ☐ N/A	1.	
Chain of Custody Filled Out?	☒ Yes ☐ No ☐ N/A	2.	
Chain of Custody Relinquished?	☒ Yes ☐ No ☐ N/A	3.	
Sampler Name and/or Signature on COC? <u>09/01/16 AA</u>	☒ Yes ☐ No ☐ N/A	4.	
Samples Arrived within Hold Time?	☒ Yes ☐ No ☐ N/A	5.	
Short Hold Time Analysis (<72 hr)?	☐ Yes ☒ No ☐ N/A	6.	
Rush Turn Around Time Requested?	☐ Yes ☒ No ☐ N/A	7.	
Sufficient Volume?	☒ Yes ☐ No ☐ N/A	8.	
Correct Containers Used?	☒ Yes ☐ No ☐ N/A	9.	
-Pace Containers Used?	☒ Yes ☐ No ☐ N/A		
Containers Intact?	☒ Yes ☐ No ☐ N/A	10.	
Filtered Volume Received for Dissolved Tests?	☐ Yes ☐ No ☒ N/A	11.	Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☒ Yes ☐ No ☐ N/A	12.	
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>			
All containers needing acid/base preservation have been checked?	☐ Yes ☐ No ☒ N/A	13.	☐ HNO ₃ ☐ H ₂ SO ₄ ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation?	☐ Yes ☐ No ☒ N/A		Sample #
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes ☐ No ☒ N/A		Initial when completed: _____ Lot # of added preservative: _____
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes ☐ No ☒ N/A		
Headspace in VOA Vials (>6mm)?	☐ Yes ☐ No ☒ N/A	14.	
Trip Blank Present?	☐ Yes ☐ No ☒ N/A	15.	
Trip Blank Custody Seals Present?	☐ Yes ☐ No ☒ N/A		
Pace Trip Blank Lot # (if purchased):			

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____ Date/Time: _____ Field Data Required? ☐ Yes ☐ No

Comments/Resolution: _____

Project Manager Review: Amanda J. Albrecht

Date: 09/01/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Barr Engineering Company
Routine Level Quality Control Report

Project # 23690877.00
 Laboratory Pace
 Lab Report # 10361091
 Report Date 9/7/16
 Holding Times Met ☒ Yes ☐ No
 If no, comments _____

Project Name SLR1DT
 COC(s)/Event _____
 Matrix WT
 Review Date 9/8/16
 Reviewed By J
 Posted to QC Track? ☐
 Revised Report? ☐ Rev # _____
 Data Report Request # _____

Temps on Receipt (°C) 3.5

Method Blanks

PAH - OK

Field Blanks

Trip Blanks (VOCs Only)

Field Duplicates (if applicable)

LCS/LCSD

PAH 90R + RPD - OK

MS/MSD

Surrogates (if applicable)

PAH - OK

Lab Duplicates (if applicable)

Additional Notes (include historical comparison, if appropriate)

Resampled from Summer due to suspected sampling error in the field.

Data is accepted as reported.

Qualifier Summary		Qualifier Changes		
Sample Name	Parameter	Added	Removed	Retained

Additional Notes to DM**For DM Use Only**

Equis Y / N

Facility ID:

Data Tech Init:

Date entered into Equis:

September 21, 2016

Andrea Nord
Barr Engineering
4300 MarketPointe Drive
Suite 200
Minneapolis, MN 55435

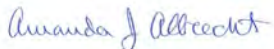
RE: Project: 23690B77.00 SLRIDT LTMM
Pace Project No.: 10361963

Dear Andrea Nord:

Enclosed are the analytical results for sample(s) received by the laboratory on September 09, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Amanda Albrecht
amanda.albrecht@pacelabs.com
Project Manager

Enclosures

cc: BarrDM, Barr Engineering



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 23690B77.00 SLRIDT LTMM

Pace Project No.: 10361963

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

525 N 8th Street, Salina, KS 67401

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #: 14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Virginia/VELAP Certification #: Pace

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: 23690B77.00 SLRIDT LTMM

Pace Project No.: 10361963

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10361963001	SB-PW-11A 1.1	Water	09/09/16 08:45	09/09/16 18:30
10361963002	SB-PW-11 3.0	Water	09/09/16 09:00	09/09/16 18:30
10361963003	SB-PW-12 1.5	Water	09/09/16 09:45	09/09/16 18:30
10361963004	SB-PW-12 3.0	Water	09/09/16 10:15	09/09/16 18:30
10361963005	SB-PW-13 2.0	Water	09/09/16 10:30	09/09/16 18:30
10361963006	SB-PW-13 3.0	Water	09/09/16 11:00	09/09/16 18:30
10361963007	SB-PW-02 1.5	Water	09/09/16 11:30	09/09/16 18:30
10361963008	SB-PW-02 2.8	Water	09/09/16 11:45	09/09/16 18:30

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SAMPLE ANALYTE COUNT

Project: 23690B77.00 SLRIDT LTMM

Pace Project No.: 10361963

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10361963001	SB-PW-11A 1.1	EPA 8270D by SIM	AS1	19
10361963002	SB-PW-11 3.0	EPA 8270D by SIM	JLR	19
10361963003	SB-PW-12 1.5	EPA 8270D by SIM	AS1	19
10361963004	SB-PW-12 3.0	EPA 8270D by SIM	AS1	19
10361963005	SB-PW-13 2.0	EPA 8270D by SIM	AS1	19
10361963006	SB-PW-13 3.0	EPA 8270D by SIM	AS1	19
10361963007	SB-PW-02 1.5	EPA 8270D by SIM	AS1	19
10361963008	SB-PW-02 2.8	EPA 8270D by SIM	AS1	19

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 23690B77.00 SLRIDT LTMM

Pace Project No.: 10361963

Sample: SB-PW-11A 1.1		Lab ID: 10361963001		Collected: 09/09/16 08:45		Received: 09/09/16 18:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	0.87	ug/L	0.041	0.0038	1	09/15/16 09:54	09/17/16 19:55	83-32-9	
Acenaphthylene	0.36	ug/L	0.041	0.0075	1	09/15/16 09:54	09/17/16 19:55	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	09/15/16 09:54	09/17/16 19:55	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	09/15/16 09:54	09/17/16 19:55	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	09/15/16 09:54	09/17/16 19:55	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	09/15/16 09:54	09/17/16 19:55	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	09/15/16 09:54	09/17/16 19:55	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	09/15/16 09:54	09/17/16 19:55	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	09/15/16 09:54	09/17/16 19:55	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	09/15/16 09:54	09/17/16 19:55	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0060	1	09/15/16 09:54	09/17/16 19:55	206-44-0	
Fluorene	0.10	ug/L	0.041	0.0046	1	09/15/16 09:54	09/17/16 19:55	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	09/15/16 09:54	09/17/16 19:55	193-39-5	
2-Methylnaphthalene	0.060	ug/L	0.041	0.0071	1	09/15/16 09:54	09/17/16 19:55	91-57-6	
Naphthalene	30.1	ug/L	0.41	0.049	10	09/15/16 09:54	09/19/16 16:35	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0065	1	09/15/16 09:54	09/17/16 19:55	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	09/15/16 09:54	09/17/16 19:55	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	73	%.	53-125		1	09/15/16 09:54	09/17/16 19:55	321-60-8	
p-Terphenyl-d14 (S)	82	%.	57-125		1	09/15/16 09:54	09/17/16 19:55	1718-51-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 23690B77.00 SLRIDT LTMM

Pace Project No.: 10361963

Sample: SB-PW-11 3.0		Lab ID: 10361963002		Collected: 09/09/16 09:00		Received: 09/09/16 18:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	1.2	ug/L	0.041	0.0038	1	09/15/16 09:54	09/17/16 20:16	83-32-9	M1
Acenaphthylene	1.6	ug/L	0.041	0.0075	1	09/15/16 09:54	09/17/16 20:16	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	09/15/16 09:54	09/17/16 20:16	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	09/15/16 09:54	09/17/16 20:16	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	09/15/16 09:54	09/17/16 20:16	50-32-8	M1
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	09/15/16 09:54	09/17/16 20:16	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	09/15/16 09:54	09/17/16 20:16	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	09/15/16 09:54	09/17/16 20:16	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	09/15/16 09:54	09/17/16 20:16	218-01-9	M1
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	09/15/16 09:54	09/17/16 20:16	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0060	1	09/15/16 09:54	09/17/16 20:16	206-44-0	
Fluorene	0.43	ug/L	0.041	0.0046	1	09/15/16 09:54	09/17/16 20:16	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	09/15/16 09:54	09/17/16 20:16	193-39-5	M1
2-Methylnaphthalene	2.8	ug/L	0.041	0.0071	1	09/15/16 09:54	09/17/16 20:16	91-57-6	
Naphthalene	81.0	ug/L	0.41	0.049	10	09/15/16 09:54	09/19/16 12:33	91-20-3	
Phenanthrene	<0.041	ug/L	0.041	0.0065	1	09/15/16 09:54	09/17/16 20:16	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	09/15/16 09:54	09/17/16 20:16	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	70	%.	53-125		1	09/15/16 09:54	09/17/16 20:16	321-60-8	
p-Terphenyl-d14 (S)	79	%.	57-125		1	09/15/16 09:54	09/17/16 20:16	1718-51-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 23690B77.00 SLRIDT LTMM

Pace Project No.: 10361963

Sample: SB-PW-12 1.5		Lab ID: 10361963003		Collected: 09/09/16 09:45		Received: 09/09/16 18:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	3.6	ug/L	0.041	0.0038	1	09/15/16 09:54	09/17/16 21:22	83-32-9	
Acenaphthylene	0.34	ug/L	0.041	0.0074	1	09/15/16 09:54	09/17/16 21:22	208-96-8	
Anthracene	<0.041	ug/L	0.041	0.0044	1	09/15/16 09:54	09/17/16 21:22	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	09/15/16 09:54	09/17/16 21:22	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	09/15/16 09:54	09/17/16 21:22	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	09/15/16 09:54	09/17/16 21:22	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	09/15/16 09:54	09/17/16 21:22	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	09/15/16 09:54	09/17/16 21:22	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	09/15/16 09:54	09/17/16 21:22	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	09/15/16 09:54	09/17/16 21:22	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	09/15/16 09:54	09/17/16 21:22	206-44-0	
Fluorene	1.2	ug/L	0.041	0.0045	1	09/15/16 09:54	09/17/16 21:22	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	09/15/16 09:54	09/17/16 21:22	193-39-5	
2-Methylnaphthalene	0.14	ug/L	0.041	0.0070	1	09/15/16 09:54	09/17/16 21:22	91-57-6	
Naphthalene	94.8	ug/L	0.41	0.049	10	09/15/16 09:54	09/19/16 16:57	91-20-3	
Phenanthrene	0.33	ug/L	0.041	0.0064	1	09/15/16 09:54	09/17/16 21:22	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	09/15/16 09:54	09/17/16 21:22	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	68	%.	53-125		1	09/15/16 09:54	09/17/16 21:22	321-60-8	
p-Terphenyl-d14 (S)	81	%.	57-125		1	09/15/16 09:54	09/17/16 21:22	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77.00 SLRIDT LTMM

Pace Project No.: 10361963

Sample: SB-PW-12 3.0		Lab ID: 10361963004		Collected: 09/09/16 10:15		Received: 09/09/16 18:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	26.4	ug/L	0.41	0.038	10	09/15/16 09:54	09/19/16 17:18	83-32-9	
Acenaphthylene	0.37	ug/L	0.041	0.0075	1	09/15/16 09:54	09/17/16 21:43	208-96-8	
Anthracene	0.29	ug/L	0.041	0.0044	1	09/15/16 09:54	09/17/16 21:43	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	09/15/16 09:54	09/17/16 21:43	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	09/15/16 09:54	09/17/16 21:43	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	09/15/16 09:54	09/17/16 21:43	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	09/15/16 09:54	09/17/16 21:43	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	09/15/16 09:54	09/17/16 21:43	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	09/15/16 09:54	09/17/16 21:43	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	09/15/16 09:54	09/17/16 21:43	53-70-3	
Fluoranthene	0.65	ug/L	0.041	0.0060	1	09/15/16 09:54	09/17/16 21:43	206-44-0	
Fluorene	9.2	ug/L	0.041	0.0046	1	09/15/16 09:54	09/17/16 21:43	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	09/15/16 09:54	09/17/16 21:43	193-39-5	
2-Methylnaphthalene	<0.041	ug/L	0.041	0.0071	1	09/15/16 09:54	09/17/16 21:43	91-57-6	
Naphthalene	6.6	ug/L	0.041	0.0049	1	09/15/16 09:54	09/17/16 21:43	91-20-3	
Phenanthrene	0.11	ug/L	0.041	0.0065	1	09/15/16 09:54	09/17/16 21:43	85-01-8	
Pyrene	0.32	ug/L	0.041	0.0054	1	09/15/16 09:54	09/17/16 21:43	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	70	%.	53-125		1	09/15/16 09:54	09/17/16 21:43	321-60-8	
p-Terphenyl-d14 (S)	73	%.	57-125		1	09/15/16 09:54	09/17/16 21:43	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77.00 SLRIDT LTMM

