Department of Environmental Conservation
NEW YORK STATE

August 12, 2025

Shane Blauvelt, P.E.
Honeywell International, Inc.
301 Plainfield Road
Suite 330
Syracuse, NY 13212

Re: Onondaga Lake 2021 Monitoring and Maintenance Report (734030)

Dear Shane:

The New York State Department of Environmental Conservation (NYSDEC) has received and reviewed the "Onondaga Lake 2021 Monitoring and Maintenance Report" submitted with your letter dated August 11, 2025 and the document is hereby approved. Please see that this document, along with this approval letter, is sent to the document distribution list. If you have any questions, please contact me at 518-402-9796.

Sincerely,

Tracy A. Smith

Tracy A. Smith
Project Manager

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August 11, 2025

Mr. Tracy Smith
Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau D
625 Broadway – 12th Floor
Albany, New York 12233-7016

RE: Draft Final Onondaga Lake 2021 Monitoring and Maintenance Report
Consent Order No: 89-CV-815; Site No 734030

Dear Mr. Smith:

In response to the August 8, 2025, NYSDEC comments, enclosed is the revised Draft Final Onondaga Lake 2021 Monitoring and Maintenance Report for your review and approval.

In an ongoing effort to be eco-friendly, we are sending this document electronically only, unless we hear otherwise from you. Please feel free to contact Mark Arrigo at 315.552.9684 if you have any questions or require additional information.

Sincerely,

Shane R Blauvelt

Shane Blauvelt, PE
Senior Remediation Manager

Enclosure

ec: Mike Spera, AECOM
Mark Arrigo, Parsons

DRAFT FINAL
ONONDAGA LAKE
2021 MONITORING AND MAINTENANCE REPORT

ONONDAGA COUNTY, NEW YORK

Prepared For:

Honeywell

301 Plainfield Road
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AUGUST 2025

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LIST OF ACRONYMS

Acronym	Definition
AMP	(Onondaga County) Ambient Monitoring Program
ATSDR	Agency for Toxic Substances and Disease Registry
BAP	Biological Assessment Profile
BSQV	bioaccumulation-based sediment quality value
cm	centimeter(s)
CMU	cap management unit
CPOI	chemical parameter of interest
DDT	dichlorodiphenyltrichloroethane
DUSR	Data Usability Summary Report
GAC	granular activated carbon
$g/cm^2/year$	gram(s) per square centimeter per year
g/cm^3	gram(s) per cubic centimeter
HIS	habitat suitability index
IRM	Interim Remedial Measure
ISUS	*in situ* ultraviolet spectrophotometer
Metro	Metropolitan Syracuse Wastewater Treatment Plant
µg/L	microgram(s) per liter
mg/kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
$mg/m^2/day$	milligram(s) per square meter per day
mm	millimeter
Metro	Onondaga County Metropolitan Syracuse Wastewater Treatment Plant
MPC	Modified Protective Cap
MNR	monitored natural recovery
MT	metric ton(s)
NAVD88	North American Vertical Datum of 1988
ng/L	nanogram(s) per liter
NOAA	National Oceanic and Atmospheric Administration
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OLMMP	Onondaga Lake Monitoring and Maintenance Plan

Acronym	Definition
O&M	operations and monitoring
PCB	polychlorinated biphenyls
PEC	probable effects concentration
PRG	preliminary remediation goal
QAPP	Quality Assurance Project Plan
RA	Remedial Area
RAO	remedial action objective
ROD	Record of Decision
SCA	Sediment Consolidation Area
SMU	Sediment Management Unit
SOP	standard operating procedures
SU	Syracuse University
SUNA	submersible ultraviolet nitrate analyzer
SUNY ESF	State University of New York College of Environmental Science and Forestry
SVOC	semi-volatile organic compounds
SWQS	surface water quality standards
TDS	total dissolved solids
TSS	total suspended solids
UFI	Upstate Freshwater Institute
USACE	U.S. Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
WB 1-8	Wastebeds 1-8

EXECUTIVE SUMMARY

Honeywell continues progress toward achieving the goals of the Onondaga Lake Record of Decision (ROD) and the community's vision for a restored Onondaga Lake with the implementation of the long-term lake monitoring program. The remediation plan was selected by the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Environmental Protection Agency (USEPA). Under NYSDEC oversight, the Honeywell team developed and implemented a remedy design that was approved by both agencies and continues to demonstrate its effectiveness in meeting the objectives outlined in the ROD. The remedy included a combination of dredging, capping, and habitat restoration – standard environmental cleanup methods that addressed the contamination in lake sediments and water. Lake dredging was completed in November 2014. Approximately 2.2 million cubic yards of material were removed from the bottom of the lake. Capping was completed in December 2016. More than 3 million cubic yards of material consisting primarily of sand, activated carbon, and gravel were used to cap 475 acres of the lake bottom. The cap also provided a new habitat layer. Habitat restoration, including shoreline wetland restoration and extensive planting of native vegetation, was completed in late fall 2017.

The Honeywell design team consisted of more than 100 local engineers and scientists working with nationally recognized experts from various universities, research institutions, and specialty engineering firms, NYSDEC, and USEPA. Community stakeholders also provided input. Similarly, the Honeywell team developed the lake monitoring program with input from many of the same team members, including Parsons, Anchor QEA, Upstate Freshwater Institute (UFI), the State University of New York College of Environmental Science and Forestry (SUNY ESF), NYSDEC, and USEPA.

The Onondaga Lake Monitoring and Maintenance Plan (OLMMP) (Parsons 2018b) presents the criteria, monitoring program, and decision-making framework for measuring progress toward, and attainment of, the remedial goals set forth in the ROD (NYSDEC and USEPA 2005). The monitoring program enables the team to track progress and ultimately verify remedy effectiveness in achieving the preliminary remedial goals (PRGs) and thereby the remedial action objectives (RAOs) specified in the ROD.

This report presents the comprehensive results from the 2021 lake monitoring program. Overall, results indicate that the remedy is functioning as intended. The monitoring and maintenance program includes seven separate but related elements. Each of these elements and associated results and recommendations are summarized below.

As noted in the USEPA's Second Five-Year Review Report for Onondaga Lake (2020), a "*protectiveness determination of the remedy for the Lake Bottom Subsite cannot be made until additional post-construction fish tissue data are available to ascertain when the remedial goals identified in the ROD will be achieved. It is anticipated that at least four additional years of fish data will be needed to determine when the rates of decline can be estimated with statistical significance. Following the evaluation of the additional data, a protectiveness determination will be made. In the interim, remedial operation, maintenance and monitoring activities will continue to be implemented in accordance with existing plans and requirements. The construction components of the remedy, which includes in-lake dredging, capping, habitat restoration, capping/closure of the Sediment Consolidation area located* *on Wastebed 13, which contains sediment and debris removed from the lake, have been completed. Other components of the remedy, including nitrate addition in the hypolimnion and MNR are ongoing*."

Sediment Management Unit 8 (SMU 8) Monitored Natural Recovery (MNR). The primary natural recovery mechanism in SMU 8 (deep water portions of the lake) is burial of sediment by incoming cleaner sediments that are continually being deposited from overlying water. MNR is projected to achieve the ROD-specified sediment remedial goals for the uncapped portions of SMU 8 within 10 years after the remediation of upland sources and littoral sediments and initial thin-layer capping in portions of SMU 8, that were completed in 2017. The Onondaga Lake 2018 Annual Comprehensive Monitoring and Maintenance Report documented that MNR was progressing faster than anticipated. It was recommended that surface sediment sampling for assessing achievement of MNR goals, including compliance with mercury probable effects concentration (PEC) and bioaccumulation-based sediment quality value (BSQV) criteria, be performed in 2020. However, this monitoring was postponed until 2021 due to challenges associated with COVID-19. The 2021 MNR scope consisted of sediment trap sampling, the first of two sediment compliance sampling events, and the collection of cores from microbead plots. Results from the 2021 sediment trap monitoring and compliance monitoring events, as well as an evaluation of the comprehensive dataset, support the conclusion that MNR in SMU 8 is progressing faster than anticipated and that MNR sediment-based goals may have been achieved. Therefore, the monitoring scope for 2022 will include both sediment trap monitoring and the second sediment compliance sampling event. The 2022 sampling will be the second year of the two compliance sampling events called for in the OLMMP.

Biota Tissue. Fish tissue collection and analysis was conducted in 2021 as per the OLMMP. Results are generally consistent with or slightly lower than the last year of data collected in 2018. Similar to results from 2018, the mean and 95% UCL mercury concentrations in Pumpkinseed and Common Carp in 2021 were below goals. Mercury concentrations in Smallmouth Bass and Walleye remained above goals. This is expected because these fish are longer-lived, higher trophic level species that take longer to respond to the effects of the remedy (USEPA 2020). The mean and 95% UCL for PCBs in Pumpkinseed were below the lowest target, while in Smallmouth Bass, Walleye, and Common Carp, mean and 95% UCL PCB concentrations were generally between the lower and upper target, except for the 95% UCL in Walleye, which was slightly above the higher target. The mean and 95% UCL for dioxin/furans in Smallmouth Bass, Walleye, and Pumpkinseed were all below the lowest target, while in Common Carp, the mean was below the lowest target and the 95% UCL was slightly above the lowest target. Mean and 95% UCL contaminant concentrations in prey fish were lower in 2021 than in 2018 or were below goals and targets, with the exception of PCBs in small and large prey fish and mercury in large prey fish. Elevated PCB concentrations in small prey fish, particularly in SMU 6 are attributed to ongoing contributions of PCBs from Ley Creek, which enters Onondaga Lake at the north end of SMU 6. This source is unrelated to Honeywell and will be remediated in the future. Zooplankton tissue analysis for both total mercury and methylmercury was conducted in 2021 as per the OLMMP. Relative to pre-nitrate addition values, methylmercury concentrations in zooplankton have remained consistently low from the first year of nitrate addition through 2021. It is recommended that annual fish and zooplankton monitoring be completed in 2022 as described in the OLMMP and the 2022 Onondaga Lake Scope Memorandum (Parsons 2021a).

Surface Water. In accordance with the OLMMP, surface water sampling and analysis was completed in 2017 and 2018 at numerous locations to assess compliance with goals. Surface water criteria for mercury, volatile organic compounds, and semi-volatile organic compounds have been achieved for two consecutive years as criteria were met for two consecutive years. Additional monitoring to evaluate polychlorinated biphenyl (PCB) concentrations in surface waters of Onondaga Lake and its tributaries occurred in 2021. In general, in-lake average PCB concentrations were lower than the averages documented in background tributaries. Additionally, rainwater samples collected and analyzed in 2021 exceeded the lowest PCB criteria by one to two orders of magnitude. As such, the ROD goal to "achieve surface water quality standards, to the extent practicable" has been achieved as it pertains to PCBs based on current conditions. Therefore, no further monitoring of PCBs in surface water is planned. However, additional monitoring may be considered in the future following remediation by others of Ley Creek, which is an ongoing source of PCBs to Onondaga Lake. Surface water mercury goals were met during pre- and post-turnover sampling events in 2017 and 2018. However, 2021 pre-turnover dissolved mercury results exceeded the 0.7 nanogram per liter goal in seven of 12 locations. It is believed that these exceedances were a result of laboratory contamination. Therefore, it is recommended that an additional round of pre-turnover in-lake sampling for mercury (total dissolved, and methyl) be conducted during the summer/early fall of 2022.

<u>Cap Maintenance and Monitoring</u>. Consistent with the scope and schedule detailed in the OLMMP, comprehensive probing and physical inspection, including shoreline inspection and drone photography, were completed in 2021. Additional physical monitoring was also conducted in RAs -A, -C, -D, and -E to further evaluate anomalies identified during the 2019 and 2020 monitoring programs. Results from 2021 monitoring, as well as the 2020 focused physical monitoring and the 2019 comprehensive physical monitoring, indicate that there has been no significant loss of cap material in any of the capped areas. Consistent with the OLMMP, the 2022 physical monitoring of the cap will consist of a comprehensive bathymetric survey of all capped areas and the uncapped areas along the RE-E CSX shoreline and collection of cores and documentation of cap thicknesses as part of the chemical monitoring program. Consistent with the monitoring schedule specified in the OLMMP, chemical monitoring was not completed in 2021. Comprehensive chemical monitoring of the caps will be implemented in 2022, as specified in the OLMMP.

<u>Habitat Reestablishment and Biological Response</u>. Vegetation and wildlife monitoring conducted in 2021 show that newly restored habitats are providing a diverse, functional habitat for a variety of species. Restoring diverse, functioning, and sustainable habitats to the remediated areas of Onondaga Lake was one of the top priorities of the remedial program. Therefore, habitat considerations are a significant component in the monitoring and maintenance plan for the lake.

The fifth year of monitoring at the Mouth of Ninemile Creek and the fourth year of monitoring for the Wastebed B/Harbor Brook Outboard Area was conducted in 2021. Monitoring of wetland and adjacent upland planted vegetation from 2017 through 2021 verified that year five (Mouth of Ninemile Creek) and interim (Wastebed B/Harbor Brook Outboard Area) goals have been met. Maintenance activities in the form of supplemental plantings and invasive species control were completed in 2021. Additional targeted plantings are recommended for 2022 for Wastebed B/Harbor Brook Outboard Area to continue progress toward meeting the fifth-year vegetation goals specified in the OLMMP.

Habitat monitoring verified the restored areas are attracting robust and diverse wildlife usage. Overall, approximately 121 wildlife species were observed across all remediation areas in 2021. As expected, most were found within the restored wetlands. These included 46 species of birds, 23 of macroinvertebrates, seven of mammals, and seven of amphibians or reptiles. Common wildlife species included Great Blue Heron (*Ardea herodias*), Mallard (*Anas platyrhynchos*), and Double-crested Cormorant (*Phalacrocorax auritus*). Other notable species include Northern Leopard Frog (*Lithobates pipiens*), Northern Water Snake (*Nerodia sipedon*), Pied-billed Grebe (*Podilymbus podiceps)*, Snowy Owl (*Bubo scandiacus*), Black-crowned Night Heron (*Nycticorax nycticorax*) and Bald Eagle (*Haliaeetus leucocephalus*).

As detailed in the OLMMP, although there are no goals for the fish community, monitoring is conducted to document how fish are using the newly restored habitats in the lake. Over 20 years of research by SUNY ESF has shown that Onondaga Lake is home to a robust and diverse fish community. Data collected in 2021, by SUNY ESF for Honeywell, shows that this continues to be the case, both within and outside of remediation areas. Forty fish species were documented in Onondaga Lake in 2021, including numerous sportfish such as Largemouth Bass and Walleye. The fish community in Onondaga Lake continues to be composed of mostly warm-water species that are typically found in Central New York.

Benthic community data was collected for the second time post-remediation in 2021 to document recolonization of new cap substrate placed during remediation. Since recolonization is occurring as anticipated and the overarching goal of maintaining or improving the ecological function of the Onondaga Lake benthic community has been demonstrated, the scope called for in the OLMMP has been completed, and therefore no further monitoring of benthic macroinvertebrates is recommended at this time.

Institutional Controls. Institutional controls are actions such as administrative and legal controls that are implemented to help minimize the potential for human health or ecological exposure to sediment contamination and ensure the long-term integrity of the remedy. As detailed in the OLMMP, Institutional controls being implemented at Onondaga Lake include:

- Fish consumption advisories issued by NYSDOH and related public communication activities
- Recreational boating buoys, updated navigational charts, and related public communication activities to prevent recreational boaters from accidently hitting potential navigational hazards created by capping and restoration components of the remedy
- Regulatory permitting controls to prevent damage to the cap from activities such as navigational dredging

The specific institutional controls listed above remain in place. Honeywell is currently working with the NYSDEC to finalize the Onondaga Lake Site Management Plan, which will provide additional details regarding institutional controls that will be implemented to prevent actions that may disrupt the cap or SMU 8 sediment, including environmental easements and environmental notices to ensure the long-term integrity of the remedy. Additionally, the Draft Onondaga Lake Sediment Consolidation Area (SCA) Site Management Plan provides additional details regarding institutional controls to prevent actions that may disrupt the SCA cover and the contained sediments dredged from the lake.

Nitrate Addition. Addition of nitrate in Onondaga Lake during 2021 and prior years successfully met objectives and resulted in methylmercury concentrations in lake water remaining near background levels. Methylmercury can be released from Onondaga Lake bottom sediment in the lake's profundal zone (called SMU 8) when lower waters are depleted of oxygen and nitrate during summer stratification. If methylmercury is released to the water column, it eventually enters the food web where it can bioaccumulate in lake organisms. Addition of nitrate to the lower waters, during the summer, limits methylmercury release and thereby limits mercury bioaccumulation in aquatic life in Onondaga Lake. Monitoring results show that methylmercury was effectively controlled during summer lake stratification in 2021 through addition of a diluted calcium nitrate solution. Addition of a diluted calcium nitrate solution will continue to be implemented in 2022 as needed.

SECTION 1 INTRODUCTION

1.1 Overview

This annual report presents the comprehensive results of the Onondaga Lake remediation monitoring and maintenance conducted by Honeywell in 2021. The Onondaga Lake Monitoring and Maintenance Plan (OLMMP) (Parsons 2018b) presents the criteria, monitoring program, and decision-making framework for measuring progress toward, and attainment of, the remedial goals set forth in the Record of Decision (ROD) (NYSDEC and USEPA[1] 2005). The ROD remediation plan selected by the NYSDEC and USEPA included a combination of dredging and capping – standard environmental cleanup methods that addressed the contamination in lake sediments and water. Lake dredging was completed in November 2014, a year ahead of schedule. About 2.2 million cubic yards of material were removed from the bottom of the lake. Capping was completed in December 2016. More than 3 million cubic yards of material consisting primarily of sand, activated carbon, and gravel were used to cap 475 acres of the lake bottom, providing a new habitat layer. Habitat restoration was completed in late fall 2017 and included shoreline wetland restoration and extensive planting of aquatic vegetation.

As detailed in the OLMMP, the lake monitoring program includes the following seven separate, but related, elements:

- Sediment Management Unit 8 (SMU 8) and Monitored Natural Recovery (MNR)
- Biota Tissue
- Surface Water
- Cap Maintenance and Monitoring
- Habitat Reestablishment and Biological Response
- Wastebeds 1-8 (WB 1-8) Shoreline Stabilization and Turbidity Monitoring[2]
- Institutional Controls

Monitoring associated with the above activities began in 2017 under the Draft OLMMP, with NYSDEC approval. In addition, monitoring associated with nitrate addition was conducted in 2021 in accordance with the operations and monitoring (O&M) plan for nitrate addition (Parsons and Upstate Freshwater Institute [UFI] 2014b). Additional documentation related to the 2021 monitoring scope and modifications is included in Appendix 1A. This report presents the comprehensive results from the 2021 monitoring program. Overall, results indicate that the remedy is functioning as intended. It is

[1] NYSDEC – New York State Department of Environmental Conservation; USEPA – United States Environmental Protection Agency

[2] The 2017 turbidity monitoring results adjacent to the shoreline of Wastebeds 1-8 verified a reduction in wind-driven turbidity along the Wastebeds 1-8 shoreline after stabilization was implemented. Therefore, consistent with the OLMMP and as documented in the 2017 Annual Report, no further routine turbidity monitoring is being performed. Annual physical inspections of this area will be conducted as part of the long-term cap physical monitoring program. Additional turbidity monitoring, if required based on the annual visual inspections, would be developed in consultation with NYSDEC and subject to the agency's approval.

recommended that monitoring as per the OLMMP should continue in 2022. Recommendations for any changes are set forth in the individual sections below.

1.2 Document Organization

As per the OLMMP, annual reporting for the various monitoring components generally consists of presenting monitoring data and confirming that data are consistent with expectations. Recommendations are made for future monitoring for each respective component. In addition to the executive summary and this introduction, the report is organized into the following sections:

- Section 2 presents the results of habitat and biological response monitoring.
- Section 3 presents results of biota tissue monitoring.
- Section 4 presents results of the MNR monitoring.
- Section 5 presents the results of nitrate addition and associated monitoring in 2021.
- Section 6 presents results cap monitoring activities and the status of institutional controls.
- Section 7 presents results of in-lake and tributary surface water monitoring.
- Attachment 1 presents the Annual Post Closure Care Summary Report for the Onondaga Lake Sediment Consolidation Area (SCA)

Appendices associated with each section provide additional information such as detailed field data, associated data usability summary reports (DUSRs), and other information relevant to the various monitoring elements.

SECTION 2 HABITAT REESTABLISHMENT AND BIOLOGICAL RESPONSE

2.1 Introduction

Habitat-related monitoring was conducted in 2021 to document habitat reestablishment and biological response within remediated areas and lake-wide reference areas as described in the OLMMP (Parsons 2018b). Results show that restored habitats are providing a diverse, functional habitat for a variety of species.

At the Mouth of Ninemile Creek and the Wastebed B/Harbor Brook Outboard Area, vegetation monitoring included qualitative and quantitative surveys to evaluate vegetative aerial percent cover, relative percent cover of each species, aerial percent cover of invasive species, and cover type. A year-five formal wetland delineation was conducted at the Mouth of Ninemile Creek in 2021 as required by the OLMMP.

Wildlife use was evaluated throughout 2021 during routine site visits and critical time periods, such as bird migration and amphibian reproduction windows.

Lake-wide aquatic macrophyte (plant) and fish community surveys were also conducted in 2021. Aquatic macrophyte surveys consisted of qualitative and quantitative surveys to evaluate species composition and estimated density in both remediated and reference areas of the lake. Gill, trap, and seine nets were used to conduct monthly fish community surveys from May through October, during which fish species composition, abundance, and species richness were evaluated. The second benthic macroinvertebrate survey was conducted in 2021 to document recolonization of the new substrate placed as part of the remedy, with the initial event completed in 2018.

Monitoring was completed in accordance with OLMMP (Parsons 2018b) and standard operating procedures (SOPs) detailed in the Quality Assurance Project Plan (QAPP) (Parsons 2020c). Monitoring results from 2021 are presented in the following sections.

2.2 Planted Vegetation

The Mouth of Ninemile Creek and the Wastebed B/Harbor Brook Outboard Area are monitored planted areas. The OLMMP specified that vegetation coverage would be compared to the success criteria for the wetland, upland, and in-lake planting areas following five years of monitoring.

The Mouth of Ninemile Creek was planted in 2016 following completion of capping in this area. 2021 therefore represented the fifth year of the five-year monitoring program in that area. Per the OLMMP, the fifth-year goals following planting in the Mouth of Ninemile Creek are:

- At least 85 percent vegetation cover on the Mouth of Ninemile Creek spits
- At least 75 percent vegetation cover in the Mouth of Ninemile Creek in-lake planted areas
- Percent cover of invasive species is less than or equal to five percent.

The fifth year of monitoring at the Mouth of Ninemile Creek was completed in 2021, and a separate evaluation of performance goal achievement is provided as Section 2.2.1, as required by the OLMMP. In addition, the long-term necessity of the Wastebed B/Harbor Brook Outboard Area berms for continued protection of the planted wetlands and shoreline is discussed in Section 2.10.

The Wastebed B/Harbor Brook Outboard Area was planted in 2017 following completion of capping in this area, and 2021 was the fourth year of the five-year monitoring program for that area. The interim goals for the fourth year following planting in the Wastebed B/Harbor Brook Outboard Area are:

- At least 85 percent vegetation cover in wetland and upland areas
- Management of all invasive wetland plant species [3]
- 90 percent of planted large trees present in wetland areas
- 100 percent of planted large trees present in upland areas

Vegetation was monitored in both areas using both qualitative and quantitative evaluation methods as described in the OLMMP. Periodic site visits were made throughout the growing season to document vegetation abundance and diversity and to identify any potential issues before they become significant. Two qualitative reconnaissance surveys were conducted at the Mouth of Ninemile Creek and the Wastebed B/Harbor Brook Outboard Area, during which a comprehensive list of plant species present was documented. Control efforts for invasive species were conducted during two separate events in 2021: one in June and the other in late September through early October.

Consistent with Appendix E of the OLMMP, quantitative vegetation monitoring was conducted at 18 plots on the Mouth of Ninemile Creek spits and 41 plot locations within the Mouth of Ninemile Creek in-lake planting areas (**Appendices 2A and 2B**). Quantitative vegetation monitoring was conducted in mid-August. Each 50-square-foot plot was assessed for cover type, total aerial cover, and relative cover for each species. A final wetland delineation of the Mouth of Ninemile Creek was performed on August 31, 2021, as directed by the OLMMP (**Appendix 2C**). At the Mouth of Ninemile Creek, 172 plant species were observed during surveys conducted on June 23, from September 14 through 20, and during periodic site visits conducted throughout the growing season. Native broadleaf cattail (*Typha latifolia),* coontail (*Ceratophyllum demersum*), common waterweed (*Elodea canadensis*), and sago pondweed (*Stuckenia pectinata*) were the most common species documented. Relative percent cover of the species documented in sampling plots is summarized in **Table 2.1**, and a photographic log of the area is provided in **Appendix 2A**. Vegetation cover types and wetland acreages across the area were estimated from these data and included extensive areas of emergent wetland and aquatic bed (**Figure 2.1**).

The average cover of vegetation at the Mouth of Ninemile Creek spits was 87.2 percent, exceeding the fifth-year goal of 85 percent. The overall cover of vegetation at the Mouth of Ninemile Creek in-lake planting areas was 73.5 percent, which is slightly below the goal of 75 percent. In both areas, the invasive species cover has remained under one percent (**Appendix 2B**).

Similarly, within the Wastebed B/Harbor Brook Outboard Area, quantitative vegetation monitoring was conducted at 51 wetland plot locations, seven upland plot locations, and six plot locations located

[3] An interim goal of zero percent invasive species aims to manage all invasive species on the site regardless of the percentage at which they are found. This will provide the maximum chance of successfully achieving the five percent or less goal after five years.

within a 25-foot in-lake planted buffer (**Appendices 2A and 2B**). Plot surveys were conducted in late September, with the same parameters being assessed in each 50-square-foot plot as were assessed for the Mouth of Ninemile Creek.

A total of 184 plant species were observed during surveys conducted at the Wastebed B/Harbor Brook Outboard Area on June 16, from September 21 through 29, and during periodic site visits conducted throughout the growing season. Broadleaf cattail, coontail, and common waterweed were the most common species. Relative percent cover of the species documented in sampling plots is summarized in **Table 2.2**, and a photographic log of the area is provided in **Appendix 2A**. Vegetation cover types and wetland acreages across the area were estimated from these data and included extensive areas of emergent wetland and aquatic bed (**Figures 2.2 and 2.3**).

The average vegetation coverage in Wastebed B/Harbor Brook Outboard Area upland plots was 100 percent, exceeding the four-year interim goal of 85 percent. The average vegetation coverage in Wastebed B/Harbor Brook Outboard Area wetland plots was 84.7 percent, essentially equal to the four-year interim goal of 85 percent. Invasive species cover across the upland area was 1.3 percent and invasive species cover across the wetland area was only 1.0 percent.

In addition, large tree conditions were surveyed in the Wastebed B/Harbor Brook Outboard Area in October 2021 (**Figures 2B.4 and 2B.5** in **Appendix 2B**). Of the 103 large trees planted during restoration, 102 were documented to be alive and in good condition, while one had died and will be replaced in 2022. Tree condition survey results are summarized in **Table 2.3.**

2.2.1 Mouth of Ninemile Creek Goal Attainment

Per the OLMMP, the planted wetlands and in-lake planted areas have been monitored annually for five years, ending in 2021, to evaluate the success of the restoration and verify that success criteria were met. In addition, as directed by the OLMMP, a wetland delineation was carried out in 2021 per U.S. Army Corps of Engineers (USACE) (2012) and NYSDEC (NYSDEC 1995) methods to quantify wetland mitigation acreage. The fifth-year success criteria for vegetated areas differ slightly depending on whether the area was a planted mitigation wetland (i.e., the spits) or an in-lake plantings area. The final (fifth year) success criteria for percent cover on the spits is 85 percent or greater, with percent cover of invasive species not to exceed five percent. The final (fifth year) success criteria for percent cover within the in-lake planted area is 75 percent or greater, with percent cover of invasive species not to exceed five percent.

2.2.1.1 Mouth of Ninemile Creek Spits

The Mouth of Ninemile Creek Spits were once dominated by a stand of invasive Phragmites. Now, because of restoration efforts, a robust assemblage of native plants has become established. This restored area provides a much improved habitat for a high diversity of wildlife. Data collected in 2021 show that the vegetation cover goals and mitigation acreage goals have been met.

During the five-year monitoring period, vegetation cover rapidly increased from year one (2017) to year two (2018) and remained generally high through year five (**Figure 2.4**). A slight decrease in 2019 appears to have been due to high water levels in the early summer of that year. Invasive species cover was very low throughout the five-year monitoring period, remaining below one-percent (**Figure 2.4**).

At the end of the five-year monitoring period in 2021, vegetation cover on the spits averaged 87 percent, exceeding the five-year goal of 85 percent cover. Invasive species cover remained under 1 percent in 2021, meeting the five-year goal of less than 5 percent invasive species cover.

Prior to the remedy, the 1.9 acre spits were delineated as wetland as described in the Habitat Plan (Parsons and Anchor QEA 2018). These wetlands were mitigated at a 1:1 ratio because they were restored on site and were designed to provide much improved habitat compared to the Phragmites dominated wetlands that was present prior to the remedy, As such, a total of 1.9 acres needed to be restored and delineated as wetland at year-five of monitoring (i.e., 2021). A wetland delineation completed in 2021 determined that at least 1.9 acres of contiguous wetlands currently exist in the spits, which meets the mitigation requirement. The complete results of the delineation can be found in Section 2.2.1.3 and Appendix 2C.

2.2.1.2 Mouth of Ninemile Creek In-Lake Planting Areas

Vegetation cover within the in-lake planting area at the Mouth of Ninemile Creek has varied over the course of the five-year monitoring program (Figure 2.5). Vegetation increased rapidly from approximately 55 percent in year one (2017) to approximately 84 percent in year two (2018) and reached a high of 88.5 percent in year three (2019) (refer to table below). Vegetation cover decreased in 2020 to approximately 71 percent and rebounded slightly in 2021 to 73.5 percent, which is slightly less than the overall goal of 75 percent. A closer examination of the vegetation types in the table below shows that a decrease in submerged aquatic vegetation is the primary factor for the overall decrease in percent cover in 2020 and 2021 compared to the previous two years. While emergent and floating aquatic vegetation either increased or remained relatively unchanged in 2020 and 2021, submerged aquatic vegetation decreased. Based on observations made during lake-wide macrophyte surveys, the fluctuations in aquatic vegetation cover at the Mouth of Ninemile Creek appear consistent with similar fluctuations observed in aquatic macrophytes lake-wide, suggesting that natural factors, such as water levels and turbidity, are potentially controlling this variability. For example, 2021 was the ninth wettest year on record in Syracuse, with much of that rainfall occurring during the summer. This resulted in higher than normal lake levels that averaged 0.5 foot above average during the growing season. The increased precipitation also likely resulted in increased turbidity within the in-lake planting area due to its location directly in front of the Mouth of Ninemile Creek (the lakes second largest natural tributary). Once emergent and floating leaved species reach the surface, they are less likely to be affected by high water and turbidity. This may explain why they have continued to expand slightly as submerged vegetation decreased.

During the five-year monitoring period, vegetation within the in-lake planting area was continually assessed to determine if supplemental maintenance plantings were needed and to guide their installation. The focus of the plantings was mostly on emergent and floating aquatic species. Prior to installation, water depths were evaluated in targeted areas to ensure water depths were appropriate for the species being installed. This was because the cap was expected to settle during the first two years, increasing water depth. These evaluations found that most in-lake plantings areas had settled by at least one-foot. Areas of established emergent vegetation continued to survive and expand despite the increased water depths. However, during the first two years of the monitoring and maintenance program, emergent plantings installed in all but the shallowest areas did not survive despite installation of species found to be most tolerant of high water in other areas that are part of the Onondaga Lake program (e.g., Pickerel Weed, Cattail, Bulrush). Supplemental floating aquatic plantings installed in the original area designed to protect these species from the wind (Habitat Modules 4A and 4B in the design) did well overall and resulted in increased cover. Supplemental floating aquatics were also installed outside this area because of their greater tolerance to deeper water. However, these did not survive, likely due to exposure to wind generated waves that these species tend to not tolerate well. The offshore areas, where water depths preclude the establishment of emergent species and wind/waves preclude the establishment of floating aquatic species, were rapidly colonized by mostly native submerged aquatic species, likely from both natural populations and plants installed during the initial restoration activities and subsequent maintenance plantings. In total, approximately 42,000 supplemental plants (mostly emergent and floating aquatic species) were added to the in-lake planting areas over the five-year monitoring and maintenance period. Any areas capable of supporting these species currently have established populations. Water depth and wind/waves limit other areas to submerged aquatic species whose year-to-year abundance is controlled by lake dynamics, just as in other areas of the lake. As such, additional plantings will likely not result long-term changes to the plant community in this area.

The emergent and floating aquatic plant communities are a significant part of the overall plant community in this area. They have stabilized and are expected to remain at or near current levels. The abundance of submerged aquatic macrophyte community will likely continue to naturally vary within the range documented during the monitoring period (~45 percent to 85 percent) based on lake conditions in any given year. The decrease in submerged aquatic macrophyte coverage towards the end of the five-year monitoring period is part of the natural variability these communities experience from year to year and does not detract from the exceptionally diverse and high-quality habitat that has been created in an area of the lake that was almost completely devoid of vegetation prior to the remedy. This is demonstrated by the exceptional wildlife community that has been documented using this area since restoration took place. As such, the overarching goals of maintaining or improving the size, diversity and ecological function of habitat and discouraging the establishment of invasive species have been successfully met within the in-lake planting area and monitoring can end.

Average Total Cover of Vegetation Plots					
	2017	2018	2019	2020	2021
Average Vegetation Plot Cover	54.7%	84.1%	88.5%	70.7%	73.5%
Absolute Cover of Vegetation Types					
	2017	2018	2019	2020	2021
Floating Aquatic	0.5%	2.0%	8.2%	7.5%	10.4%
Emergent	14.9%	12.8%	20.6%	29.5%	27.5%
Submerged Aquatic Macrophytes	46.5%	83.0%	72.7%	43.1%	47.9%

2.2.1.3 Year Five Wetland Delineation Summary

A formal wetland delineation was conducted in the Mouth of Ninemile Creek in 2021 as called for in the OLMMP. The full delineation report can be found in Appendix 2C. The delineation documented a total of 10.31 acres of wetland including the 1.9 acre spits. The delineation also assessed the extent and community composition of the wetland communities present, including persistent emergent wetlands and non-persistent/floating aquatic beds. Common species in the emergent wetland communities were broadleaf cattail, softstem bulrush (*Schoenoplectus tabernaemontani*) and bur-reed (*Sparganium* spp.). Common species in the non-persistent/aquatic beds were emergent species such as pickerelweed (*Pontederia cordata*), floating aquatic species such as white water-lily (*Nymphaea odorata*), and submerged aquatic species such as water stargrass (*Heteranthera dubia*) and coontail.

2.3 Aquatic Macrophytes

The fifth year of aquatic macrophyte (vegetation) monitoring was conducted in 2021 to document the natural recolonization by aquatic plants in remediation areas and the coverage within in-lake reference areas. As detailed below, extensive natural recolonization of capped areas has occurred, mostly by native species. There are no specific success criteria associated with aquatic vegetation that naturally recolonizes remediated areas. Instead, monitoring was conducted for a five-year period following remediation to document the extent and speed of recolonization. A brief discussion of trends observed during five years of macrophyte monitoring is discussed in Section 2.3.3.

2.3.1 Qualitative Survey

In June and August 2021, qualitative visual surveys of aquatic macrophyte coverage were conducted from a boat along the entire shallow water shoreline area of Onondaga Lake, including remediated and non-remediated areas. The spatial coverage of each plant type was estimated, and plants were identified to as high a taxonomic resolution as possible in the field. Vegetation coverage was assigned one of four categories: absent (0 percent cover), sparse (1 through 25 percent), moderate (26 through 75 percent), and dense (76 through 100 percent).

Lake-wide, 18 species were observed during the qualitative surveys. The most common species during the June monitoring event were sago pondweed, starry stonewort (*Nitellopsis obtusa*), curly pondweed, (*Potamogeton crispus*), and coontail. The most common species during the August monitoring event were starry stonewort, water stargrass, and coontail. Species such as common waterweed, American eelgrass (*Vallisneria americana*), and wild rice (*Zizania aquatica*) were also observed. Although the size, distribution, and density of beds were variable, most of the lake, including remediation areas, were characterized by moderate to dense macrophyte coverage (average lake-wide density of 2.23 and 2.49 for June and August surveys, respectively). Data from the qualitative surveys are summarized in the figures included in Appendix 2D.

2.3.2 Quantitative Survey

A quantitative survey was performed during August in both remediated and non-remediated areas of the lake in accordance with the SOP. Survey data can be found in Appendix 2D. Throw rake samples were collected from a boat at predetermined coordinates. A value between 0 and 3 was assigned for each throw rake, reflecting the categories used for the qualitative survey. Density was determined to be absent (category 0) through dense (category 3). Density was assigned for each taxon identified on the throw rake and an average lake-wide density was calculated from 0 to 3.

Lake-wide, 15 species were observed during the quantitative survey. The three most common species were starry stonewort, water stargrass, and coontail (**Appendix 2D**). Compared to the qualitative survey, the quantitative survey documented a somewhat lower plant density overall (average lake-wide density of 1.42). Overall, the density of macrophytes increased in both remediated and unremediated areas in 2021 compared to 2020. Unremediated areas contained a somewhat higher macrophyte density than remediated areas, but remediated areas had a lower relative cover of invasive species, which accounts for most of the difference. In unremediated areas, invasive species accounted for 44.2 percent of macrophyte density, whereas invasive species accounted for only 16.7 percent of macrophyte density in remediated areas.

2.3.3 Macrophyte Reestablishment

Monitoring of macrophytes to document the natural colonization of the capped area of the littoral zone by aquatic vegetation species has occurred annually since 2017 per the OLMMP. Remediated areas have consistently been found to contain a generally moderate density of macrophytes composed of mostly native species. The number of species observed during qualitative surveys have increased from 11 (2017 and 2018) to 18 (2021). Similar increases in species richness have been observed during quantitative surveys, increasing from nine (2017) to 17 (2020). Lake-wide macrophyte density fluctuates annually, but density has been consistently moderate within remediated areas. This is an ideal condition for many fish species. For example, ideal macrophyte coverage for adult and juvenile Largemouth Bass ranges from approximately 40 percent to 60 percent (Stuber et al. 1982). In 2021, the average density for remediated areas was 1.04, whereas average density for unremediated areas was 1.7. Although higher macrophyte density was observed in unremediated areas in 2021, the relative cover of invasive species in unremediated areas was approximately 47%, whereas the relative cover of native species in unremediated areas was only 20%. The increase in invasive species across unremediated plots explains much of the difference in overall density between remediated and unremediated areas.

Although fluctuations in density are anticipated, success of vegetation in remediated areas is expected to continue. As specified in the OLMMP, the need for and/or schedule for continued monitoring of aquatic vegetation will be evaluated after 2021. Given the rapid recolonization, moderate density, and low proportion of invasive species in remediated areas, it is recommended that aquatic macrophyte monitoring be concluded.

2.4 Overall Mitigation Wetland Acreage

As detailed in the OLMMP, wetland acreages are assessed holistically across the Ninemile Creek spits, Wastebeds 1-8 wetlands, and both the inboard and outboard wetlands in the Wastebed B/ Harbor Brook Outboard Area to determine if mitigation acreage goals have been attained after formal wetland delineations have been completed in all areas following their respective five-year monitoring periods. **Table 2.4** summarizes the 2021 estimated current wetland acreage for each area. The estimated wetland acreage across the restoration areas for 2021 shows that the overall wetland mitigation acreage goal of 19.5 acres is likely to be met.

The OLMMP also details the assessment of open water requirements within the Wastebed B/Harbor Brook Outboard Area. Table 2.4 summarizes the 2021 estimated open water acreage for the Wastebed B/Harbor Brook Outboard Area. The 2021 estimated open water acreage (4.93 acres) shows that the open water goal of 4.6 acres is being met. The wetland and open water areas will be reviewed holistically in year five (2022) when a formal delineation will be performed.

2.5 Fish Community

Over 20 years of research by SUNY ESF has shown that Onondaga Lake is home to a robust and diverse fish community. Data collected in 2021 show that this continues to be the case both within and outside of remediation areas. As detailed in the OLMMP, although there are no goals for the fish community, monitoring is conducted to document how fish are using the newly restored habitats in the lake (Parsons 2018b). Monthly assessments were conducted from May through October 2021 at 12 locations around Onondaga Lake (Figure 2.6). Fish were collected using gill nets, trap nets, and seine nets. The species were identified and recorded before the fish were released. Additionally, the lengths of the first 30 individuals of each species were measured at each collection event. The abundance of additional individuals was also recorded. Fish data are provided in Appendix 2E and discussed below.

2.5.1 Lake-wide Results

Lake-wide fish species richness in 2021 was 40 species. This is equal to the lake-wide average richness of 40 species observed during the baseline sampling period (2008 through 2011), higher than the 38 species observed during the construction period (2012 through 2016), and higher than the 36 species observed in 2020 (Table 2.5). The species richness in remediated areas (36) and reference areas (38) were comparable to average richness within these areas during the baseline and construction periods. Fluctuations in annual species richness is expected due to variable catchability of less abundant species.

Year-to-year fluctuations in the relative abundance of fish are expected due to natural variability in factors such as year-class strength and catchability. Overall, the lake continues to contain a predominantly warm water fish community with abundance proportions similar to those of the baseline sampling period prior to dredging and construction and also similar to warmwater fish communities typical of this region. The relative abundance of the most common species in 2021 are Banded Killifish (*Fundulus diaphanous*) (68.68 percent), Bluegill (*Lepomis macrochirus*) (7.90 percent), Round Goby (*Neogobius melanostomus*) (6.18 percent), Largemouth Bass (*Micropterus salmoides*) (5.22 percent), and Alewife (*Alosa pseudoharengus*) (4.06 percent). The overall relative abundance data for fish species in the lake can be found in Appendix 2E. Since habitat restoration in nearshore areas was completed in fall 2017, the first full year fish community monitoring in a fully restored lake was 2018, making 2021 the fourth year of monitoring. As discussed in the OLMMP, fish community monitoring should continue for a fifth year in 2022, at which point the results should be reviewed to determine if monitoring can end.

2.5.2 Northern Pike Monitoring

The construction of the Wastebed B/Harbor Brook Outboard Area wetlands was completed in 2017. In 2021, the fourth year of monitoring for fish spawning was conducted in the Wastebed B/Harbor Brook Outboard Area wetlands in accordance with Section 7 and Appendix E of the OLMMP (Parsons 2018b). These events focused on monitoring for evidence of spawning/reproduction of Northern Pike (*Esox lucius*) and/or other wetland spawning species. Early season monitoring efforts were carried out from March 18 through April 20 during the Northern Pike spawning season to assess whether the area was being used by spawning adults. Further monitoring efforts occurred from July 21 through August 5 during the months when the young of the year would likely be present and catchable in the wetlands.

The timing of the spawning season monitoring was determined by surface water temperature in the wetland. Northern Pike generally spawn in temperatures from 40-52°F (Smith 1985), so monitoring was conducted while the surface water temperatures in the wetlands were within this range. Trap nets and visual surveys were used during the spawning period in an attempt to document use of the wetlands. Seventeen trap nets were set for 24-hour periods in the Wastebed B/Harbor Brook Outboard Area wetlands (Figure 2.7). Monitoring in July through August was focused on capturing the young of the year. Monitoring was conducted by placing twenty 24-hour minnow traps and making visual observations (e.g., looking for schools of juveniles, scouting for areas to target trapping) while walking the shoreline/berms. Seine nets were not used for this monitoring to minimize disturbance of establishing vegetation that was installed in 2017 or uprooting the new maintenance plantings that were installed from 2018 through 2021.

No adult or juvenile Northern Pike were observed during the monitoring period. However, 18 other species were observed during the March through April monitoring event, including wetland spawning species such as Bluegill, Pumpkinseed (*Lepomis gibbosus*), Yellow Perch (*Perca flavescens*), and Brown Bullhead (*Ameiurus nebulosus*), as shown in Appendix 2E. This indicates that the newly established habitat is functional and being used by fish that spawn in wetlands. Five species were observed during the July through August monitoring event, including Bluegill, Banded Killifish, Brown Bullhead, and young-of-the-year Largemouth Bass, indicating that newly established habitat is also providing functional nursery habitat for young-of-the-year fish. Northern Pike are uncommon in Onondaga Lake, so it was not unexpected that they were not observed during the monitoring period. It is recommended that monitoring of this area continue in 2022 as described in the OLMMP (Parsons 2018b). As per the OLMMP, since adult spawning or juvenile Northern Pike have not been observed following four years of monitoring, the appropriate field data to calculate a habitat suitability index (HSI) for Northern Pike in the area will be collected in 2022 to evaluate the suitability of the wetland for Northern Pike spawning. This HSI (Inskip 1982) will assess seven different variables, two of which account for vegetation requirements of spawning Northern Pike. This will include an assessment of emergent and submerged aquatic vegetation.

2.6 Wildlife

Wildlife observations were recorded during approximately 35 site visits across Remediation Areas A through E during 2021. Remediation areas are providing high quality habitat for a diverse community of wildlife species. Although there are no specific success criteria for wildlife usage in remediated areas, monitoring is conducted to document functional wildlife use. Wildlife observations in 2021 were recorded during routine site visits throughout the year and during the two qualitative surveys described for vegetation, as indicated in the SOP included in Appendix A of the QAPP (Parsons 2020c). Additional observations were made during several focused monitoring events conducted during key times of the year (e.g., spring and fall migrations for waterfowl, spring for amphibians). Because amphibians can be challenging to observe directly, call surveys were conducted during the breeding period in early May and mid-June when minimum daily temperatures reached 42°F and 50°F.

The restored areas are attracting diverse wildlife, including large numbers of migrating waterfowl during spring and fall. Overall, approximately 121 species were observed across all remediation areas in 2021. As expected, most were found within the restored wetlands. This included 46 bird species, 38 fish species, 23 macroinvertebrate species, seven mammal species, and seven amphibian or reptile species. Common wildlife species included Great Blue Heron, Mallard, and Double-crested Cormorant. Other notable species include Northern Leopard Frog, Northern Water Snake, Pied-billed Grebe, Snowy Owl (*Bubo scandiacus*), Black-crowned Night Heron (*Nycticorax nycticorax*), and Bald Eagle. Wildlife observations are summarized in Appendix 2E.

The Onondaga Lake Remedial Design Elements for Habitat Restoration (Habitat Plan) was created to establish the design of habitat modules throughout the remediation areas of Onondaga Lake (Parsons 2021b). The Habitat Technical Working Group tailored the restored areas to approximate the conditions likely to facilitate natural emigration and population development of representative wildlife species. These ecosystem services were quantified in previous annual reports and suggests that the preponderance of the desirable species identified to date are related to the implemented habitat features. The intent of the Habitat Plan was understood to rely on diversification of habitat features as the mechanism for long-term floral and faunal stability that would provide suitable habitat, not only for the selected representative species, but also for various other fish and wildlife species whose habitat requirements are similar to those of the representative species. For instance, the Indiana Bat (*Myotis sodalist*) was included as a representative species despite the understanding that there was a very low likelihood that it would colonize the area. The design was still tailored to satisfy its habitat requirements in case it, or similar species, did colonize the restored areas. The diverse fish and wildlife species documented using the restored habitats to date demonstrate the satisfaction of the intended design. In total, 41 representative wildlife species were listed in the Habitat Plan as indicators of overall ecosystem health and resilience. In total 121 species, were observed in remediation areas in 2021, of which 26 were species designated in the Habitat Plan as representative species, indicating that restored areas are performing as designed and supporting a wide range of species, including numerous representative species. A list of observed representative species is provided in Appendix 2E.

Several specific observations from 2021 that are indicative of successful establishment of appropriate habitat include:

- Mallard, Golden Shiner (*Notemigonus crysoleucas*), Smallmouth Bass (*Micropterus dolomieu*), Largemouth Bass, Pumpkinseed, and Walleye (*Sander vitreus*) have been observed in all remediation areas. Great Blue Heron, Osprey (*Pandion haliaetus*) (of protected-special concern), Red-winged Blackbird (*Agelaius phoeniceus*), Emerald Shiner (*Notropis atherinoides*), and Dragonfly (Odonata), have been observed in four of five remediation areas.

- All nine fish representative species have been documented in multiple Remediation Areas excepting Brown Trout (*Salmo trutta*) and Lake Sturgeon (*Acipenser fulvescens*) which were only observed in Remediation Areas C and B respectively.
- Observations in Remediation Area A (Modules 4A, 5A, and 6A) contained key representatives such as Northern Pike, Pumpkinseed adults and juveniles, Golden Shiner, and Northern Watersnake (*Nerodia sipedon*) as identified in Appendix D of the Habitat Plan and likely supported by the addition of habitat structures to Modules 3A and 2A.
- Common Snapping Turtle (*Chelydra serpentina*), Leopard Frog and Painted Turtle (*Chrysemys picta*) were all observed in Remediation Area D demonstrating a strong relationship between upland (Modules 8A and 8B), persistent emergent and forested wetlands (Module 6A, Module 9B respectively). This strongly suggests the Snapping Turtle, being the most tolerant of moderate wave energy systems (Module 5B) has utilized terrestrial resources provided along the lakeshore area.

Since habitat restoration in nearshore areas was completed in the fall of 2017, the first full year of wildlife monitoring in a fully restored lake was 2018, making 2021 the fourth year of monitoring. Wildlife should continue for a fifth year in 2022, at which point the results should be reviewed to determine if monitoring can end.

2.7 Benthic Macroinvertebrate Community Assessment

Although there are no specific numeric goals regarding the benthic macroinvertebrate community, the overarching goal outlined in the OLMMP is to "maintain or improve the ecological function of Onondaga Lake". Benthic community data were collected for the second time post-remediation in 2021 to document recolonization of new cap substrate placed during remediation. The first such monitoring event was conducted in 2018. Benthic macroinvertebrates were collected from representative areas within remediation areas, the CSX shoreline area, and unremediated areas of the lake (Figures 2.8A through 2.8C) as per the OLMMP. Sampling methods followed NYSDEC sampling procedures (NYSDEC 2021). A petite ponar was used in areas of soft substrate and sediments, while a multiplate was used in areas of coarse substrate such as gravel. Multiplates were deployed on July 15, 2021. Units were left in the water for five weeks and collected on August 20, 2021. Ponar samples were collected from August 11 through 24, 2021. Samples were processed in accordance with NYSDEC procedures and with the QAPP (Parsons 2020c). Organism identification was conducted by Watershed Assessment Associates. Benthic macroinvertebrate data are provided in Appendix 2E.

Biological Assessment Profile (BAP) scores were calculated from the benthic macroinvertebrate community data provided by Watershed Assessment Associates following the NYSDEC SOP for Biological Monitoring of Surface Waters in New York (NYSDEC 2021). BAP scores are organized into categories that follow the Watershed Assessment Associates data. Individual benthic macroinvertebrate community metrics, as specified in the SOP, were calculated and fitted to the applicable scales described in the SOP for petite ponar and multiplate sampling. Metrics assessed for multiplates included species richness, species diversity, Hilsenhoff Biotic Index, and EPT Richness. Metrics assessed for ponars included species richness, species diversity, Hilsenhoff Biotic Index, Percent Model Affinity, and DOM 3. The metrics were then converted to a common scale from zero to 10, with zero indicating the lack of a benthic community, and 10 being comparable to a reference/pristine benthic invertebrate community. The overall score for the samples were then averaged with their location replicates (as applicable) and presented as an average for each area of the lake.

The BAP scores were assigned to descriptive categories defined in the SOP, based on categories established by NYSDEC, to reflect the estimated water quality impact score. Currently, NYSDEC categorizes water quality into four impact categories based on BAP scores. Descriptions of these categories based on NYSDEC (2021) and how they are used to reflect overall water quality, are provided below:

- *Severely impacted (0.0-2.5)*: Indices reflect very poor water quality. The macroinvertebrate community is limited to a few tolerant species. The dominant species are almost all tolerant, and are usually midges and worms. Often 1-2 species are very abundant. Water quality is often limiting to both fish, shellfish, and wildlife propagation and survival.
- *Moderately impacted (scores of 2.5-5.0)*: Indices reflect poor water quality. The macroinvertebrate community is altered to a large degree from the pristine state. Water quality often is limiting to fish, shellfish, and wildlife propagation, but usually not to survival.
- *Slightly impacted (scores of 5.0-7.5)*: Indices reflect good water quality. The macroinvertebrate community is slightly but significantly altered from the pristine state. Water quality is usually not limiting to fish, shellfish, and wildlife survival, but may be limiting to fish propagation, especially sensitive coldwater fish taxa.
- *Non-impacted (scores of 7.5-10.0)*: Indices reflect very good water quality. The macroinvertebrate community is diverse, and virtually unaffected by human disturbance. Water quality should not be limiting to fish, shellfish, and wildlife propagation or survival. This level of water quality includes both pristine habitats and those receiving discharges which minimally alter biota.