Pace Project No.: 10361963

Sample: SB-PW-13 2.0		Lab ID: 10361963005		Collected: 09/09/16 10:30		Received: 09/09/16 18:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	1.9	ug/L	0.041	0.0038	1	09/15/16 09:54	09/17/16 22:05	83-32-9	
Acenaphthylene	1.1	ug/L	0.041	0.0074	1	09/15/16 09:54	09/17/16 22:05	208-96-8	
Anthracene	0.16	ug/L	0.041	0.0044	1	09/15/16 09:54	09/17/16 22:05	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	09/15/16 09:54	09/17/16 22:05	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	09/15/16 09:54	09/17/16 22:05	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	09/15/16 09:54	09/17/16 22:05	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	09/15/16 09:54	09/17/16 22:05	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	09/15/16 09:54	09/17/16 22:05	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	09/15/16 09:54	09/17/16 22:05	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	09/15/16 09:54	09/17/16 22:05	53-70-3	
Fluoranthene	0.099	ug/L	0.041	0.0059	1	09/15/16 09:54	09/17/16 22:05	206-44-0	
Fluorene	1.3	ug/L	0.041	0.0045	1	09/15/16 09:54	09/17/16 22:05	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	09/15/16 09:54	09/17/16 22:05	193-39-5	
2-Methylnaphthalene	4.7	ug/L	0.041	0.0070	1	09/15/16 09:54	09/17/16 22:05	91-57-6	
Naphthalene	118	ug/L	0.82	0.098	20	09/15/16 09:54	09/19/16 19:54	91-20-3	
Phenanthrene	1.5	ug/L	0.041	0.0064	1	09/15/16 09:54	09/17/16 22:05	85-01-8	
Pyrene	0.057	ug/L	0.041	0.0054	1	09/15/16 09:54	09/17/16 22:05	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	61	%.	53-125		1	09/15/16 09:54	09/17/16 22:05	321-60-8	
p-Terphenyl-d14 (S)	75	%.	57-125		1	09/15/16 09:54	09/17/16 22:05	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77.00 SLRIDT LTMM

Pace Project No.: 10361963

Sample: SB-PW-13 3.0		Lab ID: 10361963006		Collected: 09/09/16 11:00		Received: 09/09/16 18:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	2.4	ug/L	0.041	0.0037	1	09/15/16 09:54	09/17/16 22:27	83-32-9	
Acenaphthylene	1.6	ug/L	0.041	0.0074	1	09/15/16 09:54	09/17/16 22:27	208-96-8	
Anthracene	0.074	ug/L	0.041	0.0044	1	09/15/16 09:54	09/17/16 22:27	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	09/15/16 09:54	09/17/16 22:27	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	09/15/16 09:54	09/17/16 22:27	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	09/15/16 09:54	09/17/16 22:27	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	09/15/16 09:54	09/17/16 22:27	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	09/15/16 09:54	09/17/16 22:27	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0038	1	09/15/16 09:54	09/17/16 22:27	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	09/15/16 09:54	09/17/16 22:27	53-70-3	
Fluoranthene	0.061	ug/L	0.041	0.0059	1	09/15/16 09:54	09/17/16 22:27	206-44-0	
Fluorene	1.0	ug/L	0.041	0.0045	1	09/15/16 09:54	09/17/16 22:27	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	09/15/16 09:54	09/17/16 22:27	193-39-5	
2-Methylnaphthalene	6.8	ug/L	0.041	0.0070	1	09/15/16 09:54	09/17/16 22:27	91-57-6	
Naphthalene	231	ug/L	2.0	0.24	50	09/15/16 09:54	09/19/16 18:02	91-20-3	
Phenanthrene	0.74	ug/L	0.041	0.0064	1	09/15/16 09:54	09/17/16 22:27	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	09/15/16 09:54	09/17/16 22:27	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	66	%.	53-125		1	09/15/16 09:54	09/17/16 22:27	321-60-8	
p-Terphenyl-d14 (S)	77	%.	57-125		1	09/15/16 09:54	09/17/16 22:27	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77.00 SLRIDT LTMM

Pace Project No.: 10361963

Sample: SB-PW-02 1.5		Lab ID: 10361963007		Collected: 09/09/16 11:30		Received: 09/09/16 18:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	4.8	ug/L	0.041	0.0038	1	09/15/16 09:54	09/17/16 22:48	83-32-9	
Acenaphthylene	4.8	ug/L	0.041	0.0074	1	09/15/16 09:54	09/17/16 22:48	208-96-8	
Anthracene	0.094	ug/L	0.041	0.0044	1	09/15/16 09:54	09/17/16 22:48	120-12-7	
Benzo(a)anthracene	<0.041	ug/L	0.041	0.0039	1	09/15/16 09:54	09/17/16 22:48	56-55-3	
Benzo(a)pyrene	<0.041	ug/L	0.041	0.0053	1	09/15/16 09:54	09/17/16 22:48	50-32-8	
Benzo(b)fluoranthene	<0.041	ug/L	0.041	0.0046	1	09/15/16 09:54	09/17/16 22:48	205-99-2	
Benzo(g,h,i)perylene	<0.041	ug/L	0.041	0.0037	1	09/15/16 09:54	09/17/16 22:48	191-24-2	
Benzo(k)fluoranthene	<0.041	ug/L	0.041	0.0041	1	09/15/16 09:54	09/17/16 22:48	207-08-9	
Chrysene	<0.041	ug/L	0.041	0.0039	1	09/15/16 09:54	09/17/16 22:48	218-01-9	
Dibenz(a,h)anthracene	<0.041	ug/L	0.041	0.0038	1	09/15/16 09:54	09/17/16 22:48	53-70-3	
Fluoranthene	<0.041	ug/L	0.041	0.0059	1	09/15/16 09:54	09/17/16 22:48	206-44-0	
Fluorene	2.5	ug/L	0.041	0.0045	1	09/15/16 09:54	09/17/16 22:48	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.041	ug/L	0.041	0.0040	1	09/15/16 09:54	09/17/16 22:48	193-39-5	
2-Methylnaphthalene	14.5	ug/L	2.0	0.35	50	09/15/16 09:54	09/19/16 18:23	91-57-6	
Naphthalene	382	ug/L	2.0	0.25	50	09/15/16 09:54	09/19/16 18:23	91-20-3	
Phenanthrene	0.32	ug/L	0.041	0.0064	1	09/15/16 09:54	09/17/16 22:48	85-01-8	
Pyrene	<0.041	ug/L	0.041	0.0054	1	09/15/16 09:54	09/17/16 22:48	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	69	%.	53-125		1	09/15/16 09:54	09/17/16 22:48	321-60-8	
p-Terphenyl-d14 (S)	74	%.	57-125		1	09/15/16 09:54	09/17/16 22:48	1718-51-0	

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ANALYTICAL RESULTS

Project: 23690B77.00 SLRIDT LTMM

Pace Project No.: 10361963

Sample: SB-PW-02 2.8		Lab ID: 10361963008		Collected: 09/09/16 11:45		Received: 09/09/16 18:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM		Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3510C							
Acenaphthene	6.7	ug/L	0.040	0.0037	1	09/15/16 09:54	09/17/16 23:10	83-32-9	
Acenaphthylene	8.7	ug/L	0.040	0.0074	1	09/15/16 09:54	09/17/16 23:10	208-96-8	
Anthracene	0.30	ug/L	0.040	0.0043	1	09/15/16 09:54	09/17/16 23:10	120-12-7	
Benzo(a)anthracene	<0.040	ug/L	0.040	0.0039	1	09/15/16 09:54	09/17/16 23:10	56-55-3	
Benzo(a)pyrene	<0.040	ug/L	0.040	0.0052	1	09/15/16 09:54	09/17/16 23:10	50-32-8	
Benzo(b)fluoranthene	<0.040	ug/L	0.040	0.0045	1	09/15/16 09:54	09/17/16 23:10	205-99-2	
Benzo(g,h,i)perylene	<0.040	ug/L	0.040	0.0037	1	09/15/16 09:54	09/17/16 23:10	191-24-2	
Benzo(k)fluoranthene	<0.040	ug/L	0.040	0.0040	1	09/15/16 09:54	09/17/16 23:10	207-08-9	
Chrysene	<0.040	ug/L	0.040	0.0038	1	09/15/16 09:54	09/17/16 23:10	218-01-9	
Dibenz(a,h)anthracene	<0.040	ug/L	0.040	0.0038	1	09/15/16 09:54	09/17/16 23:10	53-70-3	
Fluoranthene	0.058	ug/L	0.040	0.0059	1	09/15/16 09:54	09/17/16 23:10	206-44-0	
Fluorene	4.4	ug/L	0.040	0.0045	1	09/15/16 09:54	09/17/16 23:10	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.040	ug/L	0.040	0.0039	1	09/15/16 09:54	09/17/16 23:10	193-39-5	
2-Methylnaphthalene	27.9	ug/L	4.0	0.70	100	09/15/16 09:54	09/19/16 18:45	91-57-6	
Naphthalene	745	ug/L	4.0	0.49	100	09/15/16 09:54	09/19/16 18:45	91-20-3	
Phenanthrene	3.0	ug/L	0.040	0.0064	1	09/15/16 09:54	09/17/16 23:10	85-01-8	
Pyrene	<0.040	ug/L	0.040	0.0053	1	09/15/16 09:54	09/17/16 23:10	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	70	%.	53-125		1	09/15/16 09:54	09/17/16 23:10	321-60-8	
p-Terphenyl-d14 (S)	69	%.	57-125		1	09/15/16 09:54	09/17/16 23:10	1718-51-0	

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QUALITY CONTROL DATA

Project: 23690B77.00 SLRIDT LTMM
Pace Project No.: 10361963

QC Batch: 435755 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3510C Analysis Description: 8270D PAH by SIM MSSV
Associated Lab Samples: 10361963001, 10361963002, 10361963003, 10361963004, 10361963005, 10361963006, 10361963007, 10361963008

METHOD BLANK: 2368260 Matrix: Water
Associated Lab Samples: 10361963001, 10361963002, 10361963003, 10361963004, 10361963005, 10361963006, 10361963007, 10361963008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
2-Methylnaphthalene	ug/L	<0.040	0.040	0.0069	09/17/16 17:45	
Acenaphthene	ug/L	<0.040	0.040	0.0037	09/17/16 17:45	
Acenaphthylene	ug/L	<0.040	0.040	0.0073	09/17/16 17:45	
Anthracene	ug/L	<0.040	0.040	0.0043	09/17/16 17:45	
Benzo(a)anthracene	ug/L	<0.040	0.040	0.0038	09/17/16 17:45	
Benzo(a)pyrene	ug/L	<0.040	0.040	0.0052	09/17/16 17:45	
Benzo(b)fluoranthene	ug/L	<0.040	0.040	0.0045	09/17/16 17:45	
Benzo(g,h,i)perylene	ug/L	<0.040	0.040	0.0036	09/17/16 17:45	
Benzo(k)fluoranthene	ug/L	<0.040	0.040	0.0040	09/17/16 17:45	
Chrysene	ug/L	<0.040	0.040	0.0038	09/17/16 17:45	
Dibenz(a,h)anthracene	ug/L	<0.040	0.040	0.0038	09/17/16 17:45	
Fluoranthene	ug/L	<0.040	0.040	0.0058	09/17/16 17:45	
Fluorene	ug/L	<0.040	0.040	0.0044	09/17/16 17:45	
Indeno(1,2,3-cd)pyrene	ug/L	<0.040	0.040	0.0039	09/17/16 17:45	
Naphthalene	ug/L	<0.040	0.040	0.0048	09/17/16 17:45	
Phenanthrene	ug/L	<0.040	0.040	0.0063	09/17/16 17:45	
Pyrene	ug/L	<0.040	0.040	0.0053	09/17/16 17:45	
2-Fluorobiphenyl (S)	%	69	53-125		09/17/16 17:45	
p-Terphenyl-d14 (S)	%	79	57-125		09/17/16 17:45	

LABORATORY CONTROL SAMPLE: 2368261

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Methylnaphthalene	ug/L	1	0.74	74	54-125	
Acenaphthene	ug/L	1	0.70	70	55-125	
Acenaphthylene	ug/L	1	0.68	68	55-125	
Anthracene	ug/L	1	0.87	87	66-125	
Benzo(a)anthracene	ug/L	1	0.81	81	66-125	
Benzo(a)pyrene	ug/L	1	0.91	91	74-125	
Benzo(b)fluoranthene	ug/L	1	0.88	88	65-125	
Benzo(g,h,i)perylene	ug/L	1	0.84	84	68-125	
Benzo(k)fluoranthene	ug/L	1	0.96	96	72-125	
Chrysene	ug/L	1	0.86	86	69-125	
Dibenz(a,h)anthracene	ug/L	1	0.82	82	61-125	
Fluoranthene	ug/L	1	0.88	88	75-125	
Fluorene	ug/L	1	0.77	77	63-125	
Indeno(1,2,3-cd)pyrene	ug/L	1	0.84	84	66-125	
Naphthalene	ug/L	1	0.71	71	51-125	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 23690B77.00 SLRIDT LTMM

Pace Project No.: 10361963

LABORATORY CONTROL SAMPLE: 2368261

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenanthrene	ug/L	1	0.85	85	64-125	
Pyrene	ug/L	1	0.87	87	72-125	
2-Fluorobiphenyl (S)	%.			68	53-125	
p-Terphenyl-d14 (S)	%.			82	57-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2368262 2368263

Parameter	Units	10361963002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
2-Methylnaphthalene	ug/L	2.8	1	1	3.1	3.2	31	32	53-125	1	30	M1
Acenaphthene	ug/L	1.2	1	1	1.9	1.8	63	60	57-125	2	30	
Acenaphthylene	ug/L	1.6	1	1	2.1	2.1	55	54	55-125	0	30	M1
Anthracene	ug/L	<0.041	1	1	0.91	0.92	88	89	66-125	2	30	
Benzo(a)anthracene	ug/L	<0.041	1	1	0.83	0.86	81	83	61-125	3	30	
Benzo(a)pyrene	ug/L	<0.041	1	1	0.92	0.96	89	92	63-125	5	30	
Benzo(b)fluoranthene	ug/L	<0.041	1	1	0.88	0.91	86	88	61-125	3	30	
Benzo(g,h,i)perylene	ug/L	<0.041	1	1	0.86	0.89	83	86	52-125	4	30	
Benzo(k)fluoranthene	ug/L	<0.041	1	1	0.93	1.0	91	97	58-125	8	30	
Chrysene	ug/L	<0.041	1	1	0.84	0.88	82	84	66-125	4	30	
Dibenz(a,h)anthracene	ug/L	<0.041	1	1	0.84	0.86	82	83	49-125	2	30	
Fluoranthene	ug/L	<0.041	1	1	0.88	0.90	86	87	67-125	2	30	
Fluorene	ug/L	0.43	1	1	1.2	1.2	75	76	60-125	1	30	
Indeno(1,2,3-cd)pyrene	ug/L	<0.041	1	1	0.86	0.88	83	85	52-125	3	30	
Naphthalene	ug/L	81.0	1	1	47.3	47.4	-3270	-3240	54-125	0	30	E,M1
Phenanthrene	ug/L	<0.041	1	1	0.95	0.98	92	94	59-125	3	30	
Pyrene	ug/L	<0.041	1	1	0.86	0.88	83	85	64-125	3	30	
2-Fluorobiphenyl (S)	%.						64	62	53-125			
p-Terphenyl-d14 (S)	%.						77	80	57-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 23690B77.00 SLRIDT LTMM
Pace Project No.: 10361963

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

E Analyte concentration exceeded the calibration range. The reported result is estimated.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 23690B77.00 SLRIDT LTMM

Pace Project No.: 10361963

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10361963001	SB-PW-11A 1.1	EPA 3510C	435755	EPA 8270D by SIM	436170
10361963002	SB-PW-11 3.0	EPA 3510C	435755	EPA 8270D by SIM	436170
10361963003	SB-PW-12 1.5	EPA 3510C	435755	EPA 8270D by SIM	436170
10361963004	SB-PW-12 3.0	EPA 3510C	435755	EPA 8270D by SIM	436170
10361963005	SB-PW-13 2.0	EPA 3510C	435755	EPA 8270D by SIM	436170
10361963006	SB-PW-13 3.0	EPA 3510C	435755	EPA 8270D by SIM	436170
10361963007	SB-PW-02 1.5	EPA 3510C	435755	EPA 8270D by SIM	436170
10361963008	SB-PW-02 2.8	EPA 3510C	435755	EPA 8270D by SIM	436170

REPORT OF LABORATORY ANALYSIS

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15361963

H:\RLG\STDFORMS\Chain Of Custody Form 2015 RLG Rev. 06/16/15

9/4/16 1830 2.5 YYY

	Document Name: Sample Condition Upon Receipt Form	Document Revised: 02Aug2016 Page 1 of 2
	Document No.: F-MN-L-213-rev.17	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt	Client Name: <u>Burr</u>	Project #: WO# : 10361963
		

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Speedee ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☒ Yes ☐ No

Thermometer ☐ 151401163 ☐ B88A912167504 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun
Used: ☒ 151401164 ☐ B88A0143310098

Cooler Temp Read (°C): 3.0 Cooler Temp Corrected (°C): 2.9 Biological Tissue Frozen? ☐ Yes ☒ No ☐ N/A
Temp should be above freezing to 6°C Correction Factor: -0.1 Date and Initials of Person Examining Contents: CHT 9-9-16

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? ☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out? ☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished? ☒ Yes ☐ No ☐ N/A	3.
Sampler Name and/or Signature on COC? ☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time? ☒ Yes ☐ No ☐ N/A	5.
Short Hold Time Analysis (<72 hr)? ☐ Yes ☒ No ☐ N/A	6.
Rush Turn Around Time Requested? ☐ Yes ☒ No ☐ N/A	7.
Sufficient Volume? ☒ Yes ☐ No ☐ N/A	8.
Correct Containers Used? ☒ Yes ☐ No ☐ N/A	9.
-Pace Containers Used? ☒ Yes ☐ No ☐ N/A	
Containers Intact? ☒ Yes ☐ No ☐ N/A	10.
Filtered Volume Received for Dissolved Tests? ☐ Yes ☒ No ☐ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? ☒ Yes ☐ No ☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
All containers needing acid/base preservation have been checked? ☐ Yes ☐ No ☒ N/A	13. ☐ HNO ₃ ☐ H ₂ SO ₄ ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? ☐ Yes ☐ No ☒ N/A	Sample #
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) ☐ Yes ☐ No ☒ N/A	Initial when completed: _____ Lot # of added preservative: _____
Exceptions: VOA, Coliform, TOC, Oil and Grease, <u>CRP/8015 (water) DOC</u> <u>CW 9-9-16</u> ☒ Yes ☐ No ☒ N/A	
Headspace in VOA Vials (>6mm)? ☐ Yes ☒ No ☐ N/A	14.
Trip Blank Present? ☒ Yes ☐ No ☒ N/A	15.
Trip Blank Custody Seals Present? ☒ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased): _____	

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Field Data Required? ☐ Yes ☐ No

Project Manager Review: Carol Tang

Date: 9/12/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Barr Engineering Company
Routine Level Quality Control Report

Project # 2369DB77.00 2016 010
 Laboratory Pace
 Lab Report # 10361963
 Report Date 9/21/16
 Holding Times Met Yes No
 If no, comments _____

Project Name SLRIDT
 COC(s)/Event LTMM
 Matrix WT
 Review Date 9/26/16
 Reviewed By H
 Posted to QC Track? ☐
 Revised Report? ☐ Rev # _____
 Data Report Request # _____

Temps on Receipt (°C) 2.9

Method Blanks

PAH - OK

Field Blanks

Trip Blanks (VOCs Only)

Field Duplicates (if applicable)

LCS/LCSD

PAH - OK

MS/MSD

PAH SB-PW-11 3.0
 2-methylnaphthalene 31,32 (53-125)
 RPD - OK *qual
 acenaphthylene OK 54 (55-125)
 RPD - OK no qual
 naphthalene 4x rule no qual

Surrogates (if applicable)

PAH - OK

Lab Duplicates (if applicable)

Additional Notes (include historical comparison, if appropriate)

Data is accepted w/ qualification. See quals below.

Qualifier Summary		Qualifier Changes		
Sample Name	Parameter	Added	Removed	Retained
ms/D SB-PW-11	3.0 Acenaphthylene		ml	
↓	2-methylnaphthalene *		ml	
	naphthalene		ml	

Additional Notes to DM

For DM Use Only

Equis Y / N

Data Tech Init:

Facility ID:

Date entered into Equis:

Appendix B

Photo Locations Photo Log

Photo Location Photographs – SLRIDT, 10/24/2016



Location 1, North end of Stryker Bay, 150°



Location 1, North end of Stryker Bay, 225°



Location 2, Central east shoreline of Stryker Bay, 150⁰



Location 2, Central east shoreline of Stryker Bay, 220⁰



Location 3, Point at south end of Stryker Bay, 30°



Location 3, Point at south end of Stryker Bay, 330°



Location 4, South end of the 59th Ave. W. Peninsula, 255^o



Location 4, South end of the 59th Ave. W. Peninsula, 330^o



Location 5, Southeast shore of the 59th Ave. W. Peninsula, 165⁰



Location 5, Southeast shore of the 59th Ave. W. Peninsula, 240⁰



Location 6, South end of dock wall along Slip 6/CAD, 50°



Location 6, South end of dock wall along Slip 6/CAD, 120°



Location 7, South end of dock wall along Slip 6/CAD, 145⁰



Location 7, South end of dock wall along Slip 6/CAD, 215⁰



Location 8, Central dock wall along Slip 6/CAD, 50°



Location 8, Central dock wall along Slip 6/CAD, 130°



Location 9, Central dock wall along Slip 6/CAD, 145°



Location 9, Central dock wall along Slip 6/CAD, 215°



Location 10, North end of Slip 6/CAD, 55°



Location 10, North end of Slip 6/CAD, 125°



Location 11, North end of Slip 6/CAD, 140°



Location 11, North end of Slip 6/CAD, 215°



Location 12, North end of the 54th Ave. W. Peninsula, 170⁰



Location 12, North end of the 54th Ave. W. Peninsula, 245⁰



Location 13, Adjacent to the North Wetlands, 50°



Location 13, Adjacent to the North Wetlands, 130°



Location 14, Northcentral area of the 54th Ave. W. Peninsula, 145⁰



Location 14, Northcentral area of the 54th Ave. W. Peninsula, 215⁰



Location 15, Southcentral area of the 54th Ave. W. Peninsula, 190⁰.



Location 15, Southcentral area of the 54th Ave. W. Peninsula, 260⁰



Location 16, Top of hill at the south end of the 54th Ave. W. Peninsula, 50⁰



Location 16, Top of hill at the south end of the 54th Ave. W. Peninsula, 125⁰



Location 17, Southwest corner of the 54th Ave. W. Peninsula, 190⁰



Location 17, Southwest corner of the 54th Ave. W. Peninsula, 260⁰



Location 18, Southwest corner of the 54th Ave. W. Peninsula, 100⁰



Location 18, Southwest corner of the 54th Ave. W. Peninsula, 170⁰



Location 19, Western shore of Slip 7, 35°



Location 19, Western shore of Slip 7, 320°



Location 20, Western shore of Slip 7, north of location 19, 35⁰



Location 20, Western shore of Slip 7, north of location 19, 320⁰



Location 21, At culvert crossing at the north end of Slip 7, 190°



Location 21, At culvert crossing at the north end of Slip 7, 270°



Location 22, North end of Slip 7 at dock wall, 145°



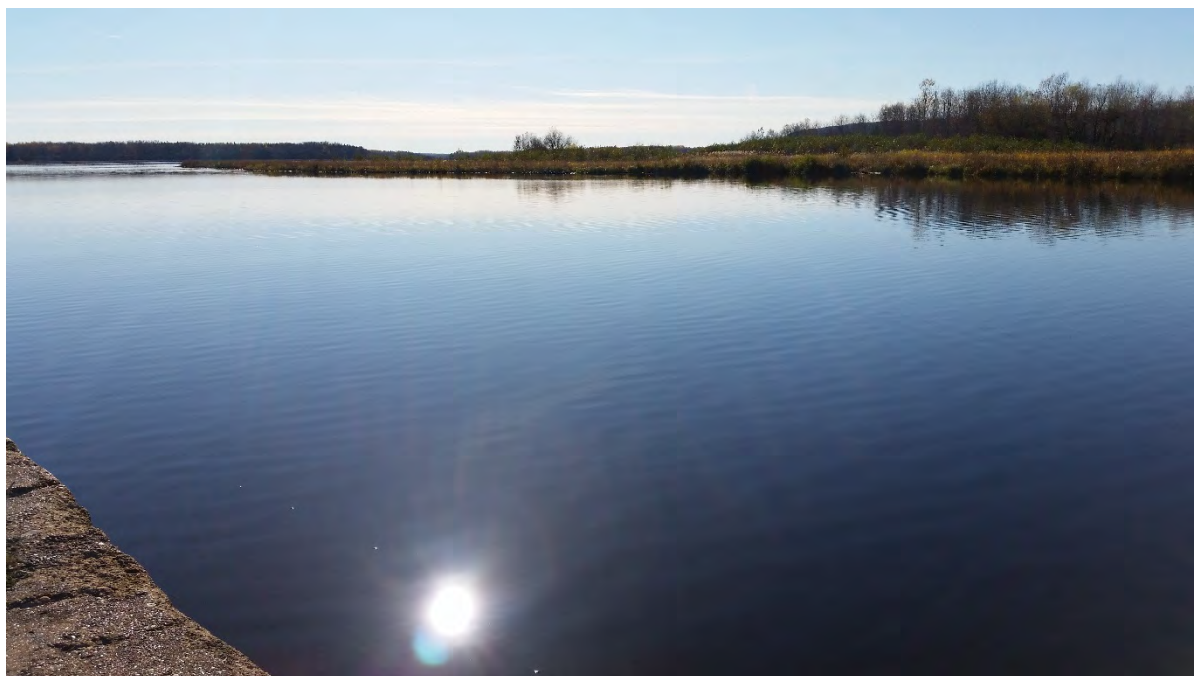
Location 22, North end of Slip 7 at dock wall, 215°



Location 23, East side of Slip 7, central, along the dock wall, 145⁰



Location 23, East side of Slip 7, central, along the dock wall, 215⁰



Location 24, East side of Slip 7, central, along the dock wall, 235⁰



Location 24, East side of Slip 7, central, along the dock wall, 330⁰



Location 25, South end of the Slip 7 dock wall, 145°



Location 25, South end of the Slip 7 dock wall, 215°



Location 26, Southernmost end of the Slip 7 dock wall, 235°



Location 26, Southernmost end of the Slip 7 dock wall, 330°

Appendix C

Cap Inspection Report Form

SLRIDT SITE INSPECTION REPORT UPLAND CAP AREAS

Inspector(s): (1) Kinnan Stauber
(2) _____

Company: Barr Engineering

Date of Inspection: 10/24/16

Time of Inspection: 10:30am to 3:12 pm

Weather: Sunny, 45-60°F, SW Wind

Temperature: 60 °F

Humidity: 45 %

Wind: NW then S/SE

Stryker Bay East Shoreline (SB-7)

1. Above average surface water elevation? *
2. Cap intact and free of erosion?
3. Cap near French drain free of erosion?
4. Cap protective of environment?
5. Cap free of surface water ponding?
6. Vegetation cover intact?
7. Cap free of animal burrows?
8. Cap free of tar deposits?