BAP scores are a very useful tool for assessing water quality in streams. However, it has been noted in other water bodies that the NYSDEC Ponar BAP categories do not correctly characterize the levels of impairment in lake environments (Baldigo *et al*. 2023). BAP scores are influenced by factors such as water depth, vegetation, and substrate type. Therefore, standard BAP impact category descriptors (severely impacted, etc.) do not accurately reflect water quality or cap conditions within the lake. Nevertheless, the BAP scores provide a useful basis for comparing benthic communities over space and time within the lake.

Average BAP scores for baseline, 2018 and 2021 are detailed in Table 2.6 and summarized below.

Average BAP Scores

	Remediated Area	Unremediated Area
Baseline (Pre-construction)	3.9	4
2018 Ponar	2.6	2.6
2018 Multi-plate	2.3	NA
2021 Ponar	3.4	3.9
2021 Multi-plate	3.8	NA

Key conclusions from this data include:

- 2021 ponar and multi-plate average BAP scores are higher than the 2018 scores, indicating continued improvement
- 2021 ponar and multi-plate average BAP scores are slightly lower but similar to baseline and 2021 scores in unremediated areas, falling within the same impairment category (2.5 to 5 - moderately impacted)
- Results indicate that the benthic community in the remediated areas, as a whole, has recovered to pre-remediation levels following dredging and capping and the unremediated areas have remained relatively unchanged.

Additional detailed discussion is provided below.

Average BAP scores from ponar samples in 2021 ranged from 1.9 to 3.8 in the remediated areas and from 2.2 to 5.3 in the unremediated areas of the lake. Remediated and unremediated areas of the lake had similar average ponar BAP scores of 3.4 and 3.9. This is an increase in the average BAP score for these areas from the averages of 2.6 in both remediated and unremediated areas observed in 2018. These observed increases in both areas indicate that remediated areas are continuing to develop a macroinvertebrate community consistent with other comparable locations in Onondaga Lake. Multiplates, which were only used in remediation areas to facilitate the sampling of coarser substrate, had an average score of 3.8, which is very similar to the ponar sample results in the given areas.

The average BAP scores in 2021 for both the unremediated and remediated areas were slightly lower than those of the baseline sampling (Parsons, Exponent, and Anchor QEA 2011). The BAP scores calculated from the 2021 sampling were all within the moderate category, apart from the unremediated area located closest to the Liverpool marina, which was in the slight impact category. These categories were consistent with or slightly higher than those observed in 2018.

As documented in the OLMMP, changes have occurred in the substrate and lake bathymetry as a result of dredging and capping, and sampling locations and methods are different than historical baseline efforts, making direct point-to-point comparisons between baseline data and post-remediation data impractical.

The baseline sampling in 2010, which exclusively sampled using ponars, was limited to nine locations. During this sampling, a total of 14 orders of benthic macroinvertebrates were identified from areas around the lake representing approximately 66 taxa (genus or species level). In 2021, approximately 86 taxa (genus or species level) were recorded. The benthic community composition in 2010 was dominated by amphipods, annelids, bivalves, or gastropods. These taxa continue to be a dominant portion of the community in 2021. Results in 2021, however, also included numerous caddisfly (Trichoptera) taxa such as Leptocerinae *Triaenodes sp.*, Leptocerinae *Oecetis sp.*, Lepcoterinae *Nectopsyche sp.*, and Hydroptilinae *Oxyethira sp.,* that are generally considered as more sensitive and that were largely absent during baseline sampling. These notable taxa were observed in 2021 at both remediation and unremediated areas, with the exception of Hydroptilinae *Oxyethira sp.,* which was exclusively present in topsoil in Remediation Area B (OL-BMI-TB01, OL-BMI-TB02) and fine gravel habitat layer in Remediation Area C (OL-BMI-GC03). Other noteworthy taxa observed in 2021 included the mayfly (Ephemeroptera) Caenidae *Caenis* sp, which was present in all areas (remediated and unremeidated), with the exception of the CSX area. The caddisfly and mayfly taxa are particularly noteworthy as they contribute to a community metric known as Ephemeroptera, Plecoptera, Trichoptera (EPT) Richness. As defined by NYSDEC (NYSDEC 2021), EPT richness denotes the total number of species of mayflies, stoneflies (Plecoptera), and caddisflies found in a subsample; these are considered to be mostly clean-water taxa, and their presence is generally considered an indication of good water quality. EPT richness was not assessed during baseline sampling, as sampling during that event was limited to ponars that does not assess for EPT Richness when using the NYSDEC BAP protocols. However, the presence of mayflies and caddisflies in 2021 is a positive indication that the benthic macroinvertebrate community is becoming more diversified.

In addition to assessing the benthic macroinvertebrate community lake-wide, BAP scores were also assessed across cap types. Different cap types are found in each remediation area. Some of these cap types occur in a single remediated area of the lake, while others occur in all remediation areas. BAP scores by cap type can be found in Tables 2.7a and b.

In general, average BAP scores from capped areas (range of 2.0 to 8.2) were similar to, or higher than, unremediated areas (range of 2.2 to 5.3) (Table 2.7b). Cap types with the highest average BAP scores in 2021 were coarse gravel (5.5) and topsoil (5.4). These locations are generally in shallow water, which may partially explain the above average scores, as diversity of benthic communities tends to be negatively correlated with water depth (i.e. decreases with water depth), as shown in Figure 2.9. Sand multilayer (1.5) and sand monolayer (1.8) MPC areas had the lowest average scores. Sand multilayer (OL-BMI-SB01, OL-BMI-SB03) and monolayer locations (OL-BMI-SB02, OL-BMI-SC02, OL-BMI-SD02) were all located in deeper water areas. Sand multilayer samples were collected at water depths of 6.86 meters (22.5 feet) and 5.97 meters (19.6 feet) and monolayer locations were collected at depths of 8.56 meters (28.1 feet), 8.1 meters (26.6 feet), and 11.53 meters (37.82 feet), respectively. Decreased benthic diversity, and associated lower scores, in deeper water are not unexpected, especially in Onondaga Lake where areas deeper than approximately 6 to 7 meters (20 to 23 feet) are subject to hypoxic and/or anoxic conditions during most of the summer. Low scores are also evident in deeper portions of unremediated areas as well. For instance, OL-BMI-RR02A, OL-BMI-RR02B, and OL-BMI-RR02C are sampling locations all found in the North end of the lake in an unremediated area. These three locations are located in close proximity to each other but in increasing depth intervals, as shown in Figure 2.8C. OL-BMI-RR02A, located at a depth of 1.12 meters (3.7 feet) in 2021, resulted an average BAP score of 6.0, whereas OL-BMI-RR02C, located at a depth of 9.29 meters (30.5 feet), resulted in an average BAP score of 1.72, which is very similar to the sand multilayer and monolayer results of 1.5 and 1.8. This suggests that the 2021 sand multilayer and monolayer results are likely a function of water depth and will likely not change significantly unless summertime dissolved oxygen levels improve at these depths.

Compared to 2018, most cap types had BAP scores in 2021 that were consistent with or improved from the scores observed in 2018, including:

- Coarse gravel (Remedial Area [RA]-E only)
- Fine gravel
- Fine gravel multilayer Modified Protective Caps (MPCs)
- Sand
- Sand mono-layer MPC

- Topsoil

The only cap type that exhibited a decrease in BAP score since 2018 was in the sand multi-layer MPC. This cap type is limited to a small area of RA-B, and the average is based on only two sample locations. As discussed above, these locations (OL-BMI-SB01 and OL-BMI-SB03) were both located in deeper water areas that are likely impacted by low dissolved oxygen levels in summer. Fluctuations in the magnitude and duration of anoxia can vary from year to year, especially in the shallowest depths where anoxia/hypoxia generally occurs (approximately 6 to 7 meters), so it would not be surprising if the benthic community varies from year to year based on the level of anoxia/hypoxia that occurred at the sample depths in the months preceding sampling. Additionally, variability from year to year and by location is not uncommon in benthic community assessments.

Overall, the BAP scores since 2018 indicate that capped areas have continued to be recolonized over time, as predicted, and are similar to unremediated areas of the lake. Since recolonization is occurring as anticipated and the overarching goal of maintaining or improving the ecological function of the Onondaga Lake benthic community has been demonstrated, the goals specified in the OLMMP have been achieved, and therefore no further monitoring of benthic macroinvertebrates is recommended at this time.

2.8 CSX Habitat Summary

Monitoring of macrophytes is conducted in the CSX area to evaluate if macrophytes recolonize this zone, thus providing additional nearshore sediment stability as intended by the CSX Shoreline Explanation of Significant Differences (NYSDEC and USEPA Region 2 2014). The fifth year of quantitative macrophyte monitoring in the CSX area was completed in 2021. In 2021, quantitative macrophyte community data were taken at the same predetermined 18 plot locations in the CSX area used in prior monitoring events (Appendix 2D). Aquatic macrophyte diversity and density was determined using the same methods as the quantitative survey for the lake-wide macrophyte survey. The most common species in 2021 were sago pondweed, coontail, and common waterweed, all of which are native species.

In 2021, overall species richness in the CSX area was 12, with an average species richness per plot location of 4.2. Since baseline data were collected in 2016, average plot macrophyte density increased from 1.2 (sparse) in 2016 to 2.3 (moderate) in 2021. Average macrophyte plot densities were 2.0 in 2017, 1.8 (2018), 2.3 (2019), and 1.8 (2020). The macrophyte plot density has been generally stable with moderate density typically being recorded over the monitoring period. Native species diversity continues to increase, representing suitable habitat for the fish community. As specified in the OLMMP, the need for continued monitoring of aquatic vegetation, including in the CSX area, will be evaluated following data collection in 2021. The results to date demonstrate that the aquatic macrophyte community in the CSX area is higher than baseline and stable, diverse, with densities sufficient to meet the intent of the Explanation of Significant Differences. As such, routine annual monitoring is recommended to be discontinued. Given the potential impacts of vegetation on sediment stability in this area, the need for additional vegetation monitoring will re-assessed based on the results of the 2024 sediment sampling and bathymetric survey in this area.

Wild rice seeding occurred within the CSX area in 2019 and 2020 to determine if a self-sustaining population of this annual species could be established. As recommended in the 2020 Annual Report, the growth of wild rice was also evaluated in 2021 to ascertain if wild rice seeded in previous years was persisting. During the August qualitative macrophyte monitoring survey, sparse patches of wild rice were observed throughout the CSX area. Although populations are sparse, the persistence of wild rice in 2021 demonstrates independent reproduction after annual seeding ceased in 2020. No additional wild rice seeding is planned in the CSX area.

The CSX area was included in the 2021 lake-wide benthic macroinvertebrate community sampling event that was discussed in Section 2.7 above. In the CSX area, the average BAP score was 3.6 in 2021, which equates to the moderate BAP category. This is consistent with the BAP score from 2018 sampling that also averaged 3.6. Benthic macroinvertebrate data were also collected at a single location within the CSX area as part of baseline sampling in 2010. Interpretation of comparisons to baseline results is challenging because baseline sampling was conducted at only one location, while the 2018/2021 sampling was more spatially diverse (three locations). However, the single baseline result of 4.2 falls within the range of values documented at individual locations in 2018 and 2021 (1.8 to 6.1). The high variability amongst locations may be related to the proximity to the wastewater treatment plant outfall that discharges to the CSX area. The data collected in 2018 and 2021 show that the current benthic community is stable and within the range documented during baseline. As such, additional data collection is not necessary, and ending benthic monitoring in the CSX area is recommended.

During other sampling events that were performed in the CSX area, such as benthic sampling and macrophyte monitoring, various fish species were visually observed from shore and the water. These species generally included Largemouth Bass (both juvenile and adult), Banded Killifish, Round Goby, Gizzard Shad, and Common Carp. Visual detection of fish was limited by abundant macrophytes in the photic zone.

2.9 Maintenance and Response Actions

Maintenance and response actions consisted of invasive plant control, supplemental plantings, and beaver nuisance control. Invasive plant control focused on common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), and water chestnut (*Trapa natans*). Supplemental plantings addressed areas with low percent cover and facilitated achievement of success criteria. To prevent herbivory of newly planted plugs, enclosures around critical planting areas were installed in May and removed once plants had established in October. Plantings in 2021 included plugs of primarily emergent wetland species. At the Mouth of Ninemile Creek, 17,350 plugs were planted on the spits, shoreline, and in-lake planting areas (Appendix 2B). In the Wastebed B/Harbor Brook Outboard Area, 28,900 plugs were installed. As recommended in the 2020 report, two large trees were replaced in 2021. Signs of beaver damage were noted in the Wastebed B/Harbor Brook Outboard Area in early December 2021. To prevent further tree damage, response actions included removal of beavers starting in December 2021 and extending into January 2022. Small woody trees and shrubs will be installed in 2022 to supplement areas impacted by beavers. Table 2.8 contains a comprehensive list of the 2021 maintenance tasks.

2.10 Outboard Area Berm Evaluation

Six berms were constructed of coarse cobble along the widest portions of the Outboard Area to provide protection to the shoreline wetlands from wind/wave energy, as shown in **Figure 2.7**. As specified in the Wastebed B/Harbor Brook Outboard Area Wetland Design Addendum (Parsons and Anchor QEA 2016), following successful completion of the multi-year wetland monitoring and maintenance program, a determination will be made in conjunction with NYSDEC regarding whether the wetlands would be self-sustaining in the absence of the berms. As detailed in Section 2.2, 2021 was the fourth year of the five-year monitoring period at the Wastebed B/Harbor Brook Outboard Area. Established wetlands in this area were stable prior to remediation. However, the wetlands present in this area prior to initiation of remediation and restoration were at elevations that were typically at least 1 foot higher than the currently restored wetlands and were dominated by the invasive species *Phragmites*, which are erosion resistant, but provide very poor habitat value. If it is determined that the berms are no longer required, they would be cut down to a lower elevation as determined appropriate. The berm material would be spread into the surrounding area outside the berm alignment.

The wetland and berm design in this area were developed in part based on the results from a 1.6-acre test planting area that was initiated in the western Outboard Area in 2014. Cap completion, including topsoil placement, and seeding and planting was completed in the test area consistent with the original design. As observed in subsequent monitoring, high water levels and shoreline wave energy resulted in erosion of the topsoil and almost total loss of vegetation in the test area. This area has long fetch exposure and significant wind/wave action, as follows:

- Wave heights of 1 foot are exceeded frequently in any given year.
- Wave heights of 1.5 feet occur on average approximately once per year.
- Wave heights of 2.2 feet occur on average approximately once every five years.

The berm heights were developed to achieve an approximate top elevation of 365 feet North American Vertical Datum of 1988 (NAVD88) following approximately three years of settlement that will result due to the weight of the berm and underlying cap material. The design for the wetlands were specifically revised (Parsons and Anchor QEA 2016) based on the protection provided by the berms, including the following elements:

- Sloped wetland surface elevations range from an elevation of 363.3 feet close to the barrier wall to an elevation of 361.3 feet on the outer edge in areas protected by the berms, which represents most of the wetland area. Since the average lake elevation is 362.5 feet, much of the wetland in this area is in the high-energy breaking wave zone that would occur in the absence of berms,
- Plateaus are at slightly higher elevations than the original design to provide improved conditions for establishment of wetland vegetation and reduce erosion potential in areas not directly behind the berms.
- Erosion resistant armored edges were incorporated along the outer edges of the plateaus and along the barrier wall in areas not directly behind the berms to reduce erosion potential.
- Hot spot dredge areas not located behind a berm were filled to reduce shoreline slopes and provide increased cap elevations, thus providing improved conditions for establishment of wetland vegetation.

- The wetland plantings were changed to predominantly floating aquatic species in the deeper areas behind the berms
- The plant selection was modified to favor more robust species such as cattails and cordgrass that will provide greater resistance to wind/wave energy and to species better able to tolerate periods of inundations. These include cattail, rushes, and bulrushes (overall species diversity and total quantity of plants will be increased slightly). Plantings include species that retain standing structure through the winter to provide appropriate spawning locations for pike

These protective berms have played a pivotal role in the establishment and ongoing protection of the shoreline wetland communities. As documented in Sections 2.2 and 2.6, the outboard area wetlands are functioning as intended, providing high quality diverse ecological value. Removal of the berms would result in significant loss of wetland vegetation and ecological value. In addition to protecting the wetland shoreline from wave action and ice scour, the berms now contain a thriving wetland community behind and along their inner edge. Many wildlife species such as Bass (*Micropterus* sp.), Mallard, Canada Goose (*Branta canadensis*), Caspian Tern (*Hydroprogne caspia*), Marsh Beetle (*Scirtidae Ora*), Painted Turtle, Leopard Frog, and Brown snake (*Storeria dekayi*) have been observed using the berms for protection, nesting, spawning, and hunting/feeding. Therefore, it was recommended that the berms remain in place permanently to provide ongoing protection to the outboard area wetlands. NYSDEC agreed with this recommendation and asked for additional actions to enhance the berms to provide greater function to wildlife since they will now be considered permanent. Habitat enhancements, including live stake plantings and placement of finer grade stone to fill interstitial spaces of cobblestone berms to improve nesting habitat for Common Terns. Additionally, berm elevations will again be surveyed as part of the 2022 monitoring program. Periodic inspection of the berms are anticipated to continue in the future, and appropriate actions will be discussed with NYSDEC if additional settlement occurs and is determined to be of a possible concern.

2.11 Recommendations for 2022

Since year-five results for the Mouth of Ninemile Creek show that habitat restoration has been successful, monitoring and maintenance should end in that area.

Based on the 2021 habitat monitoring results, monitoring and maintenance should continue as described in the OLMMP at the Wastebed B/Harbor Brook Outboard Area. Additionally, it is recommended that the deeper zones of the Wastebed B/Harbor Brook Outboard Area receive supplemental plantings to help facilitate goal attainment in 2022. One large tree should also be replaced as discussed in Section 2.2. Planting focus areas for 2022 are shown in Figures 2.10 and 2.11. Additionally small woody trees and shrubs will be installed in the Harbor Brook area in 2022 to supplement areas impacted by beavers. The Wastebed B/Harbor Brook Outboard Area will be monitored in spring 2022, and supplemental planting areas will be adjusted as indicated by the results.

As required by the OLMMP, the appropriate field data to calculate a habitat suitability index for Northern Pike should be collected in 2022 for the Wastebed B/Harbor Brook Outboard Area and a habitat suitability index calculated to evaluate the suitability of the area for Northern Pike spawning.

The fifth year of lake-wide macrophyte surveys monitoring, including the CSX area, showed that a robust and diverse community of mostly native submerged macrophytes have recolonized remediated areas of the lake. It is recommended that macrophyte monitoring should end based on the overall health of the macrophyte community, the widespread coverage that has been consistently observed since monitoring began, and because there are no success criteria.

As required by the OLMMP, a wetland delineation of the Wastebed B/Harbor Brook Outboard Area will be performed in 2022.

As described in the OLMMP, benthic macroinvertebrate surveys to document recolonization of the new substrate placed as part of the remedy have been conducted in 2018 and 2021. Overall, scores were consistent with or higher in 2021 than those observed in 2018. Since recolonization is successfully progressing as expected, no further monitoring or response actions are needed.

In addition, it is recommended that fish community and wildlife monitoring continue in 2022.

SECTION 3 BIOTA TISSUE

3.1 Introduction

Honeywell has monitored chemical concentrations in the tissue of biota in Onondaga Lake annually since 2008. Tissue monitoring is part of the basis for evaluating the effectiveness of the lake bottom remedy identified in the ROD. Tissue monitoring provides data to support decisions regarding the attainment of remedial goals and to assess remedy effectiveness by comparing post-remediation fish tissue data to the performance criteria, including remedial goals for mercury and target concentrations for organics, which are discussed in Section 4 of the OLMMP.

This section discusses biota tissue sampling activities and results from the 2021 monitoring period. Monitoring in 2021 included the following:

- Collection and analysis of sport fish, large prey fish, and small prey fish tissue
- Collection and analysis of zooplankton tissue

The relevant performance criteria are as follows:

- Mercury concentrations in Onondaga Lake sport fish fillet samples that are protective of human health (0.3 and 0.2 milligrams per kilogram [mg/kg] wet weight)
- Mercury concentrations in Onondaga Lake prey fish whole body samples that are protective of wildlife (0.14 mg/kg wet weight)

As stated in the ROD (NYSDEC and USEPA 2005), these criteria address the remedial action objective to be “protective of human health by eliminating or reducing, to the extent practicable, potential risks to humans.” The ROD states that: “A result of such a reduction could be that humans may consume fish in accordance with the state’s general advisory for eating sport fish, which states that an individual eat no more than one meal (one-half pound) per week.” The OLMMP notes, however, that mercury contamination occurs throughout the state of New York and many health advisories are in place to due to elevated mercury in some fish species. For example, the 2024 NYSDOH statewide fish advice (NYSDOH 2024) for the sensitive population (i.e., people who can become pregnant (under age 50) and children under 15) is to eat no Smallmouth Bass (>15 inches) or Walleye (>19 inches). For the general population (i.e., everyone else), the statewide fish advice is to eat no more than one meal per month of these species.

Additionally, organic compounds identified in Table 7 of the ROD (NYSDEC and USEPA 2005) are considered as points of reference for future evaluations of risk reduction for human and wildlife consumers of fish in the OLMMP (Parsons 2018). Target concentrations for total polychlorinated biphenyls (PCBs) in sport fish and prey fish, dioxins/furans in sport fish, and dichlorodiphenyltrichloroethane (DDT) and metabolites in prey fish were presented in the 2018 Annual and Comprehensive Monitoring Report (Parsons 2020b). The ROD estimated that concentrations of contaminants in fish will be reduced within 10 years following completion of remedial activities (i.e., by 2026). The Ecological and Human Health Performance Criteria for mercury and the targets for other analytes are summarized in Table 3.1.

Sampling in 2021 was conducted in accordance with the Biota Tissue Sampling Work Plan, which was included in Appendix B of the OLMMP (Parsons 2018b), with the QAPP for Onondaga Lake, Geddes Brook, Ninemile Creek, and LCP OU-1 Media Monitoring (Parsons 2020c), and with the 2021 Onondaga Lake Scope Memorandum (Parsons 2021a).

The 2021 monitoring results for zooplankton are summarized in Section 3.2.2. Recommendations for monitoring in 2022 are included in Section 3.3.

3.2 2021 Monitoring Results

3.2.1 Fish

3.2.1.1 Sampling and Analysis Methodology

Sampling for tissue chemical analyses in 2021 was conducted at the same eight locations used from 2008 through 2020 (Figure 3.1). Adult sport fish were collected between April 13 and July 27, 2021; large prey fish were collected between March 24 and October 5, 2021; and small prey fish were collected from August 2 through 9, 2021.

Twenty-five individuals were collected for tissue chemical analysis from each of the following four species of adult sport fish (100 total samples): Walleye, Smallmouth Bass, Pumpkinseed (*Lepomis gibbosus*), and Common Carp (*Cyprinus Carpio*). Samples were collected to target three to four individual fish of each species at each location, to the extent practicable. Fish were targeted based on the sizes specified in the OLMMP (Parsons 2018b). Prey fish sampling included collection of both small and large prey fish. Twenty-four large prey fish were collected in 2021, including 16 White Sucker (*Catostomus commersonii*) and eight Shorthead Redhorse (*Moxostoma macrolepidotum*). As documented in the approved 2020 Scope Memorandum (Parsons 2020a), 2020 was the first year in which Shorthead Redhorse, which occupy a similar trophic level as White Sucker, were collected. White Suckers had been collected in recent years, but their collection presented challenges due to fluctuations in relative abundance. Small prey fish species were collected based on availability at the time of sampling and included 20 Banded Killifish composite samples and four Round Goby composites, for a total of 24 samples, as called for in the OLMMP.

Samples were collected using the methods outlined in the OLMMP, dependent on the target species and size. Otoliths (small ear bones) from each Smallmouth Bass, Walleye, and Common Carp and scales from each Pumpkinseed were collected to estimate fish age. Total length (in millimeters [mm]) and mass (to the nearest gram) were recorded for each fish submitted for chemical analysis. Scatterplots of weight versus length for fish collected in 2021 are provided in Appendix 3B.

Due to fish tissue homogenization issues at Eurofins Lancaster Laboratories in 2019 and 2020, NYSDEC determined that all of the 2019 and 38% of the 2020 results were not usable (Parsons 2024). To account for the lack of 2019 data and the incomplete 2020 data set, it was mutually agreed upon with NYSDEC that 2021 fish be analyzed for all analytes specified in the OLMMP. Specifically, all sport fish samples were analyzed for mercury, PCBs, hexachlorobenzene, dioxins/furans (12 samples/species), lipids, and percent moisture. All prey fish were analyzed for mercury, PCBs, hexachlorobenzene, DDT/metabolites, lipids, and moisture.

Fish collected in 2021, originally planned to be processed and analyzed at Eurofins Lancaster Laboratories, were transferred to SGS Wilmington and placed on frozen hold. Following the approval of the 2022 Quality Assurance Plan on September 12, 2023 (Parsons 2023), which includes fish processing by SGS Wilmington and analysis by SGS Wilmington (dioxins/furans, lipids) and SGS Dayton (mercury, pesticides, PCBs, moisture), 2021 fish tissue processing and analysis began.

Data validation was conducted in accordance with the Biota Tissue Sampling Plan (Appendix B of the OLMMP) (Parsons 2018b) and updated QAPP (Parsons 2023). Chemical analytical data generated by the laboratories were reviewed and validated by Parsons for usability in accordance with data validation procedures described in the Data Usability Summary Report (DUSR) (Appendix 3A). As presented in the DUSR, the fish data from 2021 for all analytes were determined to be valid and usable. For some analytes such as PCBs, there were many samples qualified as "possibly biased low" due to low recovery in standard (certified) reference materials. In addition, NYSDEC has indicated that results for PCBs and lipids are potentially biased low based on split samples analyzed at NYSDEC labs. Therefore, NYSDEC and Honeywell are evaluating potential modifications of extraction/analytical methods for future sampling. If modifications are determined to be necessary, updates to the QAPP will be prepared.