Completed By (Initials)	Yes	No	Not Inspected
KMSZ	X		
KMSZ	X		
KMSZ	X		
KMSZ	X		
KMSZ	X		
KMSZ	X		
KMSZ	X		
KMSZ	X		

Comments: _____

Slip 6 (CAD) East Shoreline

1. Above average surface water elevation?
2. Cap intact and free of erosion?
3. Cobble at south end protective of Cap?
4. Cap protective of environment?
5. Cap free of surface water ponding?
6. Vegetation cover intact?
7. Cap free of animal burrows?
8. Cap free of tar deposit?
9. CAD dock wall (west side) intact?

Completed By (Initials)	Yes	No	Not Inspected
KMSZ	X		
KMSZ	X		
KMSZ	X		
KMSZ	X	X	
KMSZ	X		
KMSZ	X		
KMSZ	X		
KMSZ	X		
KMSZ	X		

Comments: ~~X~~- _____

*According to information on the ACOE website, Lake Superior (and, therefore, the St. Louis River) is 4 inches above the level of 2015. Chart datum is 601.10, and the current water level is 602.66. Levels are based on monthly averages, not daily water levels.

Slip 7 Mudflats (SL7-5/10)

1. Above average surface water elevation?
2. Cap intact and free of erosion?
3. Cobble along shoreline protective of cap?
4. Cap protective of environment?
5. Cap free of surface water ponding?
6. Culvert at north end free of debris?
7. Vegetation cover intact?
8. Cap free of animal burrows?
9. Cap free of tar deposits?
10. Pore water monitoring equipment intact?
11. Slip 7 dock wall (east side) intact?

Completed By (Initials)	Yes	No	Not Inspected
	X		
	X		
	X		
	X		
		X	
	X		
	X		
	X		
	X		
			X
	X	X	

Comments: The south end of the 54th Ave W. Peninsula has ponding and/or
inundation.

The dock wall of slip 7 is still intact, but there are some sections
that appear to be less stable than the majority of the dock wall. There are also
small areas of erosion on the land-ward side of the dock wall.

Appendix D

Transect Inspection Site Photos

Cap Inspection/Transect Photos – SLRIDT, 10/24/2016



Stryker Bay, north end cap repairs



Stryker Bay, north end cap repairs detail



Stryker Bay Transect, view northwest



Stryker Bay Transect, view southeast



Stryker Bay hillside erosion repairs, view northeast



Stryker Bay hillside erosion repairs, view east



Stryker Bay hillside minor erosion, view north



Stryker Bay, view south, showing higher water levels



South end of the 59th Ave. West Peninsula, vegetative cover



North end of CAD, erosion repair



View of CAD dock wall, view west



View of CAD dock wall, view southwest



54th Ave. West Peninsula Transect, view north, showing sparse vegetative cover



54th Ave. West Peninsula Transect, view east, typical vegetation around birch trees



54th Ave. West Peninsula, south end, view southeast



54th Ave. West Peninsula, south end, view north of *Phragmites* near pond



View west from Slip 7 of the south end of the 54th Ave. West Peninsula cobble shoreline protection



54th Ave. West Peninsula, east side, view west, *Phragmites* (golden color below tree line)



54th Ave. West Peninsula, view east



54th Ave. West Peninsula, east side, view east



54th Ave. West Peninsula, east side, view west



54th Ave. West Peninsula, north end, view west



North end of Slip 7, view north



North end of Slip 7, view west, boulders in place, also inundated



Slip 7 dock wall, view south



Slip 7 dock wall, view north

Appendix E

Benthic Invertebrate Sampling Photos

Appendix E – Benthic Macroinvertebrate Sampling 2016



North Bay, view north.



Typical soft sediment



Stryker Bay, view north



Typical benthic invertebrate – Ephemeropteran



Slip 6, view north



Typical equipment on pontoon boat



Slip 7, view north



Typical benthic macroinvertebrates sampled; clam, mayfly larvae, worm

Appendix F

Taxonomic Classification Levels and Number of Sample Stations

Appendix F Taxa Summary List - All Locations 2014

Lowest Taxa Identified	Taxonomic I.D. Level	Phylum	Class	Order	Family	Subfamily	Tribe	Genus	Species	# locations
Hirudinea	Subclass	Annelida	Hirudinea	Hirudinea						6
Oligochaeta	Subclass	Annelida	Oligochaeta	Oligochaeta						19
Acari	Subclass	Arachnida		Acari						23
Caecidotea	Genus	Crustacea	Malacostraca	Isopoda	Asellidae					8
Gammarus	Genus	Crustacea	Malacostraca	Amphipoda	Gammaridae					11
Valvata	Genus	Mollusca	Gastropoda		Valvatidae					11
Gyraulus	Genus	Mollusca	Gastropoda							2
Helisoma anceps	Species	Mollusca	Gastropoda							1
Promenetus										
exacuus	Species	Mollusca	Gastropoda							2
Physidae	Family	Mollusca	Gastropoda							2
Physella	Genus	Mollusca	Gastropoda							2
Dreissena polymorpha	Species	Mollusca	Bivalva		Veneroida		Dreissenidae	<i>Dreissena</i>		1
Sphaeriidae	Family	Mollusca	Bivalvia	Sphaeracea	Sphaeriidae					20
Galba	Genus	Mollusca	Gastropoda		Hygrophila		Lymnaeidae	<i>Galba</i>		1
Rissooidea	Class	Mollusca	Gastropoda	Rissooidea						9
Nemata	Phylum	Nematoda								15
Trepaxonemata	Class	Platyhelminthes	Trepaxonemata							6
Chaoborus	Genus			Diptera	Chaoboridae			<i>Chaoborus</i>		8
Ceratopogoninae	Subfamily			Diptera	Ceratopogonidae	Ceratopogoninae				8
Clinotanypus	Genus			Diptera	Chironomidae	Tanypodinae		<i>Clinotanypus</i>		4
Coelotanypus	Genus			Diptera	Chironomidae	Tanypodinae		<i>Coelotanypus</i>		4
Ablabesmyia	Genus			Diptera	Chironomidae	Tanypodinae		<i>Ablabesmyia</i>		14
Procladius	Genus			Diptera	Chironomidae	Tanypodinae		<i>Procladius</i>		21
Potthastia	Genus			Diptera	Chironomidae	Diametinae		<i>Potthastia</i>		1
Monodiamesa	Genus			Diptera	Chironomidae	Prodiamesinae		<i>Monodiamesa</i>		5
Orthoclaadiinae	Subfamily			Diptera	Chironomidae	Orthoclaadiinae				2
Cricotopus	Genus			Diptera	Chironomidae	Orthoclaadiinae		<i>Cricotopus</i>		6
Epoicocladus	Genus			Diptera	Chironomidae	Orthoclaadiinae		<i>Epoicocladus</i>		2
Parakiefferiella	Genus			Diptera	Chironomidae	Orthoclaadiinae		<i>Parakiefferiella</i>		1
Psectrocladius	Genus			Diptera	Chironomidae	Orthoclaadiinae		<i>Psectrocladius</i>		6
Chironomini	Tribe			Diptera	Chironomidae	Chironominae	Chironomini			2
Chironomus	Genus			Diptera	Chironomidae	Chironominae		<i>Chironomus</i>		17
Cladopelma	Genus			Diptera	Chironomidae	Chironominae		<i>Cladopelma</i>		3
Cryptochironomus	Genus			Diptera	Chironomidae	Chironominae		<i>Cryptochironomus</i>		5
Cryptotendipes	Genus			Diptera	Chironomidae	Chironominae		<i>Cryptotendipes</i>		7
Dicrotendipes	Genus			Diptera	Chironomidae	Chironominae		<i>Dicrotendipes</i>		8
Einfeldia	Genus			Diptera	Chironomidae	Chironominae		<i>Einfeldia</i>		3
Endochironomus	Genus			Diptera	Chironomidae	Chironominae		<i>Endochironomus</i>		3
Glyptotendipes	Genus			Diptera	Chironomidae	Chironominae		<i>Glyptotendipes</i>		8
Harnischia	Genus			Diptera	Chironomidae	Chironominae		<i>Harnischia</i>		4
Microchironomus	Genus			Diptera	Chironomidae	Chironominae		<i>Microchironomus</i>		2
Pagastiella	Genus			Diptera	Chironomidae	Chironominae		<i>Pagastiella</i>		1
Parachironomus	Genus			Diptera	Chironomidae	Chironominae		<i>Parachironomus</i>		7
Paralauterborniella nigrohalterale	Species			Diptera	Chironomidae	Chironominae		<i>Paralauterborniella nigrohalterale</i>		1
Phaenopsectra	Genus			Diptera	Chironomidae	Chironominae		<i>Phaenopsectra</i>		1
Polypedium	Genus			Diptera	Chironomidae	Chironominae		<i>Polypedium</i>		7
Stictochironomus	Genus			Diptera	Chironomidae	Chironominae		<i>Stictochironomus</i>		4
Tribelos	Genus			Diptera	Chironomidae	Chironominae		<i>Tribelos</i>		7
Tanytarsini	Tribe			Diptera	Chironomidae	Chironominae	Tanytarsini			7
Cladotanytarsus	Genus			Diptera	Chironomidae	Chironominae		<i>Cladotanytarsus</i>		5
Paratanytarsus	Genus			Diptera	Chironomidae	Chironominae		<i>Paratanytarsus</i>		1
Stempellina	Genus			Diptera	Chironomidae	Chironominae		<i>Stempellina</i>		6
Tanytarsus	Genus			Diptera	Chironomidae	Chironominae	Tanytarsini	<i>Tanytarsus</i>		17
Caenidae	Family			Ephemeroptera	Caenidae					1
Caenis	Genus			Ephemeroptera	Caenidae					9
Hexagenia	Genus			Ephemeroptera	Ephemeridae					14
Corixidae	Family			Hemiptera	Corixidae					1
Sialis	Genus			Megaloptera	Sialidae			<i>Sialis</i>		1
Anisoptera	Suborder			Odonota	(Anisoptera)					1
Coenagrionidae	Family			Odonota	Coenagrionidae					2
Phyllocentropus	Genus			Trichoptera	Polycentropodidae			<i>Phyllocentropus</i>		1
Orthotrichia	Genus			Trichoptera	Hydroptilidae			<i>Orthotrichia</i>		1
Phryganeidae	Family			Trichoptera	Phryganeidae					2
Phryganea	Genus			Trichoptera	Phryganeidae			<i>Phryganea</i>		2
Leptoceridae	Family			Trichoptera	Limnephiloidea					1
Oecetis	Genus			Trichoptera	Leptoceridae			<i>Oecetis</i>		10

Appendix F Taxa Summary List - All Locations 2016

Lowest Taxa Identified	Taxonomic I.D. Level	SubPhylum	Class	SubClass	Order	SubOrder	Family	SubFamily	Tribe	Genus	Species		# locations
Hirudinea	Subclass		Citellata	Hirudinea									3
Oligochaeta	Subclass		Citellata	Oligochaeta									28
Acari	Subclass	Chelicerata	Arachnida	Acari									15
Gammarus	Genus	Crustacea	Malacostraca	Eumalacostraca	Amphipoda	Gammaridea	Gammaridae			<i>Gammarus sp.</i>			1
Caecidotea	Genus	Crustacea	Malacostraca	Eumalacostraca	Isopoda	Asellota	Asellidae			<i>Caecidotea sp.</i>			4
Haliphus	Genus	Hexapoda	Insecta	Pterygota	Coleoptera	Adephaga	Halipidae			<i>Haliphus sp.</i>			1
Diptera	Order	Hexapoda	Insecta	Pterygota	Diptera								1
Ceratopogoninae	Subfamily	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Ceratopogonidae	Ceratopogoninae					50
Chaoboridae	Family	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chaoboridae						1
Chaoborus	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chaoboridae	Chaoborinae		<i>Chaoborus sp.</i>			2
Chironomini	Tribe	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini				4
Chironomus	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Chironomus sp.</i>			22
Cladopelma	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Cladopelma sp.</i>			4
Cryptochironomus	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Cryptochironomus sp.</i>			19
Cryptotendipes	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Cryptotendipes sp.</i>			3
Dicrotendipes	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Dicrotendipes sp.</i>			6
Einfeldia	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Einfeldia sp.</i>			9
Glyptotendipes	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Glyptotendipes sp.</i>			2
Harnischia	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Harnischia sp.</i>			6
Microchironomus	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Microchironomus sp.</i>			16
Microtendipes	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Microtendipes sp.</i>			1
Nilothauma	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Nilothauma sp.</i>			1
Pagastiella	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Pagastiella sp.</i>			23
Phaenopsectra	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Phaenopsectra sp.</i>			2
Polypedilum	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Polypedilum sp.</i>			15
Stictochironomus	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Stictochironomus sp.</i>			3
Tribelos	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Chironomini	<i>Tribelos sp.</i>			13
Stempellina	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Tanytarsini	<i>Stempellina sp.</i>			4
Tanytarsus	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Chironominae	Tanytarsini	<i>Tanytarsus sp.</i>			7
Orthoclaadiinae	Subfamily	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Orthoclaadiinae					1
Cricotopus	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Orthoclaadiinae		<i>Cricotopus sp.</i>			1
Epoicocladius	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Orthoclaadiinae		<i>Epoicocladius sp.</i>			15
Parakiefferiella	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Orthoclaadiinae		<i>Parakiefferiella sp.</i>			1
Monodiamesa	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Prodiamesinae		<i>Monodiamesa sp.</i>			5
Clinotanypus	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Tanypodinae	Coelotanypodini	<i>Clinotanypus sp.</i>			10
Coelotanypus	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Tanypodinae	Coelotanypodini	<i>Coelotanypus sp.</i>			23
Thienemannimyia Gr.	Species Group	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Tanypodinae	Pentaneurini				1
Ablabesmyia	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Tanypodinae	Pentaneurini	<i>Ablabesmyia sp.</i>			9
Procladius	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Tanypodinae	Procladiini	<i>Procladius sp.</i>			46
Tanypus	Genus	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	Tanypodinae	Tanypodini	<i>Tanypus sp.</i>			1
Caenis	Genus	Hexapoda	Insecta	Pterygota	Ephemeroptera	Furcatergalia	Caenidae	Caeninae		<i>Caenis sp.</i>			6
Hexagenia	Genus	Hexapoda	Insecta	Pterygota	Ephemeroptera	Furcatergalia	Ephemeridae			<i>Hexagenia sp.</i>			29
Sialis	Genus	Hexapoda	Insecta	Pterygota	Megaloptera		Sialidae			<i>Sialis sp.</i>			2
Dipseudopsidae	Family	Hexapoda	Insecta	Pterygota	Trichoptera		Dipseudopsidae						1
Phylocentropus	Genus	Hexapoda	Insecta	Pterygota	Trichoptera		Dipseudopsidae	Hyalopsychinae		<i>Phylocentropus sp.</i>			6
Leptoceridae	Family	Hexapoda	Insecta	Pterygota	Trichoptera		Leptoceridae						3
Oecetis	Genus	Hexapoda	Insecta	Pterygota	Trichoptera		Leptoceridae	Leptocerinae	Oecetini	<i>Oecetis sp.</i>			4
Dreissena polymorpha	Species		Bivalvia	Heterodonta	Veneroida		Dreissenidae			<i>Dreissena polymorpha</i>			1
Sphaeriidae	Family		Bivalvia	Heterodonta	Veneroida		Sphaeriidae						39
Unionidae	Family		Bivalvia	Palaeoheterodonta	Unionoida		Unionidae						3
Rissooidea	Class		Gastropoda										11
Helisoma anceps	Species		Gastropoda		Basommatophora		Planorbidae			<i>Helisoma anceps</i>			1
Valvata	Genus		Gastropoda		Heterostrophata		Valvatidae			<i>Valvata sp.</i>			7
Nemata	Phylum												30
Trepaxonemata	Class	Rhabditophora	Trepaxonemata										1

Appendix G

2014 and 2016 Benthic Data Comparison

Appendix G - 2014 and 2016 Data Comparison - North Bay
SLRIDT, Duluth, MN

2014				
Sample Location	Taxa	Sum of Count	Sum of No./Area	Density (#/m2)
NB-AA-01-N		168	2,424	35,130
	Acari	8	115	1,667
	Caecidotea	53	765	11,087
	Ceratopogoninae	1	14	203
	Clinotanypus	1	14	203
	Coenagrionidae	3	43	623
	Cricotopus	5	72	1,043
	Dicrotendipes	1	14	203
	Endochironomus	13	188	2,725
	Gammarus	46	664	9,623
	Hirudinea	2	29	420
	Nemata	4	58	841
	Oecetis	2	29	420
	Oligochaeta	6	87	1,261
	Phryganea	1	14	203
	Phylocentropus	1	14	203
	Physella	10	144	2,087
	Procladius	5	72	1,043
	Psectrocladius	1	14	203
	Rissooidea	1	14	203
	Sphaeriidae	2	29	420
	Tanytarsini	1	14	203
	Trepaxonemata	1	14	203
NB-AA-01-C				
NB-AA-01-S		68	981	14,217
	Acari	1	14	203
	Caecidotea	22	317	4,594
	Ceratopogoninae	1	14	203
	Dicrotendipes	1	14	203
	Gammarus	9	130	1,884
	Oecetis	4	58	841
	Oligochaeta	5	72	1,043
	Physella	2	29	420
	Procladius	1	14	203
	Sphaeriidae	18	260	3,768
	Trepaxonemata	1	14	203
	Valvata	3	43	623
NB-AA-02-N		34	491	7,116
	Acari	2	29	420
	Coelotanypus	1	14	203
	Hirudinea	1	14	203
	Procladius	1	14	203
	Sialis	1	14	203
	Sphaeriidae	22	317	4,594
	Tanytarsini	1	14	203
	Valvata	5	72	1,043
NB-AA-02-S		28	404	5,855
	Caecidotea	5	72	1,043
	Chironomus	1	14	203
	Cricotopus	1	14	203
	Gammarus	3	43	623
	Hirudinea	1	14	203
	Oligochaeta	3	43	623
	Parachironomus	1	14	203
	Physella	1	14	203
	Procladius	1	14	203
	Prometetus exacuuous	1	14	203
	Rissooidea	3	43	623
	Sphaeriidae	5	72	1,043
	Tanytarsus	2	29	420
NB-AA-02-C				
NB-AA-03-N		104	1,500	21,739
	Acari	1	14	203
	Ceratopogoninae	1	14	203
	Chironomus	1	14	203

2016				
Sample Location	Taxa	Sum of Count	Sum of No./Area	Density (#/m2)
NB-AA-01-N		5	72	1,045
	Ceratopogoninae	2	29	418
	Einfeldia	3	43	627
NB-AA-01-C		33	476	6,900
	Ceratopogoninae	4	58	836
	Clinotanypus	1	14	209
	Coelotanypus	1	14	209
	Einfeldia	8	115	1,673
	Helisoma anceps	1	14	209
	Procladius	1	14	209
	Sphaeriidae	16	231	3,346
	Valvata	1	14	209
NB-AA-01-S		43	620	8,991
	Caecidotea	7	101	1,464
	Ceratopogoninae	6	87	1,255
	Clinotanypus	1	14	209
	Hirudinea	1	14	209
	Nemata	1	14	209
	Phylocentropus	2	29	418
	Procladius	1	14	209
	Rissooidea	3	43	627
	Sphaeriidae	21	303	4,391
NB-AA-02-N		7	101	1,464
	Einfeldia	2	29	418
	Sphaeriidae	5	72	1,045
NB-AA-02-S		88	1270	18,400
	Ablabesmyia	1	14	209
	Acari	2	29	418
	Caenis	2	29	418
	Ceratopogoninae	11	159	2,300
	Clinotanypus	4	58	836
	Einfeldia	8	115	1,673
	Hexagenia	1	14	209
	Nemata	33	476	6,900
	Oecetis	2	29	418
	Oligochaeta	2	29	418
	Procladius	8	115	1,673
	Sphaeriidae	12	173	2,509
	Trepaxonemata	1	14	209
	Valvata	1	14	209
NB-AA-02-C		72	1039	15,055
	Acari	1	14	209
	Coelotanypus	6	87	1,255
	Cryptochironomus	1	14	209
	Leptoceridae	1	14	209
	Microchironomus	1	14	209
	Nemata	3	43	627
	Nilothauma	1	14	209
	Oligochaeta	2	29	418
	Pagastiella	2	29	418
	Phylocentropus	2	29	418
	Polypedilum	2	29	418
	Procladius	11	159	2,300
	Sphaeriidae	38	548	7,946
	Tanytarsus	1	14	209
NB-AA-03-N		23	332	4,809
	Ceratopogoninae	1	14	209
	Coelotanypus	4	58	836
	Einfeldia	2	29	418

Appendix G - 2014 and 2016 Data Comparison - North Bay SLRIDT, Duluth, MN

2014				
Sample Location	Taxa	Sum of Count	Sum of No./Area	Density (#/m2)
	<i>Coenagrionidae</i>	1	14	203
	<i>Cryptotendipes</i>	1	14	203
	<i>Gammarus</i>	1	14	203
	<i>Oligochaeta</i>	18	260	3,768
	<i>Procladius</i>	9	130	1,884
	<i>Sphaeriidae</i>	64	923	13,377
	<i>Tanytarsus</i>	3	43	623
	<i>Valvata</i>	4	58	841
NB-AA-03-C				
NB-AA-03-S		270	3,895	56,449
	<i>Ablabesmyia</i>	2	29	420
	<i>Acari</i>	12	173	2,507
	<i>Caecidotea</i>	5	72	1,043
	<i>Ceratopogoninae</i>	1	14	203
	<i>Chironomus</i>	1	14	203
	<i>Cladotanytarsus</i>	2	29	420
	<i>Clinotanypus</i>	6	87	1,261
	<i>Cryptotendipes</i>	5	72	1,043
	<i>Dicrotendipes</i>	22	317	4,594
	<i>Einfeldia</i>	3	43	623
	<i>Endochironomus</i>	1	14	203
	<i>Gammarus</i>	12	173	2,507
	<i>Glyptotendipes</i>	2	29	420
	<i>Helisoma anceps</i>	1	14	203
	<i>Nemata</i>	20	289	4,188
	<i>Oecetis</i>	5	72	1,043
	<i>Oligochaeta</i>	20	289	4,188
	<i>Pagastiella</i>	1	14	203
	<i>Parachironomus</i>	2	29	420
	<i>Phryganeidae</i>	1	14	203
	<i>Physidae</i>	1	14	203
	<i>Polypedilum</i>	2	29	420
	<i>Procladius</i>	82	1,183	17,145
	<i>Psectrocladius</i>	2	29	420
	<i>Rissooidea</i>	1	14	203
	<i>Sphaeriidae</i>	8	115	1,667
	<i>Stictochironomus</i>	1	14	203
	<i>Tanytarsini</i>	2	29	420
	<i>Tanytarsus</i>	34	491	7,116
	<i>Trepaxonemata</i>	4	58	841
	<i>Tribelos</i>	9	130	1,884
NB-AA-04-C		55	794	11,507
	<i>Ablabesmyia</i>	1	14	203
	<i>Caenis</i>	1	14	203
	<i>Clinotanypus</i>	1	14	203
	<i>Corixidae</i>	1	14	203
	<i>Cryptotendipes</i>	1	14	203
	<i>Dicrotendipes</i>	1	14	203
	<i>Einfeldia</i>	3	43	623
	<i>Harnischia</i>	1	14	203
	<i>Nemata</i>	2	29	420
	<i>Oecetis</i>	1	14	203
	<i>Oligochaeta</i>	5	72	1,043
	<i>Procladius</i>	24	346	5,014
	<i>Sphaeriidae</i>	1	14	203
	<i>Tanytarsini</i>	2	29	420
	<i>Tanytarsus</i>	5	72	1,043
	<i>Tribelos</i>	5	72	1,043
NB-AA-04-S		114	1,645	23,841
	<i>Ablabesmyia</i>	1	14	203
	<i>Acari</i>	6	87	1,261
	<i>Caecidotea</i>	8	115	1,667
	<i>Cricotopus</i>	5	72	1,043
	<i>Dicrotendipes</i>	1	14	203
	<i>Einfeldia</i>	1	14	203
	<i>Gammarus</i>	2	29	420
	<i>Nemata</i>	4	58	841
	<i>Oecetis</i>	2	29	420
	<i>Oligochaeta</i>	1	14	203
	<i>Parachironomus</i>	1	14	203
	<i>Physella</i>	1	14	203
	<i>Procladius</i>	11	159	2,304
	<i>Promenetus exacuous</i>	1	14	203
	<i>Psectrocladius</i>	5	72	1,043
	<i>Rissooidea</i>	3	43	623
	<i>Sphaeriidae</i>	54	779	11,290