3.2.1.2 2021 Results

Chemical concentrations and lipid content in fish are summarized in Table 3.2. Dioxins and furans are provided as toxicity equivalent quotients (TEQs); calculated TEQ concentrations for each fish sample are provided in Appendix 3B. Chemical concentrations in fish from 2021 are summarized in Figures 3.3 to 3.8. The long-term temporal distribution of chemical concentrations in fish are shown in Figures 3.9 to 3.36. Figure nomenclature, data treatment, and analyte-specific details are defined in Figure 3.2.

In 2021, mean and 95% UCL mercury concentrations in Common Carp and Pumpkinseed were below the Human Health Performance Criteria of 0.2 mg/kg and 0.3 mg/kg (Figure 3.3, Table 3.2). Mean and 95% UCL mercury concentrations in Smallmouth Bass and Walleye remained above the performance criteria. Smallmouth Bass and Walleye are longer-lived, higher trophic level species that are expected to take longer to respond to the remedy (USEPA 2020). Mean mercury concentrations were below the Ecological Performance Criterion of 0.14 mg/kg in both small and large prey fish; the 95% UCL mercury concentration was below the Ecological Performance Criterion in small prey fish but slightly above in large prey fish (Figure 3.3).

For PCBs, mean and 95% UCL concentrations were below the upper human health target (0.3 mg/kg) and above the lower target (0.04 mg/kg) in Smallmouth Bass and Common Carp but above both targets in Walleye (Figure 3.4). For Pumpkinseed, mean and 95% UCL concentrations of PCBs were below both human health targets. In small prey fish, mean concentrations of PCBs were below the ecological target of 0.19 mg/kg, with the 95% UCL only slightly above. In large prey fish, both the mean and 95% UCL PCB concentrations were above the ecological target.

Concentrations of hexachlorobenzene continue to be low and lower than they were when monitoring began in all species (Figure 3.5). Hexachlorobenzene was not identified as a risk concern in the ROD so there are no Human Health Performance Criteria or targets for hexachlorobenzene in fish tissue.

Mean and 95% UCL concentrations of DDT and metabolites were below the respective ecological targets of 0.049 and 0.14 mg/kg in small prey fish and large prey fish (Figure 3.6). DDT is not analyzed in sport fish as the ROD did not identify it as posing a human health risk.

For dioxins/furans as total TEQ, mean and 95% UCL concentrations in Pumpkinseed, Smallmouth Bass, and Walleye were below both human health targets (1.3 and 4.0 ng/kg) when calculated using both zero and one-half the detection limit for non-detects (Figures 3.7 and 3.8). For Common Carp, the mean concentration and 95% UCL were below the upper human health target when calculated using both zero and one-half the detection limit for non-detects. However, although the mean was also below the lowest human health target, the 95% UCL was slightly above the lowest target when calculated using one-half the detection limit (Figure 3.8). Dioxin/furans are not analyzed in prey fish because it was not identified in the ROD as posing a risk to ecological receptors.

3.2.1.3 Comprehensive Monitoring Results (2008 through 2021)

As discussed in the OLMMP, comprehensive reviews of monitoring results are to be provided every five years to support the USEPA Five-Year Reviews with the intervening years consisting of annual summaries of that year's data. The last comprehensive report was in 2018, so the next comprehensive fish monitoring discussion is scheduled to be in the 2023 Comprehensive Annual Report. However, due to the homogenization issues in 2019 and 2020 discussed briefly above, that resulted in most of those data not being usable, this section provides a brief summary of 2021 results in comparison to the 2008 through 2018 results. A more detailed review and interpretation of trends evaluated over time is planned for the 2023 Comprehensive Annual Report.

Three years with complete data sets (2017, 2018, and 2021) are available since remediation activities were completed in 2016. To assess the direction and rate of change in concentrations post-remedy (i.e., after 2016), additional years of data collection are needed and will be undertaken as defined in the OLMMP. Therefore, the discussion here focuses on a qualitative comparison of pre-remedy and post-remedy concentrations and comparisons to performance criteria and targets.

For comparison to mercury performance criteria and organic chemical targets, data are presented as box and whisker plots which show individual data points, mean, median, 25th percentile (Q1), 75th percentile (Q3), whiskers as 1.5 times the interquartile range (IQR[4]), and 95% UCLs (Figures 3.9 through Figure 3.36).

Tables 3.3a and 3.3b summarize the chemical concentrations in fish tissue from 2015 to 2021 for sport fish fillets and whole body prey fish, respectively. The tables include sample size, the number of detected concentrations, the mean, and the 95% UCL for each species and contaminant by year. The means and 95% UCLs were calculated using ProUCL Version 5.2 by the statistical method shown on the table unless there were three or fewer results with detected concentrations (USEPA, 2015). If three or fewer results had detected concentrations, then 95% UCLs were not calculated and therefore not presented in Tables 3.3a and 3.3b or on the figures. However, for the figures, the mean was calculated arithmetically when one to three results had detected concentrations by substituting one-half the

[4] The whiskers are consistent with the approach used in USEPA's ProUCL version 5.2 (USEPA 2022). The lower whisker extends to the minimum or smallest value within Q1 minus 1.5 times the IQR, whichever is higher. The upper whisker extends to the maximum or largest value within Q3 plus 1.5 times the IQR, whichever is lower.

method detection limit (mercury) or reporting limits (organic analytes) for non-detected concentrations. In monitoring reports prior to 2018, all means (for tables and figures) were calculated arithmetically. Use of ProUCL to calculate both 95% UCLs and means (unless three or fewer results had detected concentrations) provides a consistent statistical method to calculate both metrics for comparison to performance criteria. ProUCL Version 5.1 was used for 2015 through 2018 data. ProUCL Version 5.2 was used for 2021 data. For 2021 data, ProUCL Version 5.2 suggested the use of the 95% Student's-t UCL for datasets that did not follow a discernible distribution when all samples were detected. These circumstances were reviewed, and the non-parametric 95% Standard Bootstrap UCL was determined to be a better fit for these datasets. These instances are reflected in Tables 3.3a and 3.3b accordingly.

3.2.1.3.1 Sport Fish Fillet Concentrations

Overall, mean and 95% UCL contaminant concentrations in sport fish fillets were lower in 2021 than 2018 or were below goals, with the exception of mercury in Smallmouth Bass and Walleye. This is expected because these fish are longer-lived, higher trophic level species that take longer to respond to the effects of the remedy (USEPA 2020).

Mean and 95% UCL mercury concentrations in all sport fish were lower in 2021 than when Honeywell baseline monitoring began (i.e., 2008 for all species but Common Carp for which monitoring began in 2014) (Figures 3.9 through 3.12). Mean and 95% UCL mercury concentrations in Smallmouth Bass and Walleye were generally consistent in 2017, 2018, and 2021, but lower than in 2016 and previous years (Table 3.3a, Figures 3.9 and 3.10). Mean and 95% UCL mercury concentrations in Smallmouth Bass and Walleye remain above the Human Health Performance criteria of 0.2 and 0.3 mg/kg. Mean and 95% UCL mercury concentrations in Pumpkinseed and Common Carp were between the upper and lower Human Health Performance criteria (i.e., 0.3 and 0.2 mg/kg) in 2016 and 2017, and below the lowest criterion of 0.2 mg/kg in both 2018 and 2021 (Figures 3.11 and 3.12).

Mean and 95% UCL Total PCB concentrations in sport fish collected in 2021 were less than those collected when monitoring began (Figures 3.13 through 3.16), and less than any prior post-remediation concentration. Mean and 95% UCL Total PCB concentrations in Walleye remained slightly above the human health target of 0.3 mg/kg in 2021 (Figure 3.14). Mean and 95% UCL Total PCB concentrations Smallmouth Bass and Common Carp were between the upper and lower human health targets (i.e., 0.3 and 0.04 mg/kg) (Figures 3.13 and 3.15). Mean and 95% UCL Total PCB concentrations in Pumpkinseed were less than the lowest human health target of 0.04 mg/kg (Figure 3.16).

Mean and 95% UCL dioxin/furan concentrations (evaluated as TEQs using non-detects at one-half the detection limit) in sport fish collected in 2021 were less than those collected when monitoring began (Figures 3.17 through 3.20. Mean and 95% UCL concentrations in all sport fish were below the lowest human health target (1.3 ng/kg), with the exception of the 95% UCL concentration in Common Carp, which was slightly above the lowest human health target of 1.3 ng/kg (Figure 3.19).

Mean and 95% UCL hexachlorobenzene concentrations in all sport fish collected in 2021 were less than those collected when monitoring began (Figures 3.25 through 3.28). Concentrations continue to be low for all species and lower than they were when monitoring began and have had a low frequency of detections in many samples analyzed since 2017. There are no Human Health Performance Criteria or targets for hexachlorobenzene in fish tissue.

3.2.1.3.2 Small and Large Prey Fish Whole Body Concentrations

Mean and 95% UCL contaminant concentrations in prey fish in 2021 were lower than in 2018 or were below goals, with the exception of PCBs in small and large prey fish and mercury in large prey fish (Figures 3.29 through 3.36). Elevated PCB concentrations in small prey fish, particularly in SMU 6, are attributed to ongoing contributions of PCBs from Ley Creek, which enters Onondaga Lake at the north end of SMU 6. This source is unrelated to Honeywell and will be remediated in the future. As noted in Section 7.2.2, PCB concentrations in surface water are also elevated in the vicinity of Ley Creek. This ongoing source likely contributes to PCB accumulation in fish tissue overall.

For small prey fish collected in 2021, mean and 95% UCL mercury and PCBs concentrations were lower than when monitoring began. Both the mean and 95% UCL concentrations for mercury have been below the Ecological Performance Criterion of 0.14 mg/kg since 2016 (Figure 3.29). Mean Total PCB concentrations in small prey fish have been below the ecological target (0.19 mg/kg) since 2012 with the 95% UCL slightly exceeding the target in most years (Figure 3.31). The highest Total PCB concentrations in small prey fish in 2021 (0.552, 0.648, and 0.802 mg/kg) continue to be observed at sampling location OL-F-6A, which is located in SMU 6 near the mouth of Ley Creek. The average concentration at this location (0.667 mg/kg) in 2021 was four times higher than the highest concentration documented at the other sampling locations in 2021 (0.168 mg.kg) and twenty-one times higher than the lowest (0.0314 mg/kg).

Mean and 95% UCL concentrations of DDT and metabolites in small prey fish in 2021 remained well below the ecological target (0.049 mg/kg) and have remained relatively unchanged since collection began in 2008 (Figure 3.33). This is consistent with Appendix I of the Feasibility Study (Parsons 2004), which noted that DDT concentrations in fish were unlikely to change because concentrations probably reflect background concentrations and surface weighted average concentrations in sediment were lower than nearby Otisco Lake. Similarly, mean and 95% UCL hexachlorobenzene concentrations in small prey fish (Figure 3.35) show no discernible trends over the collection period. There are no ecological goals or targets for hexachlorobenzene in fish tissue.

For large prey fish, mean and 95% UCL concentrations of mercury were lower in 2021 than when monitoring began in 2014 (Figure 3.30). Consistent with 2016 and 2017 results, mean mercury concentrations were below the Ecological Performance Criterion of 0.14 mg/kg in 2021, with a 95% UCL concentration slightly above the criterion. Mean and 95% UCL PCB concentrations in large prey fish in 2021 were similar to those measured in 2014 when Honeywell baseline monitoring began, and less than concentrations measured during construction years 2015 and 2016 (Figure 3.32). With the exception of 2018, mean and 95% UCL PCB concentrations in large prey fish have remained above the ecological target of 0.19 mg/kg.

Mean and 95% UCL concentrations of DDT and metabolites in large prey fish have remained well below the ecological target (0.14 mg/kg) since monitoring began in 2014 (Figure 3.34). Mean and 95% UCL hexachlorobenzene concentrations in large prey fish (Figure 3.36) have remained low and show no discernible trends over the collection period. As mentioned for small prey fish, there are no ecological goals or targets for hexachlorobenzene in fish tissue.

3.2.2 Zooplankton

3.2.2.1 Sampling and Analysis Methodology

Zooplankton samples were collected for mercury analysis at South Deep 19 times from May 11 to November 23, 2021, at a frequency that ranged from weekly to monthly (Figure 3.1). Ten of these samples could not be analyzed for total mercury due to insufficient zooplankton biomass and were therefore analyzed only for methylmercury. UFI also attempted to collect samples of large (at least 1 mm long) *Daphnia spp*. zooplankton. Although *Daphnia* were observed on several occasions during summer 2021, the zooplankton community was generally dominated by smaller taxa, including *Bosmina*. As in previous years, *Daphnia* were not present in high enough quantities to isolate a sufficient number for mercury analysis. Although there are no remedial performance criteria for zooplankton, analysis of mercury and methylmercury concentrations provides a measure of change in potential exposure to fish that eat zooplankton and aid in the understanding of mercury cycling.

3.2.2.2 Results

Wet weight concentrations of total mercury and methylmercury in zooplankton samples collected at the South Deep location in 2021 are presented in Table 3.4 and Figure 3.37. Wet weight total mercury concentrations measured in zooplankton during 2021 ranged from 0.0132 mg/kg (or parts per million) on October 5 to 0.133 mg/kg on November 23. Methylmercury concentrations observed in zooplankton during 2021 ranged from 0.0012 mg/kg on November 10 to 0.0148 mg/kg on September 21. The highest methylmercury concentrations in zooplankton occurred on September 21 and September 28 (Table 3.4), following an increase in methylmercury concentrations at the 2-meter depth of the water column on September 14 (Figure 5.12). It is unclear if these methylmercury patterns in surface water and zooplankton are connected. Elevated methylmercury concentrations have been observed during the fall in prior years. The average methylmercury concentration for the 2021 monitoring period (0.0067 mg/kg) was within the range of average values reported in the 2011-2020 period (0.002-0.02). The DUSR for zooplankton is included in Appendix 3A.

Contribution of methylmercury to total mercury in 2021 ranged from 2 percent on November 23 to 80 percent on October 5 (Figure 3.37). The instances of higher methylmercury contribution were caused by relatively low total mercury concentrations rather than high methylmercury concentrations. On average, methylmercury accounted for approximately 24 percent of the total mercury in zooplankton. Relative to pre-nitrate addition values, methylmercury concentrations in zooplankton have remained consistently low from the first year of nitrate addition through 2021.

3.3 Recommendations for 2022

The OLMMP specifies that annual comprehensive fish monitoring will be completed through at least 2020. It is recommended that fish and zooplankton sampling continue in 2022 as specified in the OLMMP. To account for natural variability, performance criteria will be considered to have been met after multiple years of data indicate attainment. As noted in the OLMMP, performance criteria should be met at least three years in a row or four years out of five to verify achievement of goals. As specified in the OLMMP, "*fish monitoring will continue until NYSDEC/USEPA determine that the relevant* *remedial action objectives (RAOs) and preliminary remediation goals (PRGs) in the ROD have been achieved."*

SECTION 4 MONITORED NATURAL RECOVERY

4.1 Introduction

MNR is a significant component of the remedy for the sediment in Onondaga Lake's profundal zone, which is also referred to as SMU 8. Water depths in SMU 8 are greater than 30 feet, where waters typically stratify thermally from mid-May through mid-October. Natural recovery occurs gradually as older sediment is buried by new sediments with lower mercury concentrations that enter the lake through tributary inflows and direct runoff. Results from monitoring conducted in 2020 and prior years indicate that natural recovery of SMU 8 sediments is progressing faster than expected based on projections made in the Final Design (Parsons and Anchor QEA 2012).

Sediment sampling in SMU 8 for mercury analysis has been conducted every three years to monitor ongoing natural recovery in accordance with the final design for the lake bottom remedy (Parsons and Anchor QEA 2012). The primary objective of sediment sampling is to provide a basis for determining achievement of the PRGs set forth in the ROD (NYSDEC and USEPA 2005). This includes achieving a mercury probable effects concentration (PEC) of 2.2 mg/kg or lower on a point-by-point basis in the profundal zone and a mercury bioaccumulation-based sediment quality value (BSQV) of 0.8 mg/kg or lower on an area-wide basis within 10 years following remediation of upland sources, littoral sediments, and thin-layer capping in portions of the profundal zone. Area-weighted average mercury concentrations must meet the mercury BSQV of 0.8 mg/kg within each of five subareas of the lake bottom that together cover the entire surface area of Onondaga Lake. The five lake subareas from north to south are designated as: North Basin, Ninemile Creek Outlet Area, Saddle, South Basin, and South Corner (Figure 4.1A and 4.1B).

Sediment sampling was last conducted in 2017 and was originally scheduled to occur in 2020. However, due to challenges associated with COVID-19 in 2020, NYSDEC approved the next sediment sampling event to be completed in 2021. The 2017 progress monitoring results indicated that the MNR goals were likely met, therefore the 2021 monitoring event was the first of two compliance monitoring events and included collection of an expanded number of cores from both the profundal and littoral zones for chemical analysis. Monitoring also included the collection of cores from microbead plots for visual inspection to assess the depth of mixing of surface sediments and sedimentation rates.

Monitoring conducted in 2021 included:

- Collection and analysis of littoral and profundal zone surface sediments for total mercury. ,
- Sediment trap sampling and analysis for mercury and suspended solids analysis, and
- Collection and assessment of sediment cores from microbead plots to assess sedimentation rates and mixing depth.

A detailed discussion of these activities and results from the 2021 sampling is provided below.

4.2 2021 Monitoring

Results from SMU 8 sediment sampling conducted in 2021 indicate that natural recovery in SMU 8 is progressing faster than model predictions. The first compliance monitoring event was conducted in 2021, with the second planned for 2022.

Shallow sediment cores were collected at 49 locations from the profundal zone and 14 locations from the littoral zone (Figure 4.1A and 4.1B). Sampling was conducted from May 17 through May 21, 2021. Mercury data from the cores are presented in Table 4.1. These data as they relate to compliance with the PEC and BSQV are discussed below in Section 4.2. The DUSR for these data is presented in Appendix 4A, which includes chemical data reported by Eurofins TestAmerica which were reviewed and validated by Parsons for usability in accordance with data validation procedures presented in the QAPP (Parsons 2020c). Boring logs are presented in Appendix 4B.

Sediment traps are deployed annually to provide supplemental information on the mercury content of settling sediments and to aid in the assessment of sediment deposition rates. Sediment traps were deployed at the South Deep sampling location at a water depth of approximately 33 feet (or 10 meters), which is below the thermocline for most of the summer stratification period. Sampling was conducted from May 7 through November 16, 2021. Deployment periods ranged from 4 to 9 days. Table 4.2 presents mercury and total suspended solids data from 2021. Appendix 4A contains the DUSR associated with MNR. Sediment trap samples were collected continuously over the deployment intervals, and the slurry from the sediment traps was analyzed by Eurofins for low-level total mercury and by UFI for total suspended solids and total fixed solids. The 2021 sampling and analyses were conducted in accordance with the MNR Sampling Work Plan included in Appendix A of the OLMMP (Parsons 2018b) and with the QAPP (Parsons 2020c). There were no deviations from the work plan in 2021. Results from sediment traps are discussed below in Section 4.4.

4.3 Compliance Monitoring Results

As discussed above, the MNR goal is to achieve a mercury PEC of 2.2 mg/kg or lower on a point-by-point basis in the profundal zone and a mercury BSQV of 0.8 mg/kg or lower on an area-wide basis in each of the five subareas. The 2021 monitoring results relative to these goals are discussed below. A discussion of the processes controlling natural recovery, specifically settling sediment rates and mercury concentrations and sediment mixing depth, is provided in Section 4.4

Mercury PEC Compliance

Mercury concentrations measured in 2021 in surface (0 to 4 centimeters [cm]) and subsurface (4 to 10 cm) sediments throughout SMU 8 are listed in Table 4.1. All data are below the mercury PEC of 2.2 mg/kg on a point-by-point basis in the profundal zone for the 0 to 4 cm sampling interval, which is the compliance depth for the evaluation of goal attainment in SMU 8 as defined by the OLMMP. Additionally, no locations exceeded the PEC for the 4 to 10 cm interval, as shown in Table 4.1.

Mercury BSQV Compliance

Area-weighted average mercury concentrations were calculated for the five subareas of Onondaga Lake, which include both the profundal and littoral zones, for comparison to the BSQV. Area-weighted average concentrations in each subarea were calculated using the following datasets:

- 2021 SMU 8 surface sediment samples
- 2021 uncapped littoral zone surface sediment samples
- 2019 cap monitoring data (including both solid phase and porewater converted to solid phase using equilibrium partitioning) within the 0 to 15 cm depth interval within the littoral zone (0- to 6-inch samples and 3- to 6- inch samples included) and 0- to 4- cm depth intervals for locations within the profundal zone
- Pre-design investigation and remedial investigation samples collected from littoral zone surface sediment samples for those locations not resampled in 2021 that are outside of capped areas

Locations of the samples used and the resulting Thiessen polygons used for calculation of surface weighted average concentrations (SWACs) in each subarea are shown in Figure 4.2. The Thiessen polygons presented in Figure 4.2 were developed without consideration of the BSQV zone boundaries. The mercury SWACs in each BSQV zone were calculated based on the area of each Thissen polygon that falls within the boundary of the BSQV zone. A subset of littoral zone sample locations that were used to calculate the SWACs in the Final Design were sampled in 2021 to verify that conditions have not changed significantly since the locations were previously sampled. A comparison of historical and 2021 data is included in Table 4.3. Except for two locations, concentrations observed in 2021 were consistent with or lower than previously sampled locations. The two locations where mercury concentrations were higher in 2021 than in the historical data set were S112 and S373, both of which are in the North Basin. Measured mercury concentrations at S112 were 1.1 mg/kg in 1992 and 1.9 mg/kg in 2021. Measured mercury concentrations at S373 were 0.56 mg/kg in 2000 and 0.83 mg/kg in 2021. Measured concentrations at both of these locations are within the range of values observed in this area during the remedial investigation. Nevertheless, it is recommended that these two littoral zone locations be resampled in 2022.

The analysis indicates that the sediment mercury SWACs are less than the mercury BSQV of 0.8 mg/kg in all five subareas of Onondaga Lake. The lowest SWAC was in the Mouth of Ninemile Creek subarea (0.32 mg/kg), and the highest was in the North Basin (0.66 mg/kg). SWACs for all five subareas are presented in Table 4.4 and are shown on Figure 4.2. Detailed calculations are presented in Appendix 4C. Mercury SWACs in 2021 are generally less than expected by this time based on predictions presented in Appendix N of the Final Design (Parsons and Anchor QEA 2012), confirming that recovery is occurring at a faster rate than predicted.

4.4 Assessing Processes Controlling Natural Recovery

Natural recovery in SMU 8 sediments is controlled by mixing depth and sedimentation rates (i.e., burial), and mercury concentrations on settling sediment particles. Sampling was conducted to evaluate the mechanisms that control natural recovery, including core collection in microbead plots to evaluate mixing and sedimentation rates and sediment traps to evaluate sedimentation rates and mercury concentrations in settling particles.

In June and July 2009, microbead markers were deposited on top of profundal zone sediments at nine 1,400-square-foot plots located in the deep-water zone of Onondaga Lake to assess sedimentation rates in SMU 8. Sedimentation rates were estimated from cores collected in the microbead plots by measuring the thickness of sediment that accumulated on top of the microbead marker. Sediment cores have been collected periodically (2011, 2014, 2015, 2017 and 2021) since the microbead plots were placed. The cores were visually inspected for the green microbead marker. Sediment accumulation on top of the microbead marker was measured to estimate the sedimentation rate using the following formula:

$$S = \frac{T}{t} \cdot \rho_b$$

Where,

S = sedimentation rate (in grams per square centimeter per year [g/cm^2/year])

T = thickness of sediment accumulation (cm)

t = time over which accumulation occurred (years)

ρ_b= dry bulk density (in grams per cubic meter [g/cm^3])

Sedimentation rates were estimated using the thickness of sediment accumulation since 2009 are reported in Table 4.5. The thickness of sediment accumulation is based on observation of depth to microbead markers from the cores collected from the microbead plots (Appendix 4D). The results indicate that sedimentation rates range from 0.03 to 0.27 g/cm^2/year, with an average of 0.17 g/cm^2/year. The sedimentation rate of 0.25 g/cm^2/year used in the final design natural recovery modeling is within the range measured in 2021.

The cores collected from the microbead plots can also be used to assess mixing depths. The presence of layers or laminations in the SMU 8 sediment is primary evidence that SMU 8 sediment is relatively undisturbed and not affected by bioturbation to depths greater than 4 cm or resuspension of lakebed sediment. Consistent with examinations completed in previous years, visual inspection of the cores collected in 2021 focused on the upper portion of the core where observations are representative of more recent lake mixing conditions. Based on the visual observations of laminations from the cores, mixing depths range from <0.1 cm to 3 cm in 17 of the 18 cores, with one outlier with a mixing depth of 9.5 cm[5]. The average mixing depth was 1.67 cm (Appendix 4D). This is less than the mixing depth (4 cm) assumed in the MNR modeling conducted as part of the Final Design (Parsons and Anchor QEA 2012).

Sediment traps are another method used to assess sedimentation rates and mercury concentrations in settling sediments. Depositing sediment collected from sediment traps deployed each year in the

[5] The core with a mixing depth of 9.5 cm (*OL-MB-80093-A)* was collected from the North Basin in 37 feet of water. Mercury concentrations measured below 4 cm sediment depth (4 – 10 cm) in the North Basin samples were less than the mercury PEC of 2.2 mg/kg; therefore, if mixing did extend beyond 4 cm in the North Basin, mercury concentrations would not exceed 2.2 mg/kg.

south basin is analyzed for mercury. These data provide estimates of mercury sediment concentrations depositing on the lake bottom. Results from sediment trap monitoring conducted in 2021 (Table 4.2) indicate that sedimentation rates are higher than those assumed during the final design, and mercury concentrations on depositing particles are lower than the assumed value in the MNR modeling conducted during the final design, as detailed below. These results support the conclusion that MNR is occurring faster than predicted. The deposition rate of suspended solids in 2021 ranged from 2,314 to 56,120 mg per square meter per day (mg/m^2/day), with an average of 12,988 mg/m^2/day., which is higher than the 6,850 mg/m^2/day assumed in the Final Design (Parsons and Anchor QEA 2012). Mercury concentrations in sediment trap solids collected in 2021 ranged from 0.02 to 0.53 mg/kg, with a mean of 0.19 mg/kg, which is lower than the mercury concentration of 0.4 mg/kg used in the natural recovery modeling conducted during the Final Design. From 2011 through the end of construction in 2016, average mercury concentrations in settling sediment ranged from 0.43 mg/kg (2016) to 1.1 mg/kg (2012). Average mercury concentrations in settling sediment since the completion of the remedy have been lower, ranging from 0.18 mg/kg (2018) to 0.28 mg/kg (2020).