2016				
Sample Location	Taxa	Sum of Count	Sum of No./Area	Density (#/m2)
	<i>Procladius</i>	1	14	209
	<i>Sphaeriidae</i>	14	202	2,927
	<i>Valvata</i>	1	14	209
NB-AA-03-C		128	1847	26,764
	<i>Caenis</i>	1	14	209
	<i>Ceratopogoninae</i>	6	87	1,255
	<i>Clinotanypus</i>	1	14	209
	<i>Coelotanypus</i>	18	260	3,764
	<i>Microchironomus</i>	2	29	418
	<i>Nemata</i>	5	72	1,045
	<i>Oligochaeta</i>	37	534	7,736
	<i>Pagastiella</i>	1	14	209
	<i>Phylocentropus</i>	2	29	418
	<i>Procladius</i>	15	216	3,136
	<i>Sphaeriidae</i>	39	563	8,155
	<i>Tanytarsus</i>	1	14	209
NB-AA-03-S		27	390	5,646
	<i>Acari</i>	1	14	209
	<i>Caecidotea</i>	1	14	209
	<i>Ceratopogoninae</i>	3	43	627
	<i>Einfeldia</i>	11	159	2,300
	<i>Procladius</i>	1	14	209
	<i>Rissooidea</i>	4	58	836
	<i>Sphaeriidae</i>	6	87	1,255
NB-AA-04-C		65	938	13,591
	<i>Ceratopogoninae</i>	11	159	2,300
	<i>Clinotanypus</i>	2	29	418
	<i>Coelotanypus</i>	4	58	836
	<i>Cricotopus</i>	1	14	209
	<i>Einfeldia</i>	1	14	209
	<i>Glyptotendipes</i>	1	14	209
	<i>Hexagenia</i>	1	14	209
	<i>Nemata</i>	3	43	627
	<i>Oecetis</i>	1	14	209
	<i>Phylocentropus</i>	1	14	209
	<i>Polypedilum</i>	2	29	418
	<i>Procladius</i>	1	14	209
	<i>Rissooidea</i>	1	14	209
	<i>Sialis</i>	1	14	209
	<i>Sphaeriidae</i>	34	491	7,109
NB-AA-04-S		202	2914	42,237
	<i>Acari</i>	1	14	209
	<i>Caecidotea</i>	14	202	2,927
	<i>Caenis</i>	2	29	418
	<i>Ceratopogoninae</i>	18	260	3,764
	<i>Chironomini</i>	2	29	418
	<i>Clinotanypus</i>	3	43	627
	<i>Cryptochironomus</i>	1	14	209
	<i>Dipseudopsidae</i>	1	14	209
	<i>Einfeldia</i>	38	548	7,946
	<i>Gammarus</i>	1	14	209
	<i>Glyptotendipes</i>	2	29	418
	<i>Hirudinea</i>	3	43	627
	<i>Nemata</i>	25	361	5,227
	<i>Oecetis</i>	1	14	209
	<i>Oligochaeta</i>	6	87	1,255
	<i>Phaenopsectra</i>	1	14	209
	<i>Phylocentropus</i>	1	14	209

Appendix G - 2014 and 2016 Data Comparison - North Bay
SLRIDT, Duluth, MN

2014				
Sample Location	Taxa	Sum of Count	Sum of No./Area	Density (#/m2)
	<i>Tanytarsus</i>	5	72	1,043
	<i>Trepaxonemata</i>	1	14	203
	<i>Valvata</i>	1	14	203
NB-AA-04-N				

2016				
Sample Location	Taxa	Sum of Count	Sum of No./Area	Density (#/m2)
	<i>Polypedilum</i>	2	29	418
	<i>Procladius</i>	6	87	1,255
	<i>Rissooidea</i>	12	173	2,509
	<i>Sphaeriidae</i>	62	895	12,964
NB-AA-04-N		38	548	7,946
	<i>Acari</i>	3	43	627
	<i>Ceratopogoninae</i>	3	43	627
	<i>Clinotanypus</i>	3	43	627
	<i>Coelotanypus</i>	2	29	418
	<i>Hexagenia</i>	1	14	209
	<i>Procladius</i>	5	72	1,045
	<i>Sphaeriidae</i>	18	260	3,764
	<i>Stictochironomus</i>	1	14	209
	<i>Tribelos</i>	1	14	209
	<i>Valvata</i>	1	14	209

Table XX - 2014 and 2016 Data Comparison - Stryker Bay
SLRIDT, Duluth, MN

2014				
Sample Location	Taxa	Sum of Count	Sum of No./Area	Density (#/m2)
SB-AA-03-C				
SB-AA-03-E		89	1,284	18,609
	<i>Ablabesmyia</i>	3	43	623
	<i>Acari</i>	4	58	841
	<i>Caenis</i>	4	58	841
	<i>Chironomus</i>	4	58	841
	<i>Cladotanytarsus</i>	3	43	623
	<i>Coelotanypus</i>	3	43	623
	<i>Cryptochironomus</i>	1	14	203
	<i>Cryptotendipes</i>	1	14	203
	<i>Glyptotendipes</i>	1	14	203
	<i>Harnischia</i>	2	29	420
	<i>Hexagenia</i>	3	43	623
	<i>Leptoceridae</i>	1	14	203
	<i>Oecetis</i>	2	29	420
	<i>Oligochaeta</i>	4	58	841
	<i>Parachironomus</i>	1	14	203
	<i>Polypedilum</i>	3	43	623
	<i>Procladius</i>	27	390	5,652
	<i>Rissooidea</i>	4	58	841
	<i>Sphaeriidae</i>	7	101	1,464
	<i>Tanytarsini</i>	11	159	2,304
SB-AA-04-W				
SB-AA-04-C				
SB-AA-04-E				
SB-AA-05-W				
SB-AA-05-C				
SB-AA-05-E		7	101	1,464
	<i>Acari</i>	2	29	420
	<i>Hexagenia</i>	2	29	420
	<i>Sphaeriidae</i>	3	43	623
SB-AA-06-W				

2016				
Sample Location	Taxa	Sum of Count	Sum of No./Area	Density (#/m2)
	<i>Sphaeriidae</i>	12	173	2,509
SB-AA-03-C		24	346	5,018
	<i>Acari</i>	1	14	209
	<i>Ceratopogoninae</i>	2	29	418
	<i>Coelotanypus</i>	1	14	209
	<i>Cryptochironomus</i>	4	58	836
	<i>Procladius</i>	3	43	627
	<i>Sphaeriidae</i>	13	188	2,718
SB-AA-03-E		9	130	1,882
	<i>Ceratopogoninae</i>	6	87	1,255
	<i>Cladopelma</i>	1	14	209
	<i>Nemata</i>	1	14	209
	<i>Sphaeriidae</i>	1	14	209
SB-AA-04-W		23	332	4,809
	<i>Ceratopogoninae</i>	5	72	1,045
	<i>Chironomus</i>	2	29	418
	<i>Cryptochironomus</i>	1	14	209
	<i>Nemata</i>	1	14	209
	<i>Oligochaeta</i>	4	58	836
	<i>Pagastiella</i>	1	14	209
	<i>Sphaeriidae</i>	9	130	1,882
SB-AA-04-C		101	1457	21,119
	<i>Acari</i>	1	14	209
	<i>Ceratopogoninae</i>	2	29	418
	<i>Chironomus</i>	1	14	209
	<i>Cladopelma</i>	1	14	209
	<i>Cryptochironomus</i>	2	29	418
	<i>Oligochaeta</i>	84	1212	17,564
	<i>Procladius</i>	1	14	209
	<i>Sphaeriidae</i>	9	130	1,882
SB-AA-04-E		22	317	4,600
	<i>Ceratopogoninae</i>	3	43	627
	<i>Coelotanypus</i>	2	29	418
	<i>Dicrotendipes</i>	2	29	418
	<i>Dreissena polymorpha</i>	1	14	209
	<i>Microtendipes</i>	1	14	209
	<i>Monodiamesa</i>	3	43	627
	<i>Nemata</i>	1	14	209
	<i>Rissooidea</i>	1	14	209
	<i>Tribelos</i>	7	101	1,464
	<i>Valvata</i>	1	14	209
SB-AA-05-W		9	130	1,882
	<i>Acari</i>	1	14	209
	<i>Ceratopogoninae</i>	1	14	209
	<i>Microchironomus</i>	1	14	209
	<i>Nemata</i>	3	43	627
	<i>Polypedilum</i>	1	14	209
	<i>Procladius</i>	2	29	418
SB-AA-05-C		4	58	836
	<i>Ceratopogoninae</i>	2	29	418
	<i>Sphaeriidae</i>	2	29	418
SB-AA-05-E		35	505	7,318
	<i>Ceratopogoninae</i>	3	43	627
	<i>Coelotanypus</i>	2	29	418
	<i>Haliplus</i>	1	14	209
	<i>Microchironomus</i>	1	14	209
	<i>Nemata</i>	5	72	1,045
	<i>Oligochaeta</i>	1	14	209
	<i>Pagastiella</i>	4	58	836
	<i>Procladius</i>	14	202	2,927
	<i>Stempellina</i>	2	29	418
	<i>Tribelos</i>	1	14	209
	<i>Unionidae</i>	1	14	209
SB-AA-06-W		11	159	2,300
	<i>Ceratopogoninae</i>	2	29	418
	<i>Cryptochironomus</i>	1	14	209
	<i>Hexagenia</i>	3	43	627
	<i>Oligochaeta</i>	2	29	418
	<i>Pagastiella</i>	1	14	209
	<i>Procladius</i>	1	14	209
	<i>Stictochironomus</i>	1	14	209

Table XX - 2014 and 2016 Data Comparison - Stryker Bay
SLRIDT, Duluth, MN

2014				
Sample Location	Taxa	Sum of Count	Sum of No./Area	Density (#/m2)
SB-AA-06-C				
SB-AA-06-E		19	274	3,971
	Acari	1	14	203
	Epoicocladius	1	14	203
	Hexagenia	1	14	203
	Nemata	1	14	203
	Oligochaeta	7	101	1,464
	Parachironomus	1	14	203
	Procladius	6	87	1,261
	Tribelos	1	14	203

2016				
Sample Location	Taxa	Sum of Count	Sum of No./Area	Density (#/m2)
SB-AA-06-C		8	115	1,673
	Nemata	7	101	1,464
	Sphaeriidae	1	14	209
SB-AA-06-E		9	130	1,882
	Chironomini	1	14	209
	Coelotanypus	1	14	209
	Hexagenia	3	43	627
	Pagastiella	1	14	209
	Procladius	1	14	209
	Tribelos	2	29	418

[illegible]

2016				
Sample Location	Taxa	Sum of Count	Sum of No./Area	Density (#/m2)
S6-AA-01-W		119	1717	24,882
	<i>Ceratopogoninae</i>	3	43	627
	<i>Chaoboridae</i>	1	14	209
	<i>Chironomus</i>	2	29	418
	<i>Cryptochironomus</i>	3	43	627
	<i>Dicratendipes</i>	1	14	209
	<i>Oligochaeta</i>	104	1500	21,746
	<i>Procladius</i>	4	58	836
	<i>Rissooidea</i>	1	14	209
S6-AA-01-C		99	1428	20,700
	<i>Ceratopogoninae</i>	1	14	209
	<i>Chironomus</i>	2	29	418
	<i>Oligochaeta</i>	96	1385	20,073
S6-AA-01-E		15	216	3,136
	<i>Chironomus</i>	3	43	627
	<i>Cladopelma</i>	1	14	209
	<i>Cryptotendipes</i>	1	14	209
	<i>Dicratendipes</i>	1	14	209
	<i>Harnischia</i>	1	14	209
	<i>Hexagenia</i>	3	43	627
	<i>Microchironomus</i>	1	14	209
	<i>Pagastiella</i>	2	29	418
	<i>Procladius</i>	2	29	418
S6-AA-02-W		103	1486	21,537
	<i>Ablabesmyia</i>	1	14	209
	<i>Chironomus</i>	5	72	1,045
	<i>Coelotanypus</i>	4	58	836
	<i>Cryptochironomus</i>	1	14	209
	<i>Dicratendipes</i>	1	14	209
	<i>Epoicocladus</i>	2	29	418
	<i>Hexagenia</i>	9	130	1,882
	<i>Microchironomus</i>	2	29	418
	<i>Oligochaeta</i>	31	447	6,482
	<i>Pagastiella</i>	12	173	2,509
	<i>Pagastiella</i>	4	58	836
	<i>Parakiefferiella</i>	1	14	209
	<i>Phyllocentropus</i>	1	14	209
	<i>Polypedium</i>	1	14	209
	<i>Procladius</i>	21	303	4,391
	<i>Sphaeriidae</i>	2	29	418
	<i>Stempellina</i>	1	14	209
	<i>Tanytarsus</i>	4	58	836
S6-AA-02-C		74	1068	15,473
	<i>Acari</i>	1	14	209
	<i>Ceratopogoninae</i>	5	72	1,045
	<i>Chaoborus</i>	1	14	209
	<i>Coelotanypus</i>	2	29	418
	<i>Epoicocladus</i>	2	29	418
	<i>Hexagenia</i>	3	43	627
	<i>Microchironomus</i>	7	101	1,464
	<i>Nemata</i>	2	29	418
	<i>Oligochaeta</i>	11	159	2,300
	<i>Pagastiella</i>	5	72	1,045
	<i>Polypedium</i>	3	43	627
	<i>Procladius</i>	14	202	2,927
	<i>Sphaeriidae</i>	17	245	3,555
	<i>Tanytarsus</i>	1	14	209
S6-AA-02-E		10	144	2,091
	<i>Ceratopogoninae</i>	4	58	836
	<i>Chironomus</i>	2	29	418
	<i>Hexagenia</i>	1	14	209
	<i>Monodiamesa</i>	1	14	209
	<i>Polypedium</i>	1	14	209
	<i>Procladius</i>	1	14	209
S6-AA-03-W		27	390	5,646
	<i>Ablabesmyia</i>	1	14	209
	<i>Ceratopogoninae</i>	1	14	209
	<i>Chironomini</i>	1	14	209
	<i>Cryptochironomus</i>	1	14	209
	<i>Epoicocladus</i>	1	14	209
	<i>Hexagenia</i>	4	58	836
	<i>Microchironomus</i>	2	29	418
	<i>Oligochaeta</i>	6	87	1,255
	<i>Procladius</i>	6	87	1,255
	<i>Sphaeriidae</i>	4	58	836
S6-AA-03-C		36	519	7,527
	<i>Ablabesmyia</i>	1	14	209
	<i>Chaoborus</i>	1	14	209
	<i>Cryptochironomus</i>	3	43	627