4.5 Summary of Results and Recommendations

Based on SMU 8 sediment sampling results from the 2021 compliance monitoring event and an evaluation of the comprehensive data set, natural recovery of SMU 8 sediments is progressing faster than anticipated based on projections completed as part of the Final Design, and MNR sediment-based goals may have already been achieved. Therefore, it is recommended that the next sediment monitoring event be completed for compliance verification in 2022. This will entail sampling from the same 49 profundal zone locations completed in 2021, as detailed in the Monitored Natural Recovery Work Plan in the OLMMP. In addition, the two littoral zone locations where mercury concentrations were higher in 2021 than in the historical data set (S112 and S373) will be resampled in 2022, both of which are in the North Basin.

The 2022 sampling will be the second year of two compliance sampling events. SWACs will be calculated for each of the five BSQV zones based on the 2022 compliance sampling along with the cap monitoring data collected in 2022. If the 2022 sampling indicates SMU 8 sediments continue to meet the PEC on a point-by-point basis and the BSQV on a SWAC basis, then remedial goals would be considered achieved and further sampling for assessment of mercury concentrations in SMU 8 would not be needed. Additionally, sediment trap monitoring should continue in 2022, as described in the OLMMP.

SECTION 5 2021 NITRATE ADDITION

5.1 Introduction

5.1.1 Purpose and Background

Detailed below are the activities and results from the eighth year of full-scale nitrate addition conducted on behalf of Honeywell. Nitrate is being added to maintain nitrate concentrations in the hypolimnion of Onondaga Lake sufficient to mitigate the release and/or production of methylmercury from low levels of mercury in the lake's profundal zone (i.e., deep water) sediment (Parsons and UFI 2014b). Methylmercury is a substance that bioaccumulates in aquatic organisms and can make fish unsuitable for human consumption. Methylmercury was not significantly released from underlying sediment to lower hypolimnion waters during the summer of 2021 when deep lake waters would be prone to methylmercury release in the absence of nitrate addition. This lack of methylmercury release from SMU 8 sediment demonstrates that nitrate addition was again effective in 2021 as it has been since the nitrate addition program began in 2011.

The remedy for the Onondaga Lake bottom is described in the ROD prepared by the NYSDEC and the USEPA in 2005. In 2014, following completion of the three-year nitrate addition pilot test, NYSDEC and USEPA issued an Explanation of Significant Differences that specified continuation of nitrate addition to the hypolimnion of Onondaga Lake as warranted during summer and early fall (NYSDEC and USEPA 2014).

As Onondaga Lake surface water temperatures increase during spring and early summer months, the water column thermally stratifies so the warmer, less dense waters of the epilimnion overlie the colder, denser waters of the hypolimnion. The epilimnion and hypolimnion are separated at a water depth of approximately 30 feet (9 meters) by the thermocline, which greatly limits transport between these layers. The hypolimnion is subject to depletion of dissolved oxygen followed by depletion of dissolved nitrate during the stratification period, which typically extends from mid-May through mid-to-late October. When concentrations of oxygen and nitrate are low, profundal sediments may release methylmercury to the water column. Methylmercury, if present in the profundal zone of the lake, can be transported to the upper waters primarily when lake waters mix in the fall at a time known as fall turnover. During summer periods in years prior to the nitrate addition pilot test, depletion of nitrate in lower waters resulted in higher methylmercury concentrations in those waters.

During 2007 and 2008, releases of methylmercury to the hypolimnion were found to be substantially lower than in prior years due primarily to elevated nitrate concentrations in the lake. The increase in nitrate was a consequence of wastewater treatment upgrades implemented at the Onondaga County Metropolitan Syracuse Wastewater Treatment Plant (Metro) located along the southern (upstream) shore of Onondaga Lake. Wastewater treated at Metro is discharged into the nearshore waters of the lake. In 2004, Onondaga County began operating a biologically-active filter system at Metro that converts ammonia in wastewater to nitrate. As a result, the available pool of nitrate in the hypolimnion at the start of summer stratification almost doubled. In 2005, Onondaga County implemented an advanced phosphorous-removal system that resulted in decreased algal growth in the upper waters of the lake and reduced demand for oxygen and nitrate in the hypolimnion. Because of Metro's additional wastewater treatment efforts, nitrate persisted in the Onondaga Lake hypolimnion for a significantly greater time during summer months of 2007 and 2008, which inhibited the release of methylmercury from SMU 8 sediments (UFI and Syracuse University [SU] 2007; Todorova et al. 2009). The nitrate addition pilot test was conducted successfully for three years from 2011 through 2013, and the full-scale nitrate addition was conducted from 2014 to present, which has further inhibited the release of methylmercury from profundal zone sediments. The full-scale application program in 2021 is summarized below.

5.1.2 Operation and Monitoring

During 2021, as during previous years, liquid calcium nitrate solution was diluted with upper lake waters and added directly to the lower waters in the profundal zone at three locations in the lake. One application location was in the northern basin of Onondaga Lake, and the other two were in the southern basin (**Figure 5.1**). The three application locations used in 2021 were the same locations at which nitrate was applied from 2011 through 2020.

In 2021, nitrate was added to the lower, stratified waters of Onondaga Lake in 25 nonconsecutive, single-day applications from July 20 through October 7 (see **Table 5.1**). A target one-day dose of liquid calcium nitrate solution[6] was applied at one of the three application locations during each application day.

Monitoring of lake conditions during 2021 provided the basis for assessing lake conditions directly and indirectly associated with nitrate addition. Three-dimensional monitoring of nitrate concentrations in the lake's profundal zone was completed twice per week during the nitrate addition period. Thirty-four locations were monitored each week, and a subset of 11 of those locations was monitored later in the week. In addition, surface water samples were collected at the South Deep location (**Figure 5.2**) on 24 different dates from May 10 through November 22, 2021, and analyzed for methylmercury and other parameters to confirm the effectiveness of adding nitrate.

Fall turnover, which marks the end of summer stratification, typically takes place between mid-October and early November in Onondaga Lake, depending on complex lake mixing and meteorological factors. In 2021, fall turnover of Onondaga Lake occurred on November 19th. Although temperature stratification ended on November 6th, salinity stratification persisted until November 19th. A very dry spring and unusually wet summer caused the bottom waters of the lake to be much more saline and dense than the upper waters, resulting in a significantly delayed fall turnover.

Nitrate addition O&M was performed in 2021 in accordance with the approved O&M Plan (Parsons and UFI 2014b).

5.1.3 Reporting

Section 5.2 describes the 2021 field activities and identifies any deviations from the work plan. Section 5.2 also presents monitoring data and discusses the results. Section 5.3 summarizes results

[6] The liquid calcium nitrate used was labeled CN-8 by the supplier, Univar of Bedford, Illinois.

and provides recommendations for revisions to the monitoring program. Appendix 5A provides 2021 operational information, including application location, target dilution factor, lake water temperature and specific conductivity data, nitrate and dilution water flow rates, application durations, and the total amount of nitrate applied during each application. Appendix 5B presents an example of daily monitoring information provided on the same day field data were collected. Appendix 5C summarizes nitrate concentrations observed one meter above the lake bottom. Appendix 5D is the DUSR for relevant laboratory water quality data compiled in 2021. Appendix 5E presents depth profile plots of dissolved oxygen, nitrate-nitrogen (NO_3-N), total mercury, and methylmercury water concentrations.

5.2 Presentation of Monitoring Data and Discussion of Results

5.2.1 Mobilization, Monitoring and Observations

Nitrate is added to maintain summertime nitrate-nitrogen levels in the lower hypolimnion (below the 14 meter water depth) at or above 1.0 milligrams per liter (mg/L), thereby limiting accumulations of methylmercury in hypolimnion waters. This section describes:

- Natural development of thermal stratification
- In-lake monitoring program
- Dissolved oxygen and nitrate resources of the hypolimnion
- Effect of nitrate applications on nitrate levels
- Nitrite concentrations in lake water
- Mercury concentrations in lake water
- Other related monitoring from July through October 2021 when nitrate was being applied

The 2021 lake water quality monitoring for mercury at the South Deep location began on May 10 and continued through November 22 (Table 5.2). Measurements of dissolved oxygen, nitrate and other water quality parameters in the deep portion of Onondaga Lake prior to the first application provided the information needed to determine when to start adding nitrate to the lake. Water quality measurements during the nitrate application period helped to guide how much nitrate to apply at each location. Water quality monitoring was also conducted on October 11, October 18, October 25, November 1, November 8, November 15, and November 22, following the last application of nitrate on October 7, 2021.

The 2021 barge equipment, piping, and instrumentation, onshore support area for storage of nitrate, and instrumentation on the UFI monitoring boats included the same elements as in previous years (see Figures 2 through 4 in Parsons and UFI 2014a). Delivery equipment used in 2021 was similar to that used in previous years and was once again set up to maintain a contained, continuous flow from the on-barge equipment to the target application depth.

5.2.2 Application Summary

Nitrate additions were completed in 2021 at the three predetermined locations in the lake used since 2011 (Figure 5.1). The three locations where nitrate was applied are referred to as the North Location, South Location #1 (hereafter called South1), and South Location #2 (hereafter called South2). The desired minimum concentration of nitrate-nitrogen to be maintained in the lake (1.0 mg/L) was identified based on frequent water quality monitoring of methylmercury and nitrate in the profundal zone of Onondaga Lake since 2006 and a historical review of methylmercury releases from Onondaga Lake profundal zone sediments. These releases were described in the approved O&M Plan for adding nitrate (Parsons and UFI 2014b).

Thermal stratification became strongly established by mid-May 2021, limiting further significant inputs of oxygen and nitrate from the epilimnion downward to the hypolimnion (below the 30-foot water depth in Onondaga Lake). Stratification initiates an annual period of oxygen and nitrate depletion and locks in place the “ambient” oxygen and nitrate pools or supplies. Therefore, nitrate addition was initiated on July 20, 2021, before hypolimnetic nitrate-nitrogen concentrations could fall below 1.0 mg/L at the 18 meter water depth and continued until approximately six weeks prior to the fall turnover. The depth of the thermocline between the epilimnion and hypolimnion was relatively stable through July and August and then descended through September and more rapidly during October and November until the water column became effectively mixed in the vertical dimension. In 2021, this occurred on November 19.

As in prior years, each application of nitrate in 2021 involved moving and anchoring the barge at the designated application location. A concrete block anchoring system at each application location held the barge stationary for the duration of an application. Inflow and outflow piping with end-of-pipe diffusers were positioned within the lake water column at their target depths. The barge pumps provided water from the epilimnion that was mixed on the barge with full-strength liquid calcium nitrate. The liquid calcium nitrate has a density of approximately 1.47 times the density of lake water. The extent of diluting nitrate with water from the epilimnion was guided during each application by in-lake monitoring. The resulting neutrally buoyant nitrate-water mixture was directed to the lower waters in the lake hypolimnion via hoses and diffusers.

In 2021, nitrate was applied continuously at one of the three pre-determined locations for approximately three to eight hours during each application day. The duration of each application depended on how much nitrate was to be added that day to meet the anticipated nitrate demand in that portion of the lake and the extent of dilution needed to keep the nitrate near but above the lake bottom (i.e., increased dilution meant longer pumping times to apply the same volume of nitrate). A total of 25 applications of nitrate were completed during 2021, including four applications at the North location, 12 applications at South1, and nine applications at South2. Two of the 25 applications were partial doses due to unsafe weather conditions or the approach of sunset.

Table 5.1 and Appendix 5A summarize work completed as part of each 2021 nitrate application. In general, applications were conducted two to three days each week, moving from location to location as directed by results from in-lake monitoring. The pace of applications during July and August was slower than normal due to relatively high nitrate concnetrations in the hypolimnion. For the months of September and October, the pace of appliations was that silimar to previous years. A total of 46.41 metric tons (MT) of nitrate-nitrogen were added to the lower waters of Onondaga Lake during 2021.

5.2.3 In-Lake Monitoring

Table 5.2 summarizes the in-lake monitoring completed by UFI in 2021, including both field measurements and sample collection. Figure 5.2 illustrates the 2021 lake monitoring locations. The primary objective of in-lake monitoring was to observe and characterize the vertical and horizontal distribution of nitrate in the lake. Using a submersible ultraviolet nitrate analyzer (SUNA) deployed from a boat, UFI provided near real-time feedback on nitrate conditions. The SUNA was used to take measurements of water depth, nitrate-nitrogen, sulfide, temperature, specific conductivity, turbidity and parameters associated with light penetration and primary productivity. Measurements were collected every 0.25 meter vertically throughout the water column at 34 locations. These data were downloaded and processed, and a summary of the lake nitrate concentrations was provided the same day. Each data summary included nitrate-nitrogen profiles at each monitoring location and bubble plots illustrating nitrate-nitrogen concentrations at particular depths within the hypolimnion. These included one plot of all measurements taken one meter above the lake bottom across the footprint of the hypolimnion. The SUNA was also used to identify the effective water depth where the nitrate was applied. This information was communicated to barge operation in real-time to facilitate adjustments to the density of the nitrate solution.

The performance of SUNA and an equivalent instrument (*in situ* ultraviolet spectrophotometer [ISUS]) have been compared with laboratory measurements of nitrate since 2006. Results from 2021 continue to demonstrate that the SUNA nitrate measurements are comparable to laboratory measurements. The nitrate sensor was checked in distilled water routinely and was recalibrated or replaced when measurements fell outside acceptable limits (±0.028 mg/L of nitrate).

In addition to monitoring during each nitrate application, surface water samples were collected at South Deep, which is in the vicinity of the South1 application location, on 24 days from May 10 to November 22, 2021 (Table 5.2) and analyzed for various water quality parameters including total mercury and methylmercury. This was consistent with lake water monitoring efforts completed since 2008. Selected surface water samples from the 2-meter and 16-meter water depths were also analyzed for filtered (i.e., dissolved) total mercury. Surface water samples were collected weekly at South Deep from June 28 through November 22, 2021. Collected surface water samples were analyzed for total mercury, methylmercury, and forms of nitrogen (i.e., nitrate, nitrite and ammonia). Samples collected from July 5 to November 8 in waters at or below 14 meters deep were also analyzed for soluble reactive phosphorus. Fixed-frequency monitoring focused on sample collection at the South Deep location because water quality at that location has been determined to be generally representative of water quality conditions throughout Onondaga Lake.

5.2.4 Dissolved Oxygen and Nitrate Observations

Figures 5.3 and 5.4, respectively, present dissolved oxygen and nitrate-nitrogen concentrations at the South Deep location for four different water depths from May through November 2021. Figure 5.5 illustrates the depletion of the dissolved oxygen pool during May and June 2021, based on measurements from the UFI robotic buoy at the South Deep location. Most of the oxygen available in the hypolimnion during 2021 prior to lake stratification was consumed by early July.

In 2021, nitrate applications were again successful in keeping the nitrate-nitrogen levels in the hypolimnion above 1.0 mg/L throughout the summer months in deeper portions of Onondaga Lake (Figure 5.4). The cumulative mass of nitrate-nitrogen applied in 2021 to the lower hypolimnion was 46.41 MT. The mass of nitrate-nitrogen in the hypolimnion prior to the start of stratification in early May 2021 was approximately 120 MT, which was higher than prior years due to a dry spring and Metro's return to nitrification following plant upgrades in 2018-2019. Treated municipal wastewater from Metro is the primary input of nitrate-nitrogen to the lake. When the treatment process is functioning, Metro effluent contains an average of approximately 12.0 mg/L of nitrate nitrogen.

Figure 5.6 presents volume-weighted average nitrate concentrations and mass in the hypolimnion before, during, and following nitrate addition in 2021. The blue line in Figure 5.6 is the volume-weighted nitrate concentration in the hypolimnion, while the purple line represents the mass of nitrogen. The average rate of nitrate addition in 2021 was 0.59 MT of nitrate-nitrogen per day (4.1 MT per week) throughout the application season. Figure 5.6 also illustrates the hypolimnion's response to applications of nitrate, with the rate of nitrate depletion slowing when applications of nitrate were ongoing. Nitrate applications began on July 20 and continued at a steady pace through August 4. Applications were suspended from August 11 through August 29 because nitrate concentrations in the hypolimnion were sufficiently high. During this period, nitrate levels in the hypolimnion were at historically high levels, with sufficient mass of nitrate present in the hypolimnion present to meet sediment demands. Monitoring via profiles were conducted in accordance with the O&M Plan and reviewed in real time to evaluate concentrations present to inform the need for applications. Eighteen of the 25 applications were performed between late August and early October. Applications were stopped for the year after October 7 in anticipation of fall turnover. Concentrations of nitrate generally remained above 1 mg/L until turnover, which occurred on November 19.

Figure 5.7 illustrates apparent 2021 nitrate depletion rates in the Onondaga Lake hypolimnion represented by measurements made in the South and North Basins prior to the initiation of nitrate addition on July 20. Nitrate depletion in the South Basin and North Basin, respectively, averaged 0.0058 mg/L and 0.0081 mg/L of nitrate-nitrogen per day. Depletion of nitrate concentrations in the hypolimnion decreased during September because of increased nitrate applications. Nitrate depletion rates vary between the South and North Basins from year-to-year.

Table 5.3 presents annual lake conditions and observations for 2011 through 2021 that are important factors associated with adding nitrate. Spring turnover nitrate is the concentration of nitrate in lake waters as the waters begin to stratify, which typically takes place during April-May each year. The 2021 spring turnover nitrate concentration was 3.3 mg/L, the highest concentration measured since nitrate addition began in 2011.

Figure 5.8 presents the spatiotemporal distribution of nitrate concentrations in the hypolimnion at site 12 near South Deep from April through late November 2021. Areas of the lake with water depths between 14 and 16 meters (46-52 feet) were generally exposed to nitrate-nitrogen concentrations between 1.0 and 2.0 mg/L for most of the late July to early October period when nitrate was being applied. Sediments below the 16-meter (52-foot) water depth were generally exposed to nitrate concentrations greater than 1.5 mg/L during the nitrate application period. Nitrate concentrations higher than 3 mg/L were measured immediately following nitrate applications.

Figure 5.9 illustrates the spatial and temporal extent of the measured nitrate-nitrogen concentrations in 2021 at water depths one meter (3 feet) above profundal zone sediments. Concentrations of nitrate-nitrogen above the lake bottom generally ranged from 1.5 to 3.0 mg/L throughout the 2021 nitrate application period, meeting the program goal. A total of 13 nitrate-nitrogen measurements less than 1 mg/L were recorded by SUNA on November 9 and 16. The lowest measured concentration of nitrate-nitrogen was 0.80 mg/L on November 16 at a water depth of 19.0 meters (measured by SUNA), which is above the 0.70 mg/L threshold that would trigger supplemental sampling of low-level mercury and methylmercury.

5.2.5 Dilution and Dispersion of Applied Nitrate

The specific gravity of the liquid calcium nitrate was 1.47 in 2021. Therefore, significant dilution was required to produce a neutrally-buoyant water-nitrate mixture to take advantage of natural hydrodynamic forces that spread the nitrate around the lower depths of the lake. Once lake monitoring efforts identified an appropriate dilution factor for an application of nitrate, the same dilution factor was used as a starting point for the next application. Further minor adjustments to dilution and pump rates were made based on real-time lake monitoring to achieve a neutrally buoyant plume at the target depth. Figure 5.10 illustrates epilimnion (dilution water) and hypolimnion water temperatures and dilution factors for the 2021 application period.

During summer 2021, dispersion by natural hydrodynamic forces was again enough to distribute nitrate horizontally across the hypolimnion from the three application locations. Appendix 5B provides an example of the daily SUNA data reports that UFI produced and issued to verify the application and distribution of the applied nitrate. Appendix 5C presents bubble plots prepared by UFI illustrating conditions across the hypolimnion at one meter (3 feet) above the lake bottom. The target nitrate-nitrogen concentration of 1.0 mg/L continued to be met in lower hypolimnion waters throughout the 2021 season, and minimal concentrations of methylmercury were observed in the lower waters during the stratified period.

The 2021 applications of nitrate were terminated after October 7 based on an assessment of the size of the remaining nitrate pool in the hypolimnion and anticipated uptake of nitrate in lower waters of the lake through an estimated late turnover timeframe of early November. Approximately 70 MT of nitrate-nitrogen was present in the lake's hypolimnion on October 11, 2021 (Figure 5.6).

5.2.6 Significance of 2021 Nitrite Water Concentrations

Nitrite-nitrogen (NO_2-N) concentrations measured in Onondaga Lake from 2006 through 2021 have been compared to the New York State surface water quality standards (SWQS) established to protect warm water fish from effects of nitrite (Figure 5.11). The SWQS for nitrite (100 micrograms per liter [µg/L] as nitrogen) was not exceeded at any sampled depth during 2021. Exceedances of the SWQS for nitrite have occurred historically in the lower waters of the lake during early summer. However, low dissolved oxygen concentrations in the lower waters limit the exposure of fish to elevated nitrate concentrations. Elevated nitrite concentrations during these periods were caused by incomplete nitrification of ammonia. Nitrate added to the hypolimnion is denitrified to dinitrogen gas (N_2). 2021 sampling results are included in the DUSR in Appendix 5D.

5.2.7 2021 Lake Water Mercury Concentrations

Table 5.4 summarizes total mercury and methylmercury concentrations in water samples collected in 2021 near the lake bottom at South Deep. Methylmercury was not significantly released from underlying sediment to lower hypolimnion waters during the summer of 2021 when deep lake waters would be prone to methylmercury release in the absence of nitrate addition. This lack of methylmercury release from SMU 8 sediment demonstrates that nitrate addition was again effective in 2021 as it has been since the nitrate addition program began in 2011. From the beginning of the 2021 nitrate applications on July 20 through turnover of the lake on November 19, the maximum concentration of methylmercury observed in the lower waters of the lake was 0.111 nanogram per liter (ng/L) (where 1 ng/L is 0.000001 mg/L) at the 18-meter water depth on August 9 (**Figures 5.12** and **5.13**). **Figure 5.13** presents methylmercury and unfiltered total mercury results measured at South Deep over time at water depths of 2 meters (epilimnion), 12 meters (near the top of the hypolimnion), 16 meters (mid-to-lower hypolimnion), and 18 meters (bottom of the hypolimnion). **Figure 5.13** shows that the highest total mercury concentration (3.08 ng/L) was measured in the sample collected from the 12-meter water depth on June 29. In contrast to past years, total mercury concentrations were not elevated late in the 2021 season (e.g., peaks of 11.4 ng/L in 2014, 5.9 ng/L in 2015, 5.09 ng/L in 2016, 3.34 ng/L in 2017, 3.58 in 2018, 5.11 in 2019, and 10.8 ng/L in 2020). Higher mercury concentrations during fall may be caused by wind driven resuspension of mercury contaminated sediments. Methylmercury concentrations remained low in 2021.

Concentrations of methylmercury at the 18-meter water depth at South Deep for the April-November period from 2007 through 2021 are presented in **Figure 5.14**. Methylmercury concentrations were considerably lower in the lake's hypolimnion from 2011 through 2021 compared to prior years (**Figures 5.14a** and **5.15**). Note that a single high concentration from September 2020 is a conspicuous outlier. Low methylmercury concentrations in Onondaga Lake since 2011 are consistent with the higher nitrate concentrations (because of nitrate additions) compared to prior years. Methylmercury concentrations in Onondaga Lake hypolimnion water have declined dramatically aided by the addition of nitrate. With the noted single exception, methylmercury in the lower hypolimnion has been barely detectable since 2011 when nitrate additions began.

Table 5.5 summarizes dissolved mercury concentrations in water samples collected in 2021 at the 2-meter water depth at South Deep. Dissolved mercury results for samples collected on July 13 and September 8 were rejected due to mercury contamination within the analytical laboratory. Of the 14 reportable dissolved mercury results for water samples collected at this depth in 2021, 13 are considered estimated concentrations and two exceeded the New York State SWQS for dissolved mercury (0.7 ng/L). One of the six results from the water samples collected during August, September, and October at the 16-meter depth in the lake's hypolimnion exceeded the New York State SWQS for dissolved mercury. The sample collected on October 5 from the 16-meter depth had a dissolved mercury concentration of 0.84 ng/L. The highest dissolved mercury concentration measured in 2021 was 2.15 ng/L from a sample collected on June 29 at the 2-meter water depth. The relative percent difference between regular samples and field duplicates varied from 7 percent to 72 percent and averaged 35 percent.

5.2.8 Other Related 2021 Lake Monitoring

Additional monitoring completed in 2021 included laboratory analyses for soluble reactive phosphorus in deep waters that are anoxic during the summer period. An additional benefit to maintaining nitrate levels in the hypolimnion during periods of anoxia is that release of phosphorus from deep lake sediments has been reduced (**Figure 5.16**). The presence of nitrate in waters near the lake bottom prevents the reduction of iron oxyhydroxides that is typical in anaerobic surface sediments. This, in turn, reduces the release of phosphorus bound to those compounds. The same mechanism preventing release of phosphorus from anaerobic lake sediment is thought to control the release of methylmercury from sediments (Matthews et al. 2013).

All ammonia-nitrogen concentrations measured in 2021 were below the New York State SWQS. The NYSDEC aquatic-protection based surface water standard for total ammonia is pH and temperature dependent; for a typical pH of 7.5, the standard for Classes B/C waters ranges from 1.5 mg/L at 25°C to 2.2 mg/L at 10°C. Five samples in 2021, all collected from the 18-meter water depth, had concentrations greater than 1 mg/L. The highest ammonia-nitrate concentration measured in 2021 was 1.26 mg/L.

The full data set for total mercury and methylmercury analysis in zooplankton, which are collected as part of the tissue monitoring program to assess ongoing recovery, is presented in Section 3.

5.3 Summary of 2021 Nitrate Addition Results and Recommendations

5.3.1 2021 Results Summary

Results from the eighth year of full-scale nitrate addition (2021) showed successful delivery of sufficient quantities of nitrate to the lower hypolimnion of Onondaga Lake during summer stratification to meet the objective and thereby minimize methylmercury concentrations in deep waters of the lake. Nitrate-nitrogen concentrations were maintained at levels sufficient to inhibit the release of methylmercury from profundal zone sediments. Methylmercury release into the water column from profundal zone sediment continues to be effectively controlled. Two of the 14 dissolved mercury results for water samples collected at the 2-meter water depth in 2021 exceeded the New York State SWQS for dissolved mercury (0.7 ng/L). The cause of these exceedances is not known. Note that nitrate addition is intended to control methylmercury concentrations in the hypolimnion but not dissolved mercury concentrations in the epilimnion.

A total of 46.41 MT of nitrate-nitrogen were added to the hypolimnion of Onondaga Lake between July 20 and October 7, 2021. Sediment nitrate demand in the summer of 2021 was approximately 0.6 MT per day, somewhat lower than the nitrate demand of 0.8 MT per day included in the earlier nitrate addition design report on which applications of nitrate, which began in 2011, were based. During the 79 day nitrate application interval, which included an 18 day suspension in August, the pace of applications averaged 2.2 per week.

5.3.2 Recommendations and 2022 Nitrate Addition

Part of the ongoing assessment of the nitrate addition program is to make it more effective and efficient. With this aim, a fixed application station was piloted at the South1 application station in 2018. The pilot station successfully delivered nitrate to the deep-water areas in the vicinity of the Lake. In 2019, fixed application stations were added at the South2 and North locations. It is recommended that this method be used in 2022. The traditional application method (through 2018) uses a manifold of flexible hosing that is assembled and disassembled daily. This application method will be maintained as a backup.

Upgrades to Metro were completed in 2019, and nitrification of ammonia in wastewater was online for the 2021 season and is expected to continue to be operational moving forward into 2022. Additionally, the spring of 2021 was unusually dry, which resulted in less dilution of Metro's effluent and higher nitrate concentrations in the lake. While variation in spring runoff and unforeseen circumstances will still play a role, spring conditions in 2021 were more like those seen from 2011 through 2017, and nitrate addition was not necessary as early or often as in 2018 and 2019. It is expected that rainfall conditions in 2022 will not be as favorable as conditions seen in 2021, resulting in the need for more nitrate applications than were called for in 2021. Monitoring in 2022 should commence as usual in April and May to inform the start of injections. The goal of nitrate additions in 2022 will continue to be to maintain nitrate above 1.0 mg/L in the lower hypolimnion.

SECTION 6 CAP MONITORING

Cap physical monitoring was conducted in 2021 to verify that the cap remains protective. Provided below are the detailed activities and results from the 2021 physical monitoring.

Consistent with the monitoring schedule specified in the OLMMP, chemical monitoring was not completed in 2021. Comprehensive chemical monitoring of the cap will be implemented in 2022, as specified in the OLMMP and as detailed below.

6.1 Physical Monitoring

Consistent with the scope and schedule detailed in the OLMMP, comprehensive probing and physical inspection, including shoreline inspection and drone photography, were completed in 2021. Additional physical monitoring was also conducted in RAs -A, -C, -D, and -E to further evaluate anomalies identified during the 2019 and 2020 monitoring programs. Results from 2021 monitoring, as well as the 2020 focused physical monitoring and the 2019 comprehensive physical monitoring indicate that there has been no significant loss of cap material in any of the capped areas.

Results of the routine physical monitoring activities are discussed in detail in Sections 6.1.2 through 6.1.4. Figures 6.1 through 6.5 show the physical probing locations completed in 2021, including additional activities beyond those specified in the OLMMP as discussed below in Section 6.1.1.

The monitoring program also includes event-based monitoring if any of three extreme events occur:

- A 50-year or greater wind-generated wave event
- A 50-year or greater tributary flow event
- A seismic event measuring 5.5 or higher within 30 miles of Onondaga Lake

As detailed in Appendix 6A, none of these conditions have been exceeded since cap construction was completed. The Honeywell team is also not aware of any human activities during the reporting period that may have impacted the cap and/or other components of the remedy. Therefore, no event-based cap monitoring has been required.

6.1.1 Modifications from Planned Work Scope

Modifications to the OLMMP physical monitoring work scope are documented in the 2021 Scope Memorandum included in Appendix 1A. These modifications were added to clarify conditions observed during the 2019 and 2020 monitoring, and included the following:

- Completion of supplemental coring in RA-A as shown on Figure 6.6, where bathymetric survey results showed a significant decrease in cap elevation from 2018 to 2019, as shown in Figure 6.10.
- Completion of supplemental coring in RA-C as shown in Figure 6.7, where bathymetric survey results showed a significant decrease in cap elevation from 2019 to 2020, as shown in Figure 6.11.

- Completion of a supplemental probing transect in RA-C as shown in **Figure 6.3**, in the area where additional cap material was placed in 2019 to confirm the physical stability of this area.
- Completion of supplemental coring in RA-D as shown in **Figure 6.8**, where core thickness measurements were less than the target thicknesses specified in the OLMMP during the 2019 monitoring event, or where bathymetric survey results showed a significant decrease in cap elevation from post-construction to 2019 or 2020, as shown in **Figures 6.12** and **6.13**.
- Completion of supplemental coring and video probing in RA-E as shown in **Figure 6.9**, where thicknesses were less than the target thickness as per the OLMMP during the 2019 monitoring event.

The 2021 Scope Memorandum also specified completion of elevation measurements of the small area of additional cap material placement along the RA-D shoreline completed in 2019 for comparison to the elevations measured shortly after additional material placement. This was not completed in 2021 but will be completed in 2022.

6.1.2 Shoreline Inspection Result

Inspections were performed in 2021 by boat, by foot from the shoreline, and using an aerial drone (also referred to as a small unmanned aerial system) to document the integrity of the shoreline areas where remedial activities were implemented. Inspections were completed when water levels were at elevation 363.5 feet or less (NAVD88). The areas inspected included shoreline capping areas in RAs -A, -B, -C, -D, and -E; the Outboard Area (including the berms); the WB 18 connected wetland (including the berms); the Ninemile Creek spits; the WB 1-8 shoreline stabilization area; and the capped cultural resources located in the shallow areas of RA-E. Areas that could not be adequately inspected from the shoreline were inspected from a boat. Photographs taken in 2021 were limited to identification/photograph documentation of any noted anomalies, consistent with the OLMMP and with NYSDEC concurrence.

At the time of the 2021 comprehensive shoreline inspection, no signs of significant erosion or other potential significant issues were noted. However, there were small areas where minor disturbances were noted, as listed below:

- RA-D Shoreline, east of the crane pad area: As noted in the 2019 Annual Monitoring and Maintenance report, additional cap material was placed in this area in 2019. During the 2020 inspection, erosion of the upper layer of fine gravel that was placed was observed. Erosion was also noted during the 2021 inspection. However, the coarser underlying gravel appears to remain intact. The erosion of finer-grained material was expected and does not impact the overall effectiveness of the cap.
- RA-D Outboard West: Potential topsoil erosion was observed along a small portion of this area (approximately 50 square feet), between Berms B and C, which was first noted during the 2019 shoreline inspection and was also noted during the 2020 shoreline inspection. There are portions of this area that are not protected by the berms, so some loss of topsoil is expected and does not impact the overall effectiveness of the cap. No probing was done in this area, and the cap surface was below the water surface preventing visual inspection of the cap surface. However, the cobble protective edge on the lake side of this area was intact, indicating the underlying coarse gravel erosion protection layer was not impacted.

Ground-level and aerial photographs from 2021 are included in electronic format in Appendices 6B and 6C, respectively.

6.1.3 Physical Probing Results

Consistent with the OLMMP, coarse gravel- or gravelly cobble-sized armor stone are too coarse to core through. Therefore, bathymetric surveys in conjunction with cap probing is used to verify the presence of these materials. Cap probing was implemented in 2021 consistent with the OLMMP, as well as along an additional supplemental probing transect in RA-C. This supplemental probing was performed to confirm the presence of coarse materials and stability of the cap in the areas where additional cap material was placed in 2019.

Probing was conducted along the transects shown in Figures 6.1 through 6.5 by manually tapping the cap at 25-foot intervals with a steel plate attached to rods. If an anomaly such as soft material was encountered along the transect, the location was flagged via Global Positioning System for additional review. Due to the nature of the steel plate used and the depth of water along the transects, probing can only determine the presence of soft material, and is not useful for an accurate measurement of the thickness of the layer of material or whether gravel is present underneath. In probing areas where the water depth, water clarity, and/or vegetation cover did not interfere, the presence of the coarse substrate was also verified to the extent possible based on visual observations from the water surface. Probing and visual inspection were also conducted directly adjacent to shoreline tributaries and outfalls to verify the cap remains physically stable at these locations.

The presence of coarse substrate was consistently verified along the probing transects completed in 2021 in areas with fine gravel, coarse gravel, and cobble habitat/erosion protection layers, with one exception. Some soft material was periodically noted during probing transects down the centerline of the mouth of Ninemile Creek and adjacent to the topsoil area in RA-A. The presence of this material was first noted in 2019 and was found again in 2020, as detailed in the 2019 and 2020 Monitoring and Maintenance Reports. Based on a comparison of the 2018 and 2019 survey results in this area to the as-built survey, the soft material corresponds with areas of sediment deposition, rather than erosion of cap material. Visual observations of this material verified that it appeared to be topsoil or organic depositional sediments rather than the chemical isolation layer sand. A bathymetric survey of this area will be completed in 2022 as part of the comprehensive physical monitoring.

6.1.4 Bathymetry Survey and Coring Results

Consistent with the specifications of the OLMMP, a bathymetric survey was not conducted in 2021. A comprehensive bathymetric survey of all cap areas will be conducted in 2022.

Supplemental physical cores were collected in 2021 in select areas, as detailed below and shown on Figures 6.6 through 6.13. These supplemental cores were collected based on recommendations from the 2019 and 2020 monitoring programs where anomalies were seen in the bathymetric survey results or where coring thicknesses were identified that were less than the target thicknesses specified in the OLMMP. For all core locations, a minimum of two cores were collected. Core thicknesses are shown on Table 6.1.

Based on the potential for under-estimating cap thicknesses based on collection of vibracores that was identified in the 2019 Monitoring Report and potentially linked to compaction of sand and gravel and/or the pushing aside of gravel during the vibracore process, videoprobing was conducted alongside coring locations in RA-E to verify the thickness of the cap in this area. The results of the coring and video probing in this area are shown on Figures 6.14 through 6.16. The detailed video probing report is provided in Appendix 6D.

Physical monitoring results for each RA are discussed below.

Remediation Area A

As shown on Figure 6.10, a small area of bathymetric change greater than 1 foot was found in the western portion of RA-A in 2019. To further evaluate this area, a 2019 core location was reoccupied, and an additional supplemental core was collected within the area. As shown on Table 6.1, the cap thickness measurements from these locations exceeded the minimum cap thickness specified in the OLMMP.

Remediation Area B

No cores were collected in RA-B in 2021.

Remediation Area C

As shown on Figure 6.11, a small anomalous area of greater than 1 foot of change near the edge of the MPC monolayer cap was identified in bathymetric survey in 2020. To further evaluate this area, supplemental physical cores were collected at two locations. As shown on Table 6.1, the cap thickness measurements from these locations ranged from 3 to 9 inches. This was an area where the design specified direct application of granular activated carbon (GAC); however, a mixture of sand and GAC was placed for construction purposes. The presence of sand in all the cores indicates the cap in this area is present and stable.

Remediation Area D

As detailed in the 2019 Monitoring and Maintenance Report, three 2019 coring locations were identified in the multi-layer cap where thicknesses were less than the target minimums specified in the OLMMP. As shown on Figure 6.12, these core locations were reoccupied in 2021. Additional supplemental cores were also collected at six locations to address anomalies in bathymetric survey, where elevation differences were greater than 1.0 foot in both the 2019 and 2020 surveys. These were identified in the 2019 and 2020 Monitoring and Maintenance Reports and are shown on Figures 6.12 and 6.13. As shown on Table 6.1, the cap thickness measurements from these locations exceeded the minimum cap thicknesses specified in the OLMMP.

Remediation Area E

As detailed in the 2019 Annual Report, 11 coring locations in RA-E were identified in 2019 in the multi-layered cap where thicknesses were less than the target minimums specified in the OLMMP. As shown on Figure 6.9, these core locations were reoccupied in 2021, along with an additional six step-out supplemental cores to assess the surrounding areas. As shown on Table 6.1, the target minimum total thickness was not achieved in any cores at four of the 17 locations, with multiple locations showing at least one core where the habitat layer and/or total thickness was less than the target thickness.

However, as detailed in the 2019 Annual Report, cap thickness measurements based on cores are likely biased low in areas where the habitat layer consists of fine gravel. This is due to compaction of the material and/or are a result of the vibracore pushing aside the fine gravel as the core was advanced. Therefore, video probing was conducted at 16 of the RA-E coring locations in 2021. The interface between the cap material and the native underlying sediment is easily discernable providing for reliable measurements of the total cap thickness. In some cases, the interface between the cap layers was more difficult to discern and required more nuanced interpretation from the experienced videoprobe operator. As detailed in Appendix 6D and shown on Figures 6.15 and 6.16, the cap thickness measurements from all video probe locations met or exceeded the minimum thickness specified in the OLMMP.

No video probing was completed at coring location E-21. As shown in Table 6.1, the cap thickness core measurements from this location exceeded the minimum cap thicknesses specified in the OLMMP.

Remediation Area F

No cores were collected in RA-F in 2021.

6.1.5 Summary of 2021 Physical Monitoring Results and Recommendations for 2022 Physical Monitoring

The combined results of the 2019 and 2020 monitoring program and the 2021 physical monitoring program verify that the caps remain physically stable. Based on the monitoring results, there has been no significant loss of cap material in any of the capped areas.

Consistent with the OLMMP, the 2022 physical monitoring of the cap will consist of a comprehensive bathymetric survey of all capped areas and the uncapped areas along the RE-E CSX shoreline and collection of cores and documentation of cap thicknesses as part of the chemical monitoring program. A minimum of two cores will be collected from each 2022 coring location. If the measured thicknesses are less than the target, additional cores may be collected, as well as additional step-out cores and/or video probing. These will be determined in consultation with the NYSDEC. Additional coring or probing may also be proposed based on the results of the bathymetric survey.

Consistent with the OLMMP, comprehensive probing and aerial drone photography will not be completed in 2022. Although not required per the OLMMP, a shoreline walk and visual inspection will be completed in 2022. Any signs of potential erosion along the capped areas and Wastebeds 1-8 stabilized shoreline will be photographed and noted during the shoreline inspection.

In addition, the following monitoring will be implemented:

- Elevation measurements will be collected in areas along the RA-D shoreline where additional material was placed in 2019. These measurements will be compared to the elevations measured shortly after additional material placement. This was originally planned for completion in 2021.
- Cap probing will be completed along a transect in the RA-D Outboard Area West to confirm the presence of the habitat erosion protection layer in an area observed to have topsoil erosion during the 2019, 2020, and 2021 shoreline inspections.

6.2 Recommendations for 2022 Chemical Monitoring

Consistent with the specifications of the OLMMP, chemical monitoring was not conducted in 2021. Comprehensive chemical monitoring of all cap areas will be conducted in 2022. The monitoring scope will be consistent with the scope specified in the OLMMP, with the following modifications:

- Porewater samples will be collected at new peeper locations A-30 and A-31, which were added in 2019 per NYSDEC's request to enhance the cap monitoring in RA-A adjacent to the WB 1-8 north shore hydraulic containment system (NSHCS).
- Porewater samples will be collected at locations A-8 and A-10 from sampling intervals corrected from what is shown in the OLMMP to accurately reflect that the habitat layer at these locations is a minimum of 18 inches rather than 12 inches, consistent with sampling completed in 2019.
- The impacts of filtering and suspended solids on direct-extraction porewater analytical results for volatile organic compounds (VOCs) and phenol will be evaluated.
- Additional peeper sampling will be completed in Zone 1 to allow for the collection of porewater samples from the habitat layer for benzene, toluene, and phenol analysis. These will be completed to eliminate uncertainty associated with converting solid phase results to an aqueous basis for comparison to aqueous-based performance criteria for these parameters.

The comprehensive recommended 2022 cap monitoring scope, including additional details regarding the chemical monitoring scope revisions listed above, is provided in the 2022 Onondaga Lake Scope Memorandum.

6.3 Shoreline Hydraulic Control System Operation

As part of the Interim Remedial Measures (IRMs) associated with adjacent contaminated sites, shoreline subsurface barrier walls and/or groundwater collection systems have been installed directly adjacent to several capped areas within the lake and adjacent wetlands. Successful hydraulic containment by these systems limits groundwater upwelling in adjacent lake and wetland areas. It is therefore an important factor in ensuring the caps achieve their established performance criteria. Groundwater flows through three zones in the aquifer: shallow, intermediate, and deep. A clay layer separates the intermediate and deep zones. Operational and monitoring data from the hydraulic containment systems are used to demonstrate that groundwater from the shallow and intermediate zones is being successfully captured. Thus, the only potential source of groundwater upwelling through the cap is from the deep zone through the underlying clay layer. This was the design basis used to generate the groundwater upwelling rates for cap modeling for the final design. Hydraulic containment systems include:

- A shoreline groundwater collection system that has been implemented as part of the WBs 1-8 IRM.
- Shoreline barrier walls and groundwater collection systems have been implemented as part of the Willis/Semet and WB B IRMs (Parsons 2018a).

Infiltration of impacted groundwater to Onondaga Lake along the southeastern shoreline has been mitigated as part of the Willis/Semet and WB-B IRMs through construction of a control system that includes a sheet pile barrier wall and a groundwater collection system. The hydraulic barrier wall is the primary groundwater control mechanism and extends a minimum of 3 feet into the clay layer present at depths ranging from 35 to 70 feet below grade. As documented in Honeywell Lakeshore Upland Sites Performance Verification 2017, 2018 and 2019 Annual Reports (Parsons and O'Brien and Gere 2021, Parsons and O'Brien and Gere 2022a, Parsons and O'Brien and Gere 2022b.), the ability to contain groundwater and in general maintain an inward hydraulic gradient has been demonstrated for these systems and is expected to continue in perpetuity. Successful operation of the system is ongoing, including finalization of the 2019, 2020, and 2021 annual reports.

The WB 1-8 IRM includes the Eastern and Northern Shore (adjacent to RA-A) shoreline groundwater collection systems to control shallow and intermediate groundwater discharges to Onondaga Lake. As documented in *2015 and 2016 Source Control Summary for the Onondaga Lake Bottom Subsite* (Parsons and O'Brien and Gere 2016), data through the end of March 2016 indicated general achievement of hydraulic control for these systems, with periodic exceptions observed during scheduled maintenance, extreme weather conditions, and elevated lake levels. Since then, numerous system upgrades and optimization activities have been implemented which have resulted in improved system performance. NYSDEC has been updated regularly on the performance of and upgrades to these systems. Demonstration of consistent performance has been challenging along a portion of the system that is directly adjacent to the capped area in RA-A. Therefore, peeper locations A-30 and A-31 directly adjacent to the RA-A shoreline groundwater collection systems were added to the 2019 cap monitoring program to verify that the cap adjacent to this portion of the hydraulic containment system remains protective. Except for minor detections of toluene and benzene (at less than 0.5 percent of the cap performance criteria), all analytes were non-detect for these two peepers. These peeper locations will continue to be sampled in future chemical monitoring events.

Monitoring of upwelling velocities in the capped area adjacent to the Northern Shore hydraulic containment system was also implemented. In July 2019, ultrasonic seepage meters were deployed at five locations in RA-A adjacent to the NSHCS to quantify groundwater upwelling in the area. A second round of upwelling velocity measurements was implemented at five locations in this area in 2021. Detailed results from both rounds of upwelling velocity measurements are included in Appendix 6E. Average upwelling rates and variability were generally very low at most stations during both events. In general, the two survey periods showed similar magnitudes, ranges, and variability of upwelling velocity. In 2019, the average upwelling velocities and standard deviations (i.e., mean±1 standard deviation) at the five locations ranged from -9.6±14.4 cm/year to 33.5±9.8 cm/year. In 2021, the average upwelling velocities and standard deviations at the five locations ranged from 7.5±17.1 cm/year to 28.5±22.5 cm/year with the NSHCS fully operational and -18.3±37.8 cm/year to 28.8±9.5 cm/year with the intermediate collection valve closed. In 2019, high variability was observed at Station D (i.e., -3.2±147.0 cm/year) based on the high standard deviation value. Similarly high standard deviations were not evident at Station D during the 2021 event with fully operational NSHCS average velocity of 12.3±22.6 cm/year or at adjacent Station D-Dup which had an average velocity of -6.3±38.1 cm/year. Station-specific ranges, averages, and standard deviations for each survey period are provided in Appendix 6E. As noted in Section 6.2, two new peeper locations A-30 and A-31 were added per NYSDEC's request to directly evaluate cap performance in this area.

6.4 Institutional Controls

As specified in the OLMMP, institutional controls are included as part of the long-term monitoring and maintenance program for the lake to protect the integrity of the cap and ensure long-term protectiveness of human health and the environment. Specifically, institutional controls have been implemented to prevent:

- Unacceptable exposure to residual contamination within the lake
- Recreational boaters from accidently hitting any navigational hazards created by capping and restoration components of the remedy
- Damage to the cap from such activities as navigational dredging

The specific institutional controls detailed in the OLMMP and the status of these institutional controls are detailed below.

- New York State Department of Health (NYSDOH) fish consumption advisories: NYSDOH reviews fish consumption advisories and updates on a regular basis. These advisories remain in place and are consistent with those listed in the OLMMP. In 2017, the City of Syracuse and Onondaga County posted signs in numerous locations along the shore of Onondaga Lake regarding the presence of consumption advisories and where to find additional information. Honeywell is not aware of any public outreach activities relating to fish consumption advisories since the finalization of the OLMMP.
- NYSDEC and USACE permitting process to restrict actions that may disrupt the cap or SMU 8 sediment: This permitting process remains in place, and there have been no activities that Honeywell is aware of that have disrupted the cap or SMU 8 sediment.
- Recreational boating buoys: The New York State Office of Parks, Recreation and Historic Preservation maintains navigational buoys in Onondaga Lake to warn boaters of hazards in water less than 4 feet deep and beyond 100 feet from shore. This includes buoys associated with shallow water resulting from capping activities in a small portion of RAA. These buoys have been deployed annually since 2016, as verified annually during cap monitoring activities.
- Navigational charts: Updated (post-capping) bathymetric survey results were provided in May 2017 to the National Oceanic and Atmospheric Administration (NOAA) to allow them to update the Navigational Chart for Onondaga Lake (currently included as Chart Number 14786 page 33 for the Small-Craft Book Chart for the New York State Canal System). NOAA updated the charts accordingly on February 11, 2020.

Honeywell is currently working with the NYSDEC to finalize the Onondaga Lake Site Management Plan, which will provide additional details regarding institutional controls that will be implemented to prevent actions that may disrupt the cap or SMU 8 sediment.

SECTION 7 TRIBUTARY AND IN-LAKE SURFACE WATER MONITORING

7.1 Introduction

The primary objective for monitoring Onondaga Lake surface water is to provide a basis for determining achievement of the surface water performance criteria. These criteria are based on PRG #3 of the ROD (NYSDEC and USEPA 2005), which is to "achieve surface water quality standards, to the extent practicable, associated with chemical parameters of interest (CPOIs)." The performance criteria for surface water are the NYSDEC SWQS (Part 703) and Division of Water Technical and Operational Guidance Series (TOGS) Ambient Water Quality Standards and Guidance Values (TOGS 1.1.1) for mercury, select VOCs, semi-volatile organic compounds (SVOCs), and PCBs. The performance criteria goals are to achieve:

- Total dissolved mercury concentrations in Onondaga Lake surface water samples that are protective of wildlife (2.6 ng/L or less) and of human health via fish consumption (0.7 ng/L or less)
- VOC and SVOC concentrations in Onondaga Lake water samples that are protective of aquatic life (concentrations are chemical specific)
- PCB concentrations in Onondaga Lake surface water samples that are protective of wildlife (0.12 ng/L or less) and of human health via fish consumption (0.001 ng/L or less)

As per the OLMMP, the surface water monitoring program includes collection of samples from 10 littoral and two mid-lake locations once prior to and once after fall turnover. Attainment of unfiltered and filtered (dissolved) total mercury, VOCs, SVOCs and PCB criteria will be achieved when measured values are below SWQSs for two consecutive years, including pre- and post-turnover sampling events each year.

Surface water sampling to assess compliance with the above goals was initiated in 2017 and was conducted again in 2018 to assess compliance with the above goals. During the pre-turnover events for both 2017 and 2018, samples were analyzed for unfiltered and filtered (dissolved) total mercury, unfiltered methylmercury, select VOCs and SVOCs[7], and total PCBs[8]. During the post-turnover event, samples were analyzed for unfiltered and filtered (dissolved) total mercury, unfiltered methylmercury, and PCB congeners. In accordance with the OLMMP, VOCs and SVOCs were not analyzed for during the post-turnover event for either year because all results from the pre-turnover event were below the criteria.

As discussed in the Onondaga Lake 2018 Annual and Comprehensive Monitoring Report (Parsons 2020b), surface water criteria for mercury, VOCs, and SVOCs were achieved for two consecutive years. Termination of monitoring for these parameters was therefore recommended. It was noted in the Onondaga Lake 2018 Annual and Comprehensive Report (Parsons 2020b) that total PCB

[7] Select VOCs and SVOCs were analyzed as per Table 5.1 of the OLMMP.
[8] PCBs were analyzed for full set of 209 congeners using USEPA Method 1668A.

concentrations in surface water were consistently above ecological and human health criteria in both 2017 and 2018. The measured total PCB concentrations were not unexpected given that PCB levels in Great Lakes rainwater has been measured at concentrations between 0.5 and 20 ng/L, with general background levels of PCBs in surface water in Lake Ontario ranging from 0.19 to 0.25 ng/L (Agency for Toxic Substances and Disease Registry [ATSDR] 2000). Based on these regional background PCB concentrations, the OLMMP concluded that achievement of the PCB goals of 0.12 and 0.001 ng/L is likely not practicable.