	<i>Valvata</i>	2	29	420
S6-AA-04-W		49	707	10,246
	<i>Acari</i>	3	43	623
	<i>Caenis</i>	1	14	203
	<i>Chaoborus</i>	2	29	420
	<i>Chironomus</i>	3	43	623
	<i>Cladopelma</i>	1	14	203
	<i>Endochironomus</i>	1	14	203
	<i>Nemata</i>	2	29	420
	<i>Oligochaeta</i>	18	260	3,768
	<i>Procladius</i>	17	245	3,551
	<i>Sphaeriidae</i>	1	14	203
S6-AA-04-C		64	923	13,377
	<i>Ablabesmyia</i>	2	29	420
	<i>Acari</i>	4	58	841
	<i>Caenis</i>	5	72	1,043
	<i>Chaoborus</i>	1	14	203
	<i>Chironomus</i>	33	476	6,899
	<i>Epoicocladius</i>	1	14	203
	<i>Hexagenia</i>	1	14	203
	<i>Microchironomus</i>	1	14	203
	<i>Paratanytarsus</i>	1	14	203
	<i>Procladius</i>	8	115	1,667
	<i>Sphaeriidae</i>	2	29	420
	<i>Tanytarsus</i>	2	29	420
	<i>Tribelos</i>	2	29	420
	<i>Valvata</i>	1	14	203
S6-AA-05-W		131	1,890	27,391
	<i>Ablabesmyia</i>	2	29	420
	<i>Acari</i>	1	14	203
	<i>Caenis</i>	4	58	841
	<i>Chaoborus</i>	2	29	420
	<i>Chironomus</i>	47	678	9,826
	<i>Coelotanypus</i>	1	14	203
	<i>Cryptochironomus</i>	3	43	623
	<i>Glyptotendipes</i>	8	115	1,667
	<i>Hexagenia</i>	2	29	420
	<i>Nemata</i>	1	14	203
	<i>Oligochaeta</i>	8	115	1,667
	<i>Paralauterborniella nigrohalterale</i>	1	14	203
	<i>Procladius</i>	30	433	6,275
	<i>Sphaeriidae</i>	1	14	203
	<i>Stempellina</i>	1	14	203
	<i>Tanytarsus</i>	16	231	3,348
	<i>Tribelos</i>	2	29	420
	<i>Valvata</i>	1	14	203
S6-AA-05-C		77	1,111	16,101
	<i>Ablabesmyia</i>	3	43	623
	<i>Acari</i>	4	58	841
	<i>Chaoborus</i>	2	29	420
	<i>Chironomus</i>	38	548	7,942
	<i>Coelotanypus</i>	2	29	420
	<i>Glyptotendipes</i>	2	29	420
	<i>Hexagenia</i>	2	29	420
	<i>Microchironomus</i>	2	29	420
	<i>Nemata</i>	2	29	420
	<i>Oligochaeta</i>	5	72	1,043
	<i>Orthocladinae</i>	1	14	203
	<i>Polypedium</i>	1	14	203
	<i>Procladius</i>	9	130	1,884
	<i>Stempellina</i>	1	14	203
	<i>Tanytarsus</i>	3	43	623
S6-AA-05-E		20	289	4,188
	<i>Ablabesmyia</i>	1	14	203
	<i>Acari</i>	5	72	1,043
	<i>Chironomus</i>	9	130	1,884
	<i>Coelotanypus</i>	1	14	203
	<i>Oecetis</i>	1	14	203
	<i>Phryganeidae</i>	1	14	203
	<i>Sphaeriidae</i>	1	14	203
	<i>Valvata</i>	1	14	203
S6-AA-06-W		102	1,472	21,333
	<i>Ablabesmyia</i>	1	14	203

S6-AA-03-E		17	245	3,555
	<i>Ceratopogoninae</i>	1	14	209
	<i>Cryptochironomus</i>	2	29	418
	<i>Hexagenia</i>	3	43	627
	<i>Oligochaeta</i>	2	29	418
	<i>Procladius</i>	4	58	836
	<i>Sphaeriidae</i>	5	72	1,045
S6-AA-04-W		17	245	3,555
	<i>Chironomus</i>	3	43	627
	<i>Cryptochironomus</i>	1	14	209
	<i>Epoicocladius</i>	1	14	209
	<i>Hexagenia</i>	3	43	627
	<i>Oligochaeta</i>	3	43	627
	<i>Procladius</i>	1	14	209
	<i>Sphaeriidae</i>	5	72	1,045
S6-AA-04-C		244	3520	51,019
	<i>Ceratopogoninae</i>	2	29	418
	<i>Chironomus</i>	2	29	418
	<i>Cryptochironomus</i>	1	14	209
	<i>Epoicocladius</i>	2	29	418
	<i>Harnischia</i>	1	14	209
	<i>Hexagenia</i>	2	29	418
	<i>Microchironomus</i>	5	72	1,045
	<i>Nemata</i>	3	43	627
	<i>Oligochaeta</i>	201	2900	42,028
	<i>Phaenopsectra</i>	1	14	209
	<i>Polypedium</i>	1	14	209
	<i>Procladius</i>	17	245	3,555
	<i>Sphaeriidae</i>	5	72	1,045
	<i>Tanytarsus</i>	1	14	209
S6-AA-04-E		18	260	3,764
	<i>Ceratopogoninae</i>	1	14	209
	<i>Chironomus</i>	1	14	209
	<i>Epoicocladius</i>	1	14	209
	<i>Hexagenia</i>	5	72	1,045
	<i>Polypedium</i>	2	29	418
	<i>Procladius</i>	3	43	627
	<i>Sphaeriidae</i>	5	72	1,045
S6-AA-05-W		122	1760	25,510
	<i>Ablabesmyia</i>	1	14	209
	<i>Acari</i>	1	14	209
	<i>Ceratopogoninae</i>	2	29	418
	<i>Chironomus</i>	3	43	627
	<i>Chironomus</i>	1	14	209
	<i>Coelotanypus</i>	12	173	2,509
	<i>Cryptochironomus</i>	1	14	209
	<i>Diptera</i>	1	14	209
	<i>Epoicocladius</i>	1	14	209
	<i>Hexagenia</i>	5	72	1,045
	<i>Microchironomus</i>	1	14	209
	<i>Nemata</i>	33	476	6,900
	<i>Oligochaeta</i>	15	216	3,136
	<i>Pagastella</i>	27	390	5,646
	<i>Polypedium</i>	1	14	209
	<i>Procladius</i>	6	87	1,255
	<i>Rissoidae</i>	1	14	209
	<i>Sphaeriidae</i>	8	115	1,673
	<i>Stempellina</i>	1	14	209
	<i>Valvata</i>	1	14	209
S6-AA-05-C		30	433	6,273
	<i>Ablabesmyia</i>	1	14	209
	<i>Ceratopogoninae</i>	2	29	418
	<i>Coelotanypus</i>	2	29	418
	<i>Cryptochironomus</i>	1	14	209
	<i>Hexagenia</i>	1	14	209
	<i>Nemata</i>	7	101	1,464
	<i>Pagastella</i>	3	43	627
	<i>Procladius</i>	2	29	418
	<i>Sphaeriidae</i>	11	159	2,300
S6-AA-05-E		22	317	4,600
	<i>Ablabesmyia</i>	1	14	209
	<i>Ceratopogoninae</i>	3	43	627
	<i>Chironomus</i>	2	29	418
	<i>Coelotanypus</i>	4	58	836
	<i>Epoicocladius</i>	1	14	209
	<i>Hexagenia</i>	3	43	627
	<i>Nemata</i>	1	14	209
	<i>Sphaeriidae</i>	6	87	1,255
	<i>Tribelos</i>	1	14	209
S6-AA-06-W		9	130	1,882
	<i>Ceratopogoninae</i>	3	43	627

	<i>Acari</i>	4	58	841
	<i>Chaoborus</i>	2	29	420
	<i>Chironomus</i>	50	721	10,449
	<i>Cladopelma</i>	1	14	203
	<i>Cladotanytarsus</i>	1	14	203
	<i>Clinotanypus</i>	2	29	420
	<i>Hexagenia</i>	11	159	2,304
	<i>Monodiamesa</i>	1	14	203
	<i>Nemata</i>	2	29	420
	<i>Oligochaeta</i>	1	14	203
	<i>Procladius</i>	15	216	3,130
	<i>Rissooidea</i>	2	29	420
	<i>Stempellina</i>	1	14	203
	<i>Stictochironomus</i>	2	29	420
	<i>Tanytarsus</i>	4	58	841
	<i>Tribelos</i>	2	29	420
S6-AA-06-C		90	1,298	18,812
	<i>Ablabesmyia</i>	1	14	203
	<i>Acari</i>	6	87	1,261
	<i>Chironomus</i>	27	390	5,652
	<i>Cladotanytarsus</i>	1	14	203
	<i>Glyptotendipes</i>	12	173	2,507
	<i>Hexagenia</i>	8	115	1,667
	<i>Hirudinea</i>	1	14	203
	<i>Nemata</i>	4	58	841
	<i>Oligochaeta</i>	2	29	420
	<i>Orthoclaadiinae</i>	1	14	203
	<i>Parakiefferiella</i>	1	14	203
	<i>Polypedilum</i>	1	14	203
	<i>Potthastia</i>	2	29	420
	<i>Procladius</i>	10	144	2,087
	<i>Psectrocladius</i>	1	14	203
	<i>Rissooidea</i>	1	14	203
	<i>Sphaeriidae</i>	1	14	203
	<i>Stictochironomus</i>	1	14	203
	<i>Tanytarsus</i>	9	130	1,884
S6-AA-06-E		7	101	1,464
	<i>Acari</i>	1	14	203
	<i>Ceratopogoninae</i>	1	14	203
	<i>Chironomus</i>	2	29	420
	<i>Hirudinea</i>	1	14	203
	<i>Valvata</i>	2	29	420
S6-AA-07-W		44	635	9,203
	<i>Ablabesmyia</i>	2	29	420
	<i>Acari</i>	3	43	623
	<i>Anisoptera</i>	1	14	203
	<i>Chironomus</i>	4	58	841
	<i>Cricotopus</i>	2	29	420
	<i>Dicortendipes</i>	1	14	203
	<i>Gammarus</i>	1	14	203
	<i>Hexagenia</i>	2	29	420
	<i>Nemata</i>	2	29	420
	<i>Oecetis</i>	1	14	203
	<i>Oligochaeta</i>	1	14	203
	<i>Parachironomus</i>	4	58	841
	<i>Polypedilum</i>	2	29	420
	<i>Procladius</i>	9	130	1,884
	<i>Psectrocladius</i>	3	43	623
	<i>Sphaeriidae</i>	1	14	203
	<i>Stempellina</i>	3	43	623
	<i>Tanytarsus</i>	2	29	420
S6-AA-07-C		5	72	1,043
	<i>Chironomus</i>	1	14	203
	<i>Cladopelma</i>	1	14	203
	<i>Hexagenia</i>	2	29	420
	<i>Nemata</i>	1	14	203
S6-AA-07-E		19	274	3,971
	<i>Acari</i>	1	14	203
	<i>Ceratopogoninae</i>	1	14	203
	<i>Chironomini</i>	1	14	203
	<i>Cricotopus</i>	1	14	203
	<i>Hexagenia</i>	3	43	623
	<i>Nemata</i>	2	29	420
	<i>Procladius</i>	8	115	1,667
	<i>Stempellina</i>	1	14	203
	<i>Tanytarsus</i>	1	14	203

	<i>Coelotanypus</i>	1	14	209
	<i>Leptoceridae</i>	1	14	209
	<i>Nemata</i>	2	29	418
	<i>Rissooidea</i>	1	14	209
	<i>Sphaeriidae</i>	1	14	209
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
S6-AA-06-C		22	317	4,600
	<i>Ceratopogoninae</i>	3	43	627
	<i>Chironomus</i>	3	43	627
	<i>Coelotanypus</i>	3	43	627
	<i>Cryptochironomus</i>	1	14	209
	<i>Epoicocladus</i>	3	43	627
	<i>Hexagenia</i>	1	14	209
	<i>Nemata</i>	3	43	627
	<i>Procladius</i>	2	29	418
	<i>Sphaeriidae</i>	3	43	627
S6-AA-06-E		48	693	10,037
	<i>Ceratopogoninae</i>	7	101	1,464
	<i>Clinotanypus</i>	1	14	209
	<i>Coelotanypus</i>	6	87	1,255
	<i>Hexagenia</i>	1	14	209
	<i>Microchironomus</i>	1	14	209
	<i>Nemata</i>	10	144	2,091
	<i>Oligochaeta</i>	2	29	418
	<i>Pagastiella</i>	5	72	1,045
	<i>Polypedilum</i>	1	14	209
	<i>Procladius</i>	1	14	209
	<i>Rissooidea</i>	10	144	2,091
	<i>Stictochironomus</i>	2	29	418
	<i>Tribelos</i>	1	14	209
S6-AA-07-W		28	404	5,855
	<i>Ceratopogoninae</i>	7	101	1,464
	<i>Hexagenia</i>	1	14	209
	<i>Pagastiella</i>	16	231	3,346
	<i>Polypedilum</i>	1	14	209
	<i>Thienemannimyia Gr.</i>	1	14	209
	<i>Tribelos</i>	1	14	209
	<i>Unionidae</i>	1	14	209
S6-AA-07-C		35	505	7,318
	<i>Ablabesmyia</i>	1	14	209
	<i>Ceratopogoninae</i>	3	43	627
	<i>Chironomus</i>	1	14	209
	<i>Epoicocladus</i>	1	14	209
	<i>Harnischia</i>	1	14	209
	<i>Hexagenia</i>	3	43	627
	<i>Nemata</i>	11	159	2,300
	<i>Oligochaeta</i>	1	14	209
	<i>Pagastiella</i>	11	159	2,300
	<i>Procladius</i>	2	29	418
S6-AA-07-E		57	822	11,918
	<i>Acari</i>	1	14	209
	<i>Ceratopogoninae</i>	7	101	1,464
	<i>Nemata</i>	10	144	2,091
	<i>Oligochaeta</i>	7	101	1,464
	<i>Orthoclaadiinae</i>	1	14	209
	<i>Pagastiella</i>	23	332	4,809
	<i>Procladius</i>	7	101	1,464
	<i>Sialis</i>	1	14	209