The three highest measured PCB concentrations in surface water in 2017 and 2018 were from station OL-RAE-SW-03, which is near the mouth of Ley Creek (**Figure 7.1**). The average concentrations at station OL-RAE-SW-03 were more than two times greater than the next highest measurement. Ley Creek has multiple operable units unrelated to Honeywell that are known PCB sources for which the remediation process is ongoing (USEPA 2014, NYSDEC and USEPA 2015). Therefore, as agreed upon in the 2021 Onondaga Lake and Tributary Surface Water Monitoring for PCBs Memorandum (Parsons 2021c), additional monitoring was performed in 2021. Results were used to evaluate PCB concentrations in surface waters of Onondaga Lake and within incoming water from other sources such as Ley Creek, other tributaries, and precipitation to facilitate evaluation of their impact on PCB concentrations in Onondaga Lake. Although the mercury surface water goals were met in both 2017 and 2018, the 2021 lake surface water samples were also analyzed for total mercury, dissolved mercury, and methylmercury.

The objectives of the PCB monitoring effort were to collect data which would facilitate:

- Adding to the current understanding of the background surface water concentrations of PCBs in tributaries of Onondaga Lake
- Identifying significant ongoing tributary sources of PCBs to the Lake
- Evaluating the ambient levels and temporal and spatial distribution of PCBs in Onondaga Lake surface water and to facilitate long-term trend analysis

This monitoring was not intended to perform a full mass balance of PCB loads and establish ambient levels as part of the effort performed in 2021. The sampling effort was intended to provide a short-term estimate of concentrations from precipitation and tributaries only. The results of the 2021 sampling, as discussed below, were used to expand the understanding of PCB background concentrations and PCB sources to Onondaga Lake. The data also help to quantify current concentrations of PCBs in tributaries that enter the Lake and limit or slow achievement of water quality targets.

The 2021 monitoring results are discussed below. As required by the OLMMP, these results are compared to the relevant SWQSs to assess the achievement of goals.

7.2 Monitoring Results

Monitoring details and results from tributary, in-lake, and rainwater sampling are provided below.

7.2.1 PCB Monitoring Results for Tributary Sampling

Grab sampling from tributaries (**Figure 7.1**) consisted of four sampling events for major tributaries (Onondaga Creek, Ninemile Creek, Ley Creek, and Harbor Brook). Minor tributaries (Bloody Brook, Sawmill Creek, and Tributary 5A) were sampled during two of the four sampling events. The four sampling events consisted of:

- Sampling Event 1 took place on August 8, 2021, during low flow conditions (less than median flow) and consisted of major tributaries only (**Figure 7.2**).
- Sampling Event 2 took place on September 14, 2021, during standard flow conditions. It consisted of all sampling locations and coincided with pre-turnover sampling in the lake.
- Sampling Event 3 took place on November 17, 2021, during high flow conditions (upper quartile of flow distribution). It consisted of all locations and coincided with post-turnover sampling in the lake.
- Sampling Event 4 took place on December 15, 2021, during standard flow conditions and consisted of major tributaries only. Resampling occurred for three locations on January 5, 2022, due to bottle breakage during the initial event.

Tributary sampling event information is summarized in **Table 7.1.** All tributary samples were analyzed for PCB congeners and total suspended solids (TSS).

Results for total PCB concentrations and associated TSS concentrations measured in tributaries during each sampling event in 2021 are summarized in **Table 7.2** and **Figures 7.3a** and **7.3b.** Total PCB concentrations ranged from 0.0091 ng/L (Ninemile Creek on January 5, 2022) to 71.32 ng/L (Ley Creek on September 14, 2021). Results for total PCB concentrations measured in tributaries for high-flow versus low flow conditions are shown in **Figures 7.3c** and **7.3d.**

TSS concentrations ranged from 1.9 mg/L (Upper Harbor Brook on August 3, 2021 and Sawmill Creek on November 17, 2021) to 88 mg/L (Onondaga Creek at Hiawatha on September 14, 2021). There were no statistically significant correlations in the dataset between PCB and TSS results. For example, the highest measured TSS result of 13 mg/L at Upper Harbor Brook measured on November 17, 2021 was approximately three orders of magnitude higher than the other three sampling dates, while PCB concentrations measured at Upper Harbor Brook on November 17, 2021 were within the range from other sampling dates (**Table 7.2**).

Average total PCB concentrations by tributary are shown in **Table 7.3** and **Figure 7.3e.** Average total PCB concentrations ranged from 0.06 ng/L at Onondaga Creek at Spencer Street to 41.49 ng/L at Ley Creek. Total PCB results were generally one to three orders of magnitude higher in Ley Creek than in other tributaries. These results are not unexpected given that Ley Creek has multiple operable units unrelated to Honeywell that are known PCB sources for which the remediation process is ongoing (USEPA 2014, NYSDEC and USEPA 2015). Average total PCB concentrations in all tributary locations were above the 0.001 ng/L goal for the protection of human health via fish consumption, and all locations except Onondaga Creek at Spencer Street were above the 0.12 ng/L goal for the protection of wildlife. Total PCB concentrations during high flow conditions were similar to or lower than total PCB concentrations during low flow conditions.

7.2.2 PCB Monitoring Results for In-Lake Sampling

Consistent with monitoring performed in 2017 and 2018, in-lake samples were collected from 10 littoral zone and two mid-lake locations prior to and after fall turnover. Pre- and post-turnover sampling, respectively, were conducted on September 14 and November 17, 2021. In-lake samples were collected using a submersible pump and were analyzed for PCB congeners, TSS, unfiltered and filtered (dissolved mercury), and unfiltered methylmercury.

Results for total PCBs for in-lake sampling are summarized in **Table 7.4** and **Figures 7.4a** and **7.4b**. Total PCB concentrations for in-lake sampling averaged 1.43 ng/L during 2021 (**Table 7.3**). Consistent with results in 2017 and 2018, the highest PCB concentrations observed in the lake were noted at the monitoring location that is closest to the discharge point of Ley Creek (RAE-SW-03), while total PCB concentrations throughout the remainder of the lake were relatively consistent. As discussed in Section 7.2.1, total PCB results for Ley Creek were significantly higher than all other tributary locations. Excluding RAE-SW-03 in the average calculation reduces the lake average for total PCBs to 0.63 ng/L. All total PCB concentrations for in-lake sampling were above both the 0.001 ng/L goal for the protection of human health via fish consumption and the 0.12 ng/L goal for the protection of wildlife.

7.2.3 PCB Monitoring Results for Rainwater Sampling

Rainwater was collected during rain events on August 19, September 23, and November 12, 2021, and analyzed for PCB congeners only. Total PCBs in rainwater collected in 2021 averaged 0.07 ng/L, ranging from non-detect to 0.12 ng/L (**Table 7.5**). The concentrations for the two samples that had detectable concentrations were at or below the 0.12 ng/L goal for the protection of wildlife, but above the 0.001 ng/L goal for the protection of human health via fish consumption. These concentrations are not unexpected given that PCB levels in Great Lakes rainwater have been measured historically at concentrations between 0.5 and 20 ng/L (ATSDR 2000).

7.2.4 PCB Monitoring Results Discussion and Conclusions

A comparison of average total PCB concentrations in the lake versus average concentrations measured in each tributary are shown in **Figures 7.5a** and **7.5b** and summarized below.

Tributary/Lake	Average Total PCBs (ng/L)	Tributary Flow-Weighted Average Total PCBs (ng/L)
In-lake (all locations)	1.4	
In-lake (without OL-RAE-SW-03)	0.63	
Tributary (all locations)	6.4	4.6
Tributary (without Ley Creek)	1.4	0.7

Note: Insufficient information to do mass balance. Values portrayed here are estimates based on historical flow averages of tributaries.

The flow-weighted average concentrations above were calculated based on the estimated tributary flows and measured average PCB concentrations below.

Tributary	Average Inflow 10/1/2009 – 9/30/2019	Average Total PCB Concentration (ng/L) at Downstream Location
Onondaga Creek[1]	191 cfs	0.2
Ninemile Creek[1]	176 cfs	1.06
Ley Creek[1]	45 cfs	41.5
Direct Precipitation[2]	14 cfs	0.072
Harbor Brook[1]	12 cfs	1.02
Bloody Brook[3]	10 cfs	1.7
Sawmill Creek[3]	10 cfs	0.127
Trib 5A[3]	5 cfs	5.4

[1] based on USGS data for Onondaga Creek, Ninemile Creek, Ley Creek and Harbor Brook

[2] 3.5 feet of precipitation per year at Syracuse Hancock International Airport * 3,000 acre lake surface

[3] conservative estimates based on watershed area ratios in comparison to gaged tributaries

The following conclusions are supported based on the total PCB results from Onondaga Lake, its tributaries, and rainwater.

- Average total PCB concentrations in all tributary locations were above the 0.001 ng/L goal for the protection of human health via fish consumption, and all locations except Onondaga Creek at Spencer Street were above the 0.12 ng/L goal for the protection of wildlife.
- The flow-weighted average total PCB concentration in the tributaries (all locations) is over three time higher than the average in-lake concentrations (4.6 ng/L vs 1.4 ng/L).
- Ley Creek is the most significant contributor of total PCBs to the lake. It is anticipated that the concentrations in Ley Creek will be reduced after remediation by others is complete. To evaluate the potential impacts of this, tributary average total PCB concentrations excluding Ley Creek and average in-lake concentrations exclusive of the mouth of Ley Creek were calculated and compared. The flow-weighted average total PCB concentrations in the tributaries without Ley Creek (0.7 ng/L) is comparable to the average total PCB concentration in the lake when excluding the station at the mouth of Ley Creek (0.63 ng/L).
- Rainwater average total PCB concentrations were lower than the concentrations measured in the lake or tributaries, but still exceeded the lowest PCB criteria by almost two orders of magnitude.

Potential PCB impacts to Onondaga Lake from Honeywell-related sites have been previously addressed. Total PCB concentrations measured in the tributaries – except for Ley Creek, which will be remediated by others – can be considered representative of background conditions. Therefore, the ROD goal to “achieve surface water quality standards, to the extent practicable” has been achieved as it pertains to PCBs based on current conditions. Therefore, no further monitoring of PCBs in surface water is planned. However, additional monitoring may be considered in the future following remediation by others of Ley Creek, which is an ongoing source of PCBs to Onondaga Lake.

7.2.5 Mercury Monitoring Results for In-Lake Sampling

Results for dissolved mercury for nearshore in-lake sampling are summarized in Table 7.6 and Figure 7.6. Dissolved mercury concentrations at all locations were below the goal of 2.6 ng/L for the protection of wildlife for both pre- and post- turnover events in 2021. Additionally, all post-turnover dissolved mercury results were below the goal of 0.7 ng/L for human health via fish consumption. Pre-turnover dissolved mercury results ranged from 0.63 to 1.68 ng/L, with seven of 12 locations results exceeding the 0.7 ng/L goal. However, these results are questionable as discussed below.

During data validation, results from two pre-turnover locations were not considered usable due to contamination present at the laboratory at the time of sample filtration. Those specific samples were rejected due to contamination and the presence of concentrations of dissolved mercury, which were higher than concentrations of total mercury. Although only those two data points were rejected, the mercury contamination was present at the laboratory during the time when all pre-turnover samples were processed, making the quality of the dissolved mercury data from that sampling round questionable. During 2017 and 2018, pre-turnover mercury concentrations were consistently lower than post-turnover mercury concentrations, while in 2021, pre-turnover mercury concentrations were consistently higher than post-turnover mercury concentrations, adding further doubt to the accuracy of the 2021 pre-turnover mercury concentrations. Following the contamination, the laboratory implemented corrective actions to minimize the potential for such contamination in the future.

7.3 Onondaga County Monitoring for Calcite and Ionic Waste Constituents

The Onondaga Lake ROD lists calcite and ionic waste constituents as CPOIs. Stressors of concern include calcium, chloride, salinity, ammonia, nitrite, phosphorus, sulfide, dissolved oxygen, and transparency. These stressors have been routinely monitored by Onondaga County in both the tributaries and deep portions of the lake as part of the Ambient Monitoring Program (AMP). As per the OLMMP, the most recently approved Onondaga County AMP report (2018) was reviewed and is summarized below.

Total dissolved solids (TDS) measurements at South Deep exceeded the Ambient Water Quality Standards guidance value of 500 mg/L during 2018. TDS reflects the concentration of major cations such as calcium, sodium, magnesium, potassium, and anions such as bicarbonate, chloride, and sulfate. As noted in the AMP reports from 2012 through 2018, the high TDS concentrations in Onondaga Lake, which include concentrations of cations and anions (calcium, chloride, sodium, sulfate and others), are primarily associated with the natural hydrogeology of the Onondaga Lake watershed and not with anthropogenic effects. The bedrock of Onondaga County is enriched with calcium and sulfate, which contribute to the high levels of TDS in the lake and its tributaries. Ten-year (2009-2018) trends in lake concentrations showed no significant trends in TDS at any location. Calcium, chloride, and salinity were monitored separately from TDS. Chloride and salinity showed no statistically significant trends over the 10-year period reviewed in the report (2009-2018). However, a statistically significant decrease in calcium of 2.0 percent at the lake outlet (0.6 meter depth) was observed over the 10-year period reviewed in the report (2009-2018). No statistically significant trends were observed elsewhere.

Onondaga County has fulfilled its obligation to conduct the AMP, and the 2018 Annual Report summarized above is the final comprehensive reporting of the 20-year monitoring program mandated by the Amended Consent Judgment. In 2019, Onondaga County transitioned to a simplified water quality monitoring program for Onondaga Lake modeled after the Citizen Statewide Lake Assessment Program, which was conducted through 2021. Under this new program, TDS is not monitored in Onondaga Lake. Beginning in 2022, Onondaga Lake will not be monitored by Onondaga County in any capacity. Per the OLMMP, should the County no longer monitor the relevant parameters under their program, the need to monitor for these parameters under the lake monitoring program will be discussed with NYSDEC, as described in the OLMMP. Based on the natural geology of the watershed and observed lack of trends in TDS levels, no additional monitoring for TDS is needed and therefore no further monitoring is recommended. Additionally, specific conductance is a measure of the ionic content of water and therefore coupled tightly to measurements of salinity and TDS. As part of the nitrate addition program, vertical profiles of specific conductance are collected daily by the monitoring buoy deployed at South Deep and posted to https://upstatefreshwater.org/NRT-Data/Data/data.html.

7.4 Conclusions and Recommendations

As detailed above, in-lake average total PCB concentrations were lower than the averages documented in background tributaries. Additionally, rainwater samples collected in 2021 exceeded the lowest PCB criteria by one to two orders of magnitude. The ROD goal to “achieve surface water quality standards, to the extent practicable” has been achieved as it pertains to PCBs based on current conditions. Therefore, no further monitoring of PCBs in surface water is planned. However, additional monitoring may be considered in the future following remediation by others of Ley Creek, which is an ongoing source of PCBs to Onondaga Lake.

As detailed above, surface water mercury goals were met during pre- and post-turnover sampling events in 2017 and 2018. However, pre-turnover dissolved mercury results exceeded the 0.7 ng/L goal in seven of 10 locations in 2021. It is believed that these exceedances were a result of laboratory contamination. Therefore, an additional round of pre-turnover in-lake sampling for mercury (total, dissolved, and methyl) will be conducted during the summer/early fall of 2022. In consultation with NYSDEC, a decision on whether to conduct post-turnover sampling will be determined after review of the pre-turnover sample results. If results are unexpected (i.e., higher than criteria), then post-turnover sampling for mercury (total, dissolved, and methyl) will be conducted. However, since all post-turnover samples from 2017, 2018, and 2021 were within criteria and did not have any quality concerns, this is not expected. The 2021 post-turnover mercury concentrations were consistent with the concentrations measured in 2017 and 2018. If goals are met during the pre-turnover sampling in 2022 as expected, the surface water quality standard will be considered met and no additional monitoring will be conducted.

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TABLES

TABLE 2.1 2021 VEGETATION DATA SUMMARY MOUTH OF NINEMILE CREEK RESTORATION AREA

Scientific Name[1]	Common Name	Wetland Indicator Status[2,3]	Relative Cover
Typha latifolia [4]	Broadleaf cattail	OBL	32.9%
Schoenoplectus tabernaemontani	Softstem bulrush	OBL	11.1%
Ceratophyllum demersum	Coontail	OBL	9.7%
Heteranthera dubia	Water stargrass	OBL	9.1%
Elodea canadensis	Common waterweed	OBL	7.3%
Nitellopsis obtusa	Starry stonewort	OBL	5.5%
Nymphaea odorata	American white waterlily	OBL	4.2%
Stuckenia pectinata	Sago pondweed	OBL	3.0%
Pontederia cordata	Pickerelweed	OBL	2.9%
Potamogeton illinoensis	Illinois pondweed	OBL	2.3%
Leersia oryzoides	Rice cutgrass	OBL	1.6%
Sparganium eurycarpum	Giant burreed	OBL	1.4%
Nuphar lutea	Yellow pond-lily	OBL	1.2%
Potamogeton crispus	Curly-leaf pondweed	OBL	1.0%
other species (<1% rel. cover, 41 species)			6.7%
		Total	100%

[1] Botanical nomenclature follows New York Flora Atlas (Weldy et al. 2022).

[2] Wetland Indicator Status nomenclature:

Obligate Wetland (OBL): occurs almost always (estimated probability >99%) in wetlands.
Facultative Wetland (FACW): usually occurs in wetlands (estimated probability 67%-99%), but is occasionally found in non-wetlands.
Facultative (FAC): equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

Facultative Upland (FACU): usually occurs in non-wetlands (estimated probability 67%-99%), but is occasionally found in wetlands (estimated probability 1%-33%).

Obligate Upland (UPL): occurs almost always (estimated probability >99%) in non-wetlands.

[3] References for Wetland Statuses throughout document from the following:

https://newyork.plantatlas.usf.edu/

http://plants.usda.gov

https://gobotany.newenglandwild.org

[4] Broadleaf cattail hybridizes readily with narrowleaf cattail and the hybrid can be challenging to distinguish from broadleaf cattail. Narrowleaf cattail has been documented in the qualitative surveys and there are also nearby populations outside the restoration area. Therefore, it is likely that some degree of hybridization is occurring.

[5] Table includes a summary of data collected for both the Ninemile Creek Spits and the In-Lake planted areas.

TABLE 2.2 2021 VEGETATION DATA SUMMARY, WASTEBED B/HARBOR BROOK OUTBOARD AREA

Scientific Name[1]	Common Name	Wetland Indicator Status[2,3]	Relative Cover
Typha latifolia [4]	Broadleaf cattail	OBL	22.5%
Ceratophyllum demersum	Coontail	OBL	9.4%
Elodea canadensis	Common waterweed	OBL	8.6%
Stuckenia pectinata	Sago pondweed	OBL	8.4%
Typha latifolia	Narrowleaf cattail	OBL	5.6%
Pontederia cordata	Pickerelweed	OBL	4.9%
Spartina pectinata	Prairie cordgrass	FACW	4.7%
Leersia oryzoides	Rice cutgrass	OBL	4.4%
Schoenoplectus tabernaemontani	Softstem bulrush	OBL	4.3%
Heteranthera dubia	Water stargrass	OBL	4.2%
Nitellopsis obtusa	Starry stonewort	OBL	3.8%
Nuphar lutea	Yellow pond-lily	OBL	3.1%
Echinochloa spp.	Barnyardgrass	FACW	2.7%
Potamogeton illinoensis	Illinois pondweed	OBL	2.5%
Cyperus bipartitus	Shining flat sedge	FACW	2.0%
Sparganium eurycarpum	Giant Burreed	OBL	1.1%
Schoenoplectus acutus	Hardstem bulrush	OBL	1.0%
other species (<1% rel. cover, 48 species)			6.9%
		Total	100%

[1] Botanical nomenclature follows New York Flora Atlas (Weldy et al. 2022).

[2] Wetland Indicator Status nomenclature:

Obligate Wetland (OBL): occurs almost always (estimated probability >99%) in wetlands.
Facultative Wetland (FACW): usually occurs in wetlands (estimated probability 67%-99%), but is occasionally found in non-wetlands.
Facultative (FAC): equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

Facultative Upland (FACU): usually occurs in non-wetlands (estimated probability 67%-99%), but is occasionally found in wetlands (estimated probability 1%-33%).

Obligate Upland (UPL): occurs almost always (estimated probability >99%) in non-wetlands.

[3] References for Wetland Statuses throughout document from the following:

https://newyork.plantatlas.usf.edu/

http://plants.usda.gov

https://gobotany.newenglandwild.org

[4] Broadleaf cattail hybridizes readily with narrowleaf cattail and the hybrid can be challenging to distinguish from broadleaf cattail. Narrowleaf cattail has been documented in the qualitative surveys and there are also nearby populations outside the restoration area. Therefore, it is likely that some degree of hybridization is occurring.

TABLE 2.3 2021 TREE CONDITION SURVEY, WASTEBED B/HARBOR BROOK OUTBOARD AREA

Number of Trees	Species[1]	Condition					
		Overall Condition					
		Excellent	Very Good	Good	Poor	Very Poor	Dead/Removed
17	American sycamore (*Platanus occidentalis*)	15	1	1	0	0	0
23	Black willow (*Salix nigra*)[2,3]	17	4	1	0	0	1
6	Northern white cedar (*Thuja occidentalis*)	3	1	2	0	0	0
7	Quaking aspen (*Populus tremuloides*)	3	3	1	0	0	0
24	Red maple (*Acer rubrum*)[2]	15	4	5	0	0	0
1	River birch (*Betula nigra*)	1	0	0	0	0	0
2	Silver maple (*Acer saccharinum*)	1	1	0	0	0	0
23	Swamp white oak (*Quercus bicolor*)	12	6	5	0	0	0
103	**Total trees & observed condition**	**67**	**20**	**15**	**0**	**0**	**1**

[1] Scientific names follow the New York Flora Atlas (Weldy et al. 2022).

[2] Installed in 2018 at a higher than 1:1 ratio with smaller sized potted trees. Trees were planted in close proximity to each other. The tree with the best overall condition is recorded in the table.

[3] Installed in 2020 at a higher than 1:1 ratio with smaller sized potted trees. Trees were planted in close proximity to each other. The tree with the best overall condition is recorded in the table.

TABLE 2.4 2021 MITIGATION WETLAND ACREAGES

MITIGATION AREA		MONITORING YEAR	ACREAGE
Ninemile Creek Spits		5	2.47[1]
Mouth of Ninemile Creek In-Lake Wetlands		5	7.84[2]
Wastebeds 1- 8	Perched wetland A	5	2.87[3,4]
	Perched wetland B	5	3.79[3,4]
	Perched wetland C	5	0.53[3,4]
	Wastebeds 1-8 Connected Wetlands	5	0.29[4,5,6]
Wastebed B/Harbor Brook Outboard Wetland		4	10.8[7]
		Overall Mitigation Acreage Required	19.5[8]
		2021 Wetland Acreage	28.6
Open Water Acreages			
Wastebed B/Harbor Brook Outboard Area		4	2.34[9]
Wastebeds 1-8 Connected Wetlands		5	2.3[4,5]
		Overall Open Water Required	4.6[10]
		2021 Open Water Acreage	4.6

[1] Calculated during a formal wetland delineation in 2021 (Appendix 2C). Represents contiguous wetland acreage in the area of the original spits connected to the shoreline.

[2] Calculated during a formal wetland delineation in 2021. Represents the in-lake persistent emergent (5.18 ac.), the floating aquatic (2.53 ac.), and 0.13 acers of the shoreline persistent emergent strip (Appendix 2C, Table 1 and Figure 5 of the 2021 Annual Report).

[3] Calculated during a formal wetland delineation in 2019.

[4] Wastebeds 1-8 Mitigation Wetland Delineation Report (Ramboll, 2023).

[5] Calculated during a formal wetland delineation in 2020.

[6] Additional delineated acreage in excess of the designed 2.3 acres required to account for open water loss within the Wastebeds 1-8 Connected Wetlands.

[7] Estimated during a year three formal wetland survey in 2020. Acreage includes contiguous wetlands in and adjacent to the Wastebed B/Harbor Brook Outboard boundary.

[8] Mitigation areas taken from Table 7.5A of the Onondaga Lake Monitoring and Maintenance Plan.

[9] Estimated from the 2021 acreages of the Harbor Brook Channel and the area of unconsolidated bed within the Wastebed B/Harbor Brook Outboard Area boundary (Figures 2.2 and 2.3).

[10] Mitigation areas taken from Table 7.5B of the Onondaga Lake Monitoring and Maintenance Plan (Parsons, 2018).