Sample Location	2014			
	Taxa	Sum of Count	Sum of No./Area	Density (#/m2)

S7-AA-04-W		7	101	1,464
	Hexagenia	7	101	1,464

S7-AA-04-C		2	29	420
	Chaoborus	1	14	203
	Hexagenia	1	14	203

Sample Location	2016			
	Taxa	Sum of Count	Sum of No./Area	Density (#/m2)
S7-AA-01-W		3	43	627
	Acari	1	14	209
S7-AA-01-C	Ceratopogoninae	2	29	418
		4	58	836
	Ceratopogoninae	1	14	209
S7-AA-01-E	Epoicocladus	1	14	209
	Tribelos	2	29	418
		29	418	6064
S7-AA-02-W	Ceratopogoninae	2	29	418
	Coelotanypus	2	29	418
	Hexagenia	5	72	1045
	Nemata	1	14	209
	Oligochaeta	2	29	418
	Pagastiella	13	188	2718
	Procladius	1	14	209
	Tribelos	3	43	627
		35	505	7318
	Acari	2	29	418
S7-AA-02-C	Ceratopogoninae	3	43	627
	Chironomus	1	14	209
	Coelotanypus	4	58	836
	Hexagenia	1	14	209
	Leptoceridae	2	29	418
	Nemata	1	14	209
	Oecetis	1	14	209
	Pagastiella	16	231	3346
	Polypedilum	1	14	209
	Tribelos	1	14	209
S7-AA-02-E	Unionidae	2	29	418
		4	58	836
	Microchironomus	1	14	209
S7-AA-03-W	Pagastiella	1	14	209
	Procladius	2	29	418
		2	29	418
S7-AA-03-C	Epoicocladus	1	14	209
	Hexagenia	1	14	209
		20	289	4182
	Caenis	2	29	418
	Ceratopogoninae	1	14	209
	Coelotanypus	1	14	209
	Cryptochironomus	2	29	418
	Oligochaeta	4	58	836
	Pagastiella	7	101	1464
	Polypedilum	1	14	209
S7-AA-03-E	Procladius	2	29	418
		17	245	3555
	Acari	2	29	418
	Ceratopogoninae	2	29	418
	Epoicocladus	1	14	209
	Harnischia	1	14	209
	Microchironomus	1	14	209
	Pagastiella	5	72	1045
	Procladius	4	58	836
	Sphaeriidae	1	14	209
S7-AA-04-W		4	58	836
	Clinotanypus	1	14	209
	Coelotanypus	1	14	209
	Nemata	1	14	209
	Procladius	1	14	209
S7-AA-04-C		28	404	5855
	Ceratopogoninae	3	43	627
	Chironomus	3	43	627
	Coelotanypus	1	14	209
	Harnischia	1	14	209
	Hexagenia	2	29	418
	Pagastiella	10	144	2091
	Procladius	3	43	627
	Sphaeriidae	1	14	209
	Tribelos	3	43	627
S7-AA-04-E	Tribelos	1	14	209
		10	144	2091
	Chironomus	1	14	209
	Hexagenia	1	14	209
	Microchironomus	1	14	209
	Oligochaeta	2	29	418
	Procladius	4	58	836
	Sphaeriidae	1	14	209
		17	245	3555
	Ablabesmyia	2	29	418
S7-AA-04-W	Ceratopogoninae	1	14	209
	Epoicocladus	1	14	209
	Hexagenia	2	29	418
	Nemata	3	43	627
	Oligochaeta	1	14	209
	Procladius	5	72	1045
	Tribelos	2	29	418

Appendix H

Rhithron Technical Summary

**Analysis of biological samples:
Technical summary of methods and quality assurance procedures
Prepared for Barr Engineering Company
Megan L. Pierce-Walsh, Project Manager
August 25, 2016**



by
W. Bollman, Chief Biologist
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METHODS

Sample processing

Sixty-three macroinvertebrate samples were delivered to Rhithron's laboratory facility in Missoula, Montana on July 22, 2016. The samples were collected from sites in the St. Louis River Estuary (to Lake Superior), using a petite ponar dredge. All sample jars arrived in good condition. Samples arrived to the laboratory decanted; preservative was added to each sample jar immediately upon arrival. A chain of custody document containing sample identification information was provided by the Barr Project Manager. Upon arrival, the samples were unpacked and examined, and checked against the Barr chain of custody. An inventory spreadsheet which included project code and internal laboratory identification numbers was created and uploaded to the Rhithron database prior to sample processing.

Standard sorting protocols were applied in attempt to achieve subsamples of a minimum of 300 organisms. Caton sub-sampling devices (Caton 1991), divided into 30 grids, each approximately 6 cm by 6 cm were used. Each individual sample was thoroughly mixed in its jar(s), poured out and evenly spread into the Caton tray, and individual grids were randomly selected. The contents of each grid were examined under stereoscopic microscopes using 10x-30x magnification. All aquatic invertebrates from each selected grid were sorted from the substrate, and placed in 80% ethanol for subsequent identification. Grid selection, examination, and sorting continued until at least 300 organisms were sorted or until the entire sample was processed. All samples in this project were completely processed, resulting in fewer than 300 organisms.

Organisms were individually examined by certified taxonomists, using 10x – 80x stereoscopic dissecting scopes (Leica S8E) and identified to target taxonomic levels consistent with MPCA stream protocols (MPCA 2004) and requests from the Barr Project Manager, using appropriate published taxonomic references and keys.

Identification, counts, life stages, and information about the condition of specimens were recorded on electronic bench sheets. Organisms that could not be identified to the taxonomic targets because of immaturity, poor condition, or lack of complete current regionally-applicable published keys were left at appropriate taxonomic levels that were coarser than those specified. To obtain accuracy in richness measures, these organisms were designated as “not unique” if other specimens from the same group could be taken to target levels. Organisms designated as “unique” were those that could be definitively distinguished from other organisms in the sample. Identified organisms were preserved in 80% ethanol in labeled vials, and archived at the Rhithron laboratory.

Chironomids were carefully morphotyped using 10x – 80x stereoscopic dissecting microscopes (Leica S8E) and representative specimens were slide mounted and examined at 200x – 1000x magnification using an Olympus BX 51 or Leica DM 1000 compound microscope. Slide mounted organisms were archived at the Rhithron laboratory.

Representatives of specimens identified to the target level were photographed and placed in reference collection vials. Each reference specimen was verified by three additional

taxonomists. Specimens added to the collection and taxonomist verifications were tracked on a reference collection form.

Quality control procedures

Quality control procedures for initial sample processing and subsampling involved checking sorting efficiency. These checks were conducted on 10% of the samples by independent observers who microscopically re-examined all of the sorted substrate from each sample. Quality control procedures for each sample proceeded as follows:

The quality control technician poured the sorted substrate from a processed sample out into a Caton tray, redistributing the substrate so that it could be accurately lifted out by removing entire grids in a random fashion. Grids were selected, and re-examined until all of the substrate was re-sorted. All organisms that were missed were counted and this number was added to the total number obtained in the original sort. Sorting efficiency was evaluated by applying the following calculation:

$$SE = \frac{n_1}{n_1 + n_2} \times 100$$

where: SE is the sorting efficiency, expressed as a percentage, n_1 is the total number of specimens in the first sort, and n_2 is the total number of specimens in the second sort.

Quality control procedures for taxonomic determinations of invertebrates involved checking accuracy, precision and enumeration. Seven samples were randomly selected and all organisms were re-identified and counted by an independent taxonomist. Taxa lists and enumerations were compared by calculating a Bray-Curtis similarity statistic (Bray and Curtis 1957), Percent Taxonomic Disagreement (PTD), and Percent Difference in Enumeration (PDE). Routinely, discrepancies between the original identifications and the QC identifications are discussed among the taxonomists, and necessary rectifications to the data are made. Discrepancies that cannot be rectified by discussions are routinely sent out to taxonomic specialists for identification.

Six taxonomists independently reviewed the reference collection to verify consistency of identifications.

Data analysis

Taxonomic data and counts were entered into the Rhithron's customized laboratory information management system, and an uploadable spreadsheet file that included taxonomy, counts, sample metadata, and other information, consistent with requests from the Barr Project Manager, was generated.

RESULTS

Quality Control Procedures

Results of quality control procedures for subsampling and taxonomy are given in Table 1. Sorting efficiency averaged 99.22%, taxonomic precision for identification and enumeration measured by the Bray-Curtis index averaged 99.15%, PTD averaged 0.99% and PDE averaged 0.14%. Data entry efficiency was 100%. These similarity statistics fall within acceptable industry criteria (Stribling et al. 2003).

Data analysis

An electronic spreadsheet was provided to the Barr Project Manager via email. A CD including reference collection specimen photographs will be shipped to the Barr Project Manager.

Table 1. *Results of internal quality control procedures for subsampling and taxonomy. St. Louis River Estuary 2016.*

Rhithron ID	Site Name	Sorting efficiency	Bray-Curtis similarity for taxonomy and enumeration	Percent Taxonomic Disagreement (PTD)	Percent Difference in Enumeration (PDE)
BAR16MN001	NB-AA-01-N				
BAR16MN002	NB-AA-01-C				
BAR16MN003	NB-AA-01-S		97.67%	2.33%	0.00%
BAR16MN004	NB-AA-02-S	98.85%			
BAR16MN005	NB-AA-02-C				
BAR16MN006	NB-AA-02-N				
BAR16MN007	NB-AA-03-N	100.00%			
BAR16MN008	NB-AA-03-C				
BAR16MN009	NB-AA-03-S				
BAR16MN010	NB-AA-04-S				
BAR16MN011	NB-AA-04-C				
BAR16MN012	NB-AA-04-N		97.37%	2.63%	0.00%
BAR16MN013	SB-AA-01-W	100.00%			
BAR16MN014	SB-AA-01-C				
BAR16MN015	SB-AA-01-E				
BAR16MN016	SB-AA-02-W				
BAR16MN017	SB-AA-02-C				
BAR16MN018	SB-AA-02-E				
BAR16MN019	SB-AA-03-W				
BAR16MN020	SB-AA-03-C	100.00%			
BAR16MN021	SB-AA-03-E				
BAR16MN022	SB-AA-04-W				
BAR16MN023	SB-AA-04-C				
BAR16MN024	SB-AA-04-E				
BAR16MN025	SB-AA-05-W	100.00%			
BAR16MN026	SB-AA-05-C		100.00%	0.00%	0.00%
BAR16MN027	SB-AA-05-E				
BAR16MN028	SB-AA-06-W				
BAR16MN029	SB-AA-06-C				
BAR16MN030	SB-AA-06-E				
BAR16MN031	S6-AA-01-W	95.69%			
BAR16MN032	S6-AA-01-C				
BAR16MN033	S6-AA-01-E				
BAR16MN034	S6-AA-02-W		99.02%	1.94%	0.98%
BAR16MN035	S6-AA-02-C				
BAR16MN036	S6-AA-02-E				
BAR16MN037	S6-AA-03-W				
BAR16MN038	S6-AA-03-C				
BAR16MN039	S6-AA-03-E	100.00%			
BAR16MN040	S6-AA-04-W				
BAR16MN041	S6-AA-04-C				
BAR16MN042	S6-AA-04-E				
BAR16MN043	S6-AA-05-W				
BAR16MN044	S6-AA-05-C				
BAR16MN045	S6-AA-05-E				
BAR16MN046	S6-AA-06-W				
BAR16MN047	S6-AA-06-C		100.00%	0.00%	0.00%
BAR16MN048	S6-AA-06-E				

Table 1 (cont). *Results of internal quality control procedures for subsampling and taxonomy. St. Louis River Estuary 2016.*

Rhithron ID	Site Name	Sorting efficiency	Bray-Curtis similarity for taxonomy and enumeration	Percent Taxonomic Disagreement (PTD)	Percent Difference in Enumeration (PDE)
BAR16MN049	S6-AA-07-W				
BAR16MN050	S6-AA-07-C				
BAR16MN051	S6-AA-07-E				
BAR16MN052	S7-AA-01-W				
BAR16MN053	S7-AA-01-C				
BAR16MN054	S7-AA-01-E		100.00%	0.00%	0.00%
BAR16MN055	S7-AA-02-W				
BAR16MN056	S7-AA-02-C				
BAR16MN057	S7-AA-02-E				
BAR16MN058	S7-AA-03-W				
BAR16MN059	S7-AA-03-C				
BAR16MN060	S7-AA-03-E				
BAR16MN061	S7-AA-04-W				
BAR16MN062	S7-AA-04-C		100.00%	0.00%	0.00%
BAR16MN063	S7-AA-04-E				

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