TABLE 2.5 SPECIES RICHNESS OF THE FISH COMMUNITY IN 2021

	Lakewide Total	Remediated Areas	Reference Areas
Baseline (2008-2011)	40	37	36
Construction (2012-2016)	38	33	36
2017	41	39	34
2018	42	37	40
2019	45	40	39
2020	36	33	33
2021	40	36	38

TABLE 2.6 ONONDAGA LAKE BIOLOGICAL ASSESSMENT PROFILE SCORES

Location[1]	Cap Type	Sampling Method	Area Type	2021 BAP Score 1[2,3]	2021 BAP Score 2[2,3]	2021 BAP Score 3[2,3]	2021 BAP Mean[3]	2021 Area Mean[3]	2018 Area Mean[3]
Remediation Area A									
OL-BMI-GA01	Fine Gravel	Multiplate	Remediation	3.3	-	-	3.3	2.7	2.9
OL-BMI-GA02	Fine Gravel	Multiplate	Remediation	3.1	-	-	3.1		
OL-BMI-GA03	Fine Gravel	Multiplate	Remediation	1.4	2.2	-	1.8		
OL-BMI-SA01	Sand	Ponar	Remediation	4.3	5.0	-	4.7	4.6	2.5
OL-BMI-SA02	Sand	Ponar	Remediation	4.0	2.7	-	3.3		
OL-BMI-SA03	Sand	Ponar	Remediation	4.3	1.2	2.4	2.6		
OL-BMI-TA01	Topsoil	Ponar	Remediation	4.5	7.7	6.0	6.1		
OL-BMI-TA02	Topsoil	Ponar	Remediation	3.3	1.3	4.8	3.1		
OL-BMI-TA03	Topsoil	Ponar	Remediation	7.5	7.8	-	7.7		
Remediation Area B									
OL-BMI-GB01	Fine Gravel, Multilayer MPC	Multiplate	Remediation	4.7	-	-	4.7	4.9	2.5
OL-BMI-GB02	Fine Gravel	Multiplate	Remediation	5.6	-	-	5.6		
OL-BMI-GB03	Fine Gravel, Multilayer MPC	Multiplate	Remediation	4.3	-	-	4.3		
OL-BMI-SB01	Sand, Multilayer MPC	Ponar	Remediation	1.7	2.2	-	2.0	3.3	3.4
OL-BMI-SB02	Sand, Monolayer MPC	Ponar	Remediation	4.9	3.0	2.8	3.5		
OL-BMI-SB03	Sand, Multilayer MPC	Ponar	Remediation	1.0	1.0	-	1.0		
OL-BMI-TB01	Topsoil	Ponar	Remediation	2.0	4.1	1.2	2.4		
OL-BMI-TB02	Topsoil	Ponar	Remediation	3.7	7.4	4.5	5.2		
OL-BMI-TB03	Topsoil	Ponar	Remediation	6.9	5.1	4.9	5.7		
Remediation Area C									
OL-BMI-GC01	Fine Gravel	Multiplate	Remediation	2.3	-	-	2.3	3.0	1.7
OL-BMI-GC02	Fine Gravel, Multilayer MPC	Multiplate	Remediation	3.5	-	-	3.5		
OL-BMI-GC03	Fine Gravel	Multiplate	Remediation	3.2	-	-	3.2		
OL-BMI-SC01	Sand	Ponar	Remediation	1.1	1.2	-	1.1	2.1	1.8
OL-BMI-SC02	Sand, Monolayer MPC	Ponar	Remediation	2.0	1.0	-	1.5		
OL-BMI-SC03	Sand	Ponar	Remediation	3.3	4.1	-	3.7		
Remediation Area D									
OL-BMI-GD01	Fine Gravel	Multiplate	Remediation	1.9	4.0	-	2.9	3.6	3.2
OL-BMI-GD02	Fine Gravel	Multiplate	Remediation	3.7	-	-	3.7		
OL-BMI-GD03	Fine Gravel	Multiplate	Remediation	4.3	-	-	4.3		
OL-BMI-SD01	Sand	Ponar	Remediation	3.1	2.9	-	3.0	3.8	3.0
OL-BMI-SD02	Sand, Monolayer MPC	Ponar	Remediation	0.9	0.0	-	0.5		
OL-BMI-SD03	Sand	Ponar	Remediation	1.1	0.4	-	0.7		
OL-BMI-TD01	Topsoil	Ponar	Remediation	8.4	8.0	-	8.2		
OL-BMI-TD02	Topsoil	Ponar	Remediation	6.1	5.8	-	6.0		
OL-BMI-TD03	Topsoil	Ponar	Remediation	4.9	4.1	-	4.5		
Remediation Area E									
OL-BMI-CE01	Coarse Gravel	Multiplate	Remediation	5.0	-	-	5.0	4.1	1.7
OL-BMI-CE02	Coarse Gravel	Multiplate	Remediation	4.7	-	-	4.7		
OL-BMI-CE03	Coarse Gravel	Multiplate	Remediation	6.8	-	-	6.8		
OL-BMI-GE01	Fine Gravel	Multiplate	Remediation	2.1	-	-	2.1		
OL-BMI-GE02	Fine Gravel	Multiplate	Remediation	2.8	-	-	2.8		
OL-BMI-GE03	Fine Gravel	Multiplate	Remediation	3.6	-	-	3.6		
OL-BMI-SE01	Sand	Ponar	Remediation	2.0	0.2	0.1	0.8	1.9	1.3
OL-BMI-SE02	Sand	Ponar	Remediation	0.2	2.6	4.5	2.4		
OL-BMI-SE03	Sand	Ponar	Remediation	4.2	1.7	1.6	2.5		

TABLE 2.6 ONONDAGA LAKE BIOLOGICAL ASSESSMENT PROFILE SCORES

Location[1]	Cap Type	Sampling Method	Area Type	2021 BAP Score 1[2,3]	2021 BAP Score 2[2,3]	2021 BAP Score 3[2,3]	2021 BAP Mean[3]	2021 Area Mean[3]	2018 Area Mean[3]
CSX Area									
OL-BMI-CSX01	N/A	Ponar	Unremediated	1.4	4.1	3.0	2.8	3.6	3.6
OL-BMI-CSX02	N/A	Ponar	Unremediated	5.7	6.6	-	6.1		
OL-BMI-CSX03	N/A	Ponar	Unremediated	2.4	1.3	-	1.9		
Unremediated Locations									
OL-BMI-RR01A	N/A	Ponar	Unremediated	4.1	1.6	4.5	3.4	2.2	1.4
OL-BMI-RR01B	N/A	Ponar	Unremediated	1.3	1.1	-	1.2		
OL-BMI-RR01C	N/A	Ponar	Unremediated	1.9	2.2	-	2.1		
OL-BMI-RR02A	N/A	Ponar	Unremediated	6.0	6.0	-	6.0	4.0	3.6
OL-BMI-RR02B	N/A	Ponar	Unremediated	4.1	4.5	-	4.3		
OL-BMI-RR02C	N/A	Ponar	Unremediated	3.4	0.4	1.3	1.7		
OL-BMI-RR03A	N/A	Ponar	Unremediated	6.7	5.4	-	6.1	5.3	3.0
OL-BMI-RR03B	N/A	Ponar	Unremediated	6.4	5.9	-	6.2		
OL-BMI-RR03C	N/A	Ponar	Unremediated	3.6	4.0	-	3.8		
								2021	2018
Average Ponar BAP Score (Remediated Areas)								3.4	2.6
Average Ponar BAP Score (Unremediated Areas)								3.9	2.6
Average Multiplate BAP Score (Remediated Areas)								3.8	2.3
Average CSX BAP Score								3.6	3.6
Average Baseline Ponar BAP Score (Remediation Areas)								3.9	
Average Baseline Ponar BAP Score (Unremediated Areas)								4.0	

[1] Location IDs indicated by cap type, where T=topsoil, S= sand, G=gravel, C=coarse gravel/cobble; or by other general area of the Lake, such as CSX or Unremediated Area.

[2] Biological Assessment Profile (BAP) calculated for two of three replicates where samples were collected via ponar. Where samples were collected via multiplates, one of two replicates was identified. Due to high variability in subset of samples, BAP scores were calculated for archive samples for two multiplate locations and 13 ponar locations.

[3] Scores assigned to descriptive categories defined in the SOP to reflect the estimated water quality impact score. These categories are severe (for BAP score ranging from 0-2.5), moderate (for BAP score ranging from 2.5-5), slight (for BAP score ranging from 5-7.5), and none (for BAP ranging from 7.5-10).

BAP Score 0-2.5
BAP Score 2.5-5.0
BAP Score 5.0-7.5
BAP Score 7.5-10

TABLE 2.7a 2021 ONONDAGA LAKE BIOLOGICAL ASSESSMENT PROFILE SCORES BY CAP TYPE IN REMEDIATION AREAS

Cap Type	Number of Locations	Sampling Method	2018 BAP Minimum	2018 BAP Maximum	2018 Average BAP Score	2018 Impact Category	2021 BAP Minimum	2021 BAP Maximum	2021 Average BAP Score	2021 Impact Category
Remediation Area A										
Sand	3	Ponar	2.2	4.7	3.1	Moderate	2.6	4.7	3.6	Moderate
Topsoil	3	Ponar	1.5	2.4	1.9	Severe	3.1	7.7	5.6	Slight
Fine Gravel	3	Multiplate	1.4	4.6	2.9	Moderate	1.8	3.3	2.7	Moderate
Remediation Area B										
Sand, Multilayer MPC	2	Ponar	1.3	4.4	2.9	Moderate	1.0	2.0	1.5	Severe
Sand, Monolayer MPC	1	Ponar	-	-	1.7	Severe	-	-	3.5	Moderate
Topsoil	3	Ponar	4.1	4.4	4.3	Moderate	2.4	5.7	4.4	Moderate
Fine Gravel	1	Multiplate	-	-	2.9	Moderate	-	-	5.6	Slight
Fine Gravel, Multilayer MPC	2	Multiplate	1.6	3.1	2.4	Severe	4.3	4.7	4.5	Moderate
Remediation Area C										
Sand	2	Ponar	2.0	2.2	2.1	Severe	1.2	3.7	2.4	Severe
Sand, Monolayer MPC	1	Ponar	-	-	1.2	Severe	-	-	1.5	Severe
Fine Gravel	2	Multiplate	2.0	2.0	2.0	Severe	2.3	3.2	2.8	Moderate
Fine Gravel, Multilayer MPC	1	Multiplate	-	-	1.2	Severe	-	-	3.5	Moderate
Remediation Area D										
Sand	2	Ponar	1.3	1.8	1.5	Severe	0.7	3.0	1.9	Severe
Sand, Monolayer MPC	1	Ponar	-	-	0.0	Severe	-	-	0.5	Severe
Topsoil	3	Ponar	2.4	7.6	4.9	Moderate	4.5	8.2	6.2	Slight
Fine Gravel	3	Multiplate	2.9	3.7	3.2	Moderate	2.9	4.3	3.6	Moderate
Remediation Area E										
Sand	3	Ponar	1.1	1.5	1.3	Severe	0.8	2.5	1.9	Severe
Coarse gravel	3	Multiplate	1.3	2.6	2.0	Severe	4.7	6.8	5.5	Slight
Fine Gravel	3	Multiplate	1.3	1.6	1.4	Severe	2.1	3.6	2.8	Moderate

1. Scores assigned to descriptive categories defined in the SOP to reflect the estimated water quality impact score. These categories are severe (for BAP score ranging from 0-2.5), moderate (for BAP score ranging from 2.5-5), slight (for BAP score ranging from 5-7.5), and none (for BAP ranging from 7.5-10).

BAP Score 0-2.5
BAP Score 2.5-5.0
BAP Score 5.0-7.5
No Impact 7.5-10

TABLE 2.7b 2021 ONONDAGA LAKE BIOLOGICAL ASSESSMENT PROFILE SCORES BY CAP TYPE

Cap Type	Number of Locations	Sampling Method	2018 BAP Score Minimum	2018 BAP Score Maximum	2018 Average BAP Score	2018 Impact Category	2021 BAP Score Minimum	2021 BAP Score Maximum	2021 Average BAP Score	2021 Impact Category
Sand	10	Ponar	1.1	4.7	2.0	Severe	0.7	4.7	2.5	Severe
Sand, Multilayer MPC	2	Ponar	1.3	4.4	2.9	Moderate	1.0	2.0	1.5	Severe
Sand, Monolayer MPC	3	Ponar	1.2	1.7	1.5	Severe	0.5	3.5	1.8	Severe
Fine Gravel	12	Multiplate	1.3	4.6	2.5	Severe	1.8	5.6	3.2	Moderate
Fine Gravel, Multilayer MPC	3	Multiplate	1.3	3.1	2.0	Severe	3.5	4.7	4.2	Moderate
Coarse Gravel	3	Multiplate	1.3	2.6	2.0	Severe	4.7	6.8	5.5	Slight
Topsoil	9	Ponar	1.5	7.6	3.7	Moderate	2.4	8.2	5.4	Slight
CSX	3	Ponar	1.8	5.4	3.6	Moderate	1.9	6.2	3.6	Moderate
Unremediated	3	Ponar	1.4	3.6	2.7	Moderate	2.2	5.3	3.9	Moderate

1. Scores assigned to descriptive categories defined in the SOP to reflect the estimated water quality impact score. These categories are severe (for BAP score ranging from 0-2.5), moderate (for BAP score ranging from 2.5-5), slight (for BAP score ranging from 5-7.5), and none (for BAP ranging from 7.5-10).

BAP Score 0-2.5
BAP Score 2.5-5.0
BAP Score 5.0-7.5
BAP Score 7.5-10

TABLE 2.8 2021 MAINTENANCE SUMMARY MOUTH OF NINEMILE CREEK AND WASTEBED B/HARBOR BROOK OUTBOARD RESTORATION AREAS

MONTH	TASK	SITE	DESCRIPTION
Action Items and Maintenance Efforts			
June and September/October	Invasive Species Control	Mouth of Ninemile Creek, Wastebed B/Harbor Brook Outboard Area	Applications of the herbicide Rodeo® to control invasive species were carried out
July and August	Mechanical Removal of Water Chestnut	Restoration Area A and E	Hand pulled water chestnut out of lake
December	Large Tree Replacement	Wastebed B/Harbor Brook Outboard Area	Replaced 2 dead trees noted in the 2020 survey
December	Beaver Nuisance Control	Harbor Brook	Removal of beavers due to tree damage in Harbor Brook Area
Supplemental Plantings			
May-August	Enhancement Plantings[1]	Mouth of Ninemile Creek, Wastebed B/Harbor Brook Outboard Area	Planted herbaceous plugs in sparsely vegetated areas

[1] Quantities and species can be found in Table 2B.6.

TABLE 3.1 REMEDIAL GOALS (MERCURY) AND TARGET CONCENTRATIONS (ORGANIC CHEMICALS) FOR FISH TISSUE

	Human Health	Ecological[a]
Remedial Goals		
Mercury (mg/kg)	0.2 to 0.3[b]	0.14[c] for small and large prey fish
Target Concentrations		
PCBs (mg/kg)	0.04 to 0.3[d]	0.19[c] for small and large prey fish
Dioxin/furan TEQ (ng/kg)	1.3 to 4[e]	NA
DDT and Metabolites (mg/kg)	NA	0.049[f] for small prey fish 0.14[g] for large prey fish

Notes:

- Contaminant concentrations in fillet samples of sportfish (i.e., identified as Smallmouth Bass, Walleye, Pumpkinseed, and Common Carp in the OLMMP) are compared to performance criteria and target concentration ranges for protection of human health.
- Contaminant concentrations in 1) whole body samples of large prey fish, 2) composite whole body samples of small prey fish are compared to performance criteria and target concentrations for protection of ecological receptors, and 3) whole-body concentrations in sportfish of appropriate sizes calculated from fillet concentrations. The OLMMP identifies White Sucker and Banded Killifish for large and small prey fish, but states that other comparable species may be substituted if these species are difficult to obtain.
- Concentrations are on a wet-weight basis.
- While not collected as prey fish, remedial goals and target concentrations may be compared to contaminant concentrations in whole body sportfish (i.e., specifically Smallmouth Bass, Walleye, Pumpkinseed, and Common Carp in the OLMMP) where fillet data is converted to whole body data using "conversion factors developed in the Onondaga Lake Baseline Ecological Risk Assessment (BERA) (i.e., 0.7 for mercury, 2.5 for PCBs, and 2.3 for DDTs and hexachlorobenzene) (TAMS, 2002b)," For these calculations, fish with lengths 180-600 mm and 30-180 mm are compared to goal and target concentrations for large and small prey fish, respectively.

NA – not applicable. Dioxin/furans and DDT were not identified as posing risk to ecological receptors and human health, respectively.

a – Protection of ecological receptors (wildlife) based on the exposure assumptions from the Onondaga Lake Baseline Ecological Risk Assessment (BERA) (TAMS, 2002b). Ecological performance criteria and targets based on lowest observed adverse effect levels presented in Appendix G of the FS (Parsons et al. 2004).

b – Lower end of the mercury range is based on reasonable maximum exposure (RME), non-carcinogenic risk. The higher end of the range is EPA's methylmercury National Recommended Water Quality criterion for the protection of human health for the consumption of organisms and is expressed as mg/kg in fish tissue.

c – Protection of river otter.

d – Lower end of PCB range represents the RME non-carcinogenic target for high molecular weight PCBs and is approximately equal to the target for $1x10^{-5}$ carcinogenic risk (0.03 mg/kg). Upper end of range is the RME target for 1×10^{-4} carcinogenic risk.

e – Although non-carcinogenic targets were not developed for dioxin/furans at the time of the ROD (2005), using the parameters presented in Appendix G of the FS (Parsons et al. 2005) for a target concentration for the non-cancer endpoint, and using the USEPA 2012 reference dose of 7E-10 mg/kg-day, the non-cancer target at a hazard quotient of 1 was determined by USEPA to be 1.3E-06 mg/kg (or 1.3 ng/kg) and is the lower end of the range. The upper end of the range is for protection of carcinogenic risk of $1x10^{-4}$, reasonable maximum exposure (RME).

f – Protection of belted kingfisher

g – Protection of osprey

TABLE 3.2 SUMMARY OF 2021 FISH TISSUE CHEMICAL CONCENTRATIONS (WET-WEIGHT BASIS)

Parameter	Prep	Species	Sample Size	Number of Detections	Mean[1]	Median[2]	Min[2,3]	Max[2,3]	Standard Deviation[2,4]	Standard Error[2,5]	95% UCL[1,6]
Mercury (mg/kg)	whole body	Small Preyfish	24	24	0.071	0.08	0.03	0.10	0.023	0.0046	0.079
	whole body	Large Preyfish	24	24	0.12	0.09	0.03	0.36	0.086	0.018	0.16
	fillet	Smallmouth bass	25	25	0.68	0.65	0.29	1.6	0.28	0.055	0.78
	fillet	Walleye	25	24	0.80	0.76	*0.006U*	1.8	0.37	0.073	0.92
	fillet	Pumpkinseed	25	24	0.13	0.11	*0.007U*	0.29	0.075	0.015	0.16
	fillet	Common carp	25	25	0.14	0.093	0.048	0.48	0.12	0.024	0.18
Total PCBs (mg/kg)[7]	whole body	Small Preyfish	24	24	0.13	0.049	0.031	0.80	0.21	0.043	0.20
	whole body	Large Preyfish	24	24	0.33	0.19	0.017	1.1	0.32	0.065	0.51
	fillet	Smallmouth bass	25	25	0.23	0.14	0.033	0.88	0.21	0.041	0.30
	fillet	Walleye	25	25	0.35	0.33	0.078	0.95	0.20	0.039	0.42
	fillet	Pumpkinseed	25	22	0.017	0.016	0.0024	0.040	0.012	0.0025	0.021
	fillet	Common carp	25	25	0.19	0.12	0.0021	0.89	0.21	0.042	0.26
Sum of DDT and Metabolites (mg/kg)[8]	whole body	Small Preyfish	24	24	0.0028	0.0018	0.0010	0.010	0.0024	0.00048	0.0036
	whole body	Large Preyfish	24	24	0.024	0.014	0.0012	0.18	0.038	0.0078	0.039
Hexachlorobenzene (mg/kg)	whole body	Small Preyfish	24	8	0.000087	0.00010	0.000060	0.00024	0.000040	0.0000082	0.00011
	whole body	Large Preyfish	24	22	0.00040	0.00034	0.000055	0.0014	0.00036	0.000074	0.00053
	fillet	Smallmouth bass	25	22	0.00018	0.00016	0.000058	0.00040	0.00011	0.000022	0.00022
	fillet	Walleye	25	25	0.00041	0.00037	0.00014	0.00076	0.00015	0.000030	0.00046
	fillet	Pumpkinseed	25	11	0.000083	0.00010	0.00006	0.00026	0.000037	0.0000073	0.000095
	fillet	Common carp	25	22	0.00043	0.00024	*0.000095U*	0.0017	0.00044	0.000087	0.00065
Dioxin/Furan Total TEQ (ng/kg)[9,10,11]	fillet	Smallmouth bass	12	12 (34/199)	0.75	0.71	0.35	1.2	0.23	0.065	0.86
	fillet	Walleye	12	12 (30/199	0.73	0.73	0.42	0.99	0.20	0.059	0.83
	fillet	Pumpkinseed	12	1 (1/203)	--	0.39	*0.30 U*	*0.67 U*	0.10	0.029	--
	fillet	Common carp	12	12 (54/199)	1.0	0.57	0.36	2.6	0.79	0.23	1.4
Percent Lipid (% by weight)	whole body	Small Preyfish	23	23	1.3	1.2	0.50	2.3	0.46	0.10	1.4
	whole body	Large Preyfish	23	23	2.6	2.2	0.19	9.3	2.3	0.49	3.5
	fillet	Smallmouth bass	25	25	1.8	1.7	0.43	3.4	0.82	0.16	2.1
	fillet	Walleye	25	25	3.1	3.3	1.2	4.7	0.84	0.17	3.4
	fillet	Pumpkinseed	25	25	0.51	0.42	0.12	1.5	0.32	0.064	0.64
	fillet	Common carp	25	25	5.0	3.9	0.23	15	3.8	0.76	6.8

1. Mean and 95% UCL were calculated using ProUCL version 5.2 and were not calculated when 3 or fewer results were detects (USEPA,2015). For data sets with non-detects, ProUCL selected the statistical method and did not use substitution method (i.e., one-half of the method detection or reporting limit). For % lipids, mean was calculated arithmetically; all results were detects.
2. Non detects included at half the method detection limit for mercury and dioxin/furan TEQ; non-detects included at half the reporting limit for other analytes.
3. U = not detected. Some detected concentrations were found to be lower than the reporting limit or method detection limit of some non-detect results.
4. Standard deviation is an estimate of the variability of the data points used to calculate the mean.
5. Standard error is an estimate of how close the calculated mean is likely to be to the true population mean.
6. 95% UCL is an estimate of the upper bound for the true population mean.
7. Total PCBs was calculated by the lab as sum of Aroclors, using detected values only, unless all non-detect then maximum detection limit was reported.
8. DDT and Metabolites was calculated as sum of DDT, DDE, and DDD; 1/2 the reporting limit was used for non-detects.
9. Dioxin/Furan Total TEQ was calculated as sum of congeners; 1/2 the method detection limit was used for non-detects.
10. Number of detections is total TEQ detections; numbers in parentheses are number of congeners detected/congeners analyzed (i.e., 17 congeners times 12 samples).
11. There were 16 fish samples where 1,2,3,7,8,9-HxCDD results were rejected (5 smallmouth bass, 5 walleye, 1 pumpkinseed, and 5 common carp). These rejected samples are not included in the total congeners analyzed.

Acronyms:

-- Insufficient data to calculate Mean or 95% UCL; 3 or fewer results were detects

DDT = dichlorodiphenyltrichloroethane | PCB = polychlorinated biphenyl

mg/kg = milligrams per kilogram | TEQ = toxicity equivalent quotient

ng/kg = nanograms per kilogram | UCL = upper confidence limit

Reference:

USEPA, 2022. ProUCL Version 5.2 User Guide. https://www.epa.gov/land-research/proucl-software Accessed October 1, 2024.

TABLE 3.3a SUMMARY OF FISH TISSUE CHEMICAL CONCENTRATIONS: SPORT FISH FILLET (2015-2021)

Taxon	Chemical Name	Year	Sample Size	*(detects)*	Mean[1]	95% UCL Value[1]	95% UCL Calculation Type
Smallmouth Bass	Mercury (mg/kg)	2015	25	*(25)*	1.1	1.2	95% Student's-t UCL
		2016	25	*(25)*	0.92	1.02	95% Student's-t UCL
		2017	25	*(25)*	0.71	0.82	95% Student's-t UCL
		2018	25	*(25)*	0.79	0.91	95% Student's-t UCL
		2021	25	*(25)*	0.68	0.78	95% Student's-t UCL
	Total PCBs (mg/kg)	2015	25	*(25)*	1.9	2.2	95% Student's-t UCL
		2016	25	*(25)*	1.2	1.5	95% Adjusted Gamma UCL
		2017	25	*(25)*	0.50	0.61	95% Student's-t UCL
		2018	25	*(25)*	0.47	0.57	95% Student's-t UCL
		2021	25	*(25)*	0.23	0.30	95% Student's-t UCL
	Dioxin/Furan Total TEQ (ng/kg)	2015	12	*(12)*	1.9	2.4	95% Student's-t UCL
		2017	12	*(12)*	1.5	1.9	95% Student's-t UCL
		2018	13	*(13)*	1.0	1.3	95% Student's-t UCL
		2021	12	*(12)*	0.75	0.86	95% Student's-t UCL
	Hexachlorobenzene (mg/kg)	2015	25	*(23)*	0.0056	0.0072	95% KM Adjusted Gamma UCL
		2017	25	*(6)*	0.0021	0.0029	95% KM (t) UCL
		2018	25	*0*	--	--	--
		2021	25	*(22)*	0.000018	0.00022	95% KM (t) UCL
Walleye	Mercury (mg/kg)	2015	25	*(25)*	1.4	1.6	95% Student's-t UCL
		2016	25	*(25)*	1.1	1.3	95% Student's-t UCL
		2017	25	*(25)*	0.77	0.91	95% Adjusted Gamma UCL
		2018	25	*(25)*	0.71	0.81	95% Student's-t UCL
		2021	25	*(24)*	0.80	0.92	95% KM (t) UCL
	Total PCBs (mg/kg)	2015	25	*(25)*	3.8	5.3	95% Adjusted Gamma UCL
		2016	25	*(25)*	2.5	3.3	95% Student's-t UCL
		2017	25	*(25)*	0.74	1.4	95% Chebyshev (Mean, Sd) UCL
		2018	25	*(25)*	0.96	1.2	95% Student's-t UCL
		2021	25	*(25)*	0.35	0.42	95% Student's-t UCL
	Dioxin/Furan Total TEQ (ng/kg)	2015	12	*(12)*	2.1	2.6	95% Student's-t UCL
		2017	12	*(12)*	1.6	2.4	95% Student's-t UCL
		2018	13	*(13)*	1.8	2.5	95% Student's-t UCL
		2021	12	*(12)*	0.73	0.83	95% Student's-t UCL
	Hexachlorobenzene (mg/kg)	2015	25	*(25)*	0.027	0.032	95% Student's-t UCL
		2017	25	*(17)*	0.0044	0.0065	95% KM Adjusted Gamma UCL
		2018	25	*(3)*	--	--	--
		2021	25	*(25)*	0.00041	0.00046	95% Student's-t UCL

Notes:
1. For 2015 - 2018, mean and 95% UCL were calculated using ProUCL version 5.1. For 2021, mean and 95% UCL were calculated using ProUCL version 5.2. UCLs were not calculated when 3 or fewer results were detects (USEPA,2015). 95% UCL is an estimate of the upper bound for the true population mean. For data sets with NDs, the stated statistical method was used for handling NDs rather than the substitution method (i.e., one-half of the detection/reporting limit).
2. In 2021, ProUCL version 5.2 suggested the 95% Student's-t UCL for datasets that did not follow a discernible distribution when all samples were detected. These circumstances were reviewed, and the non-parametric 95% Standard Bootstrap UCL was determined to be a better fit for these datasets.

Abbreviations:
-- Insufficient data to calculate Mean or 95% UCL; 3 or fewer results were detects
DDT: dichlorodiphenyltrichloroethane
KM: Kaplan-Meier
mg/kg: milligrams per kilogram
ng/kg: nanograms per kilogram
ND: non-detect
PCB: polychlorinated biphenyl
TEQ: toxicity equivalent quotient
UCL: upper confidence limit

References:
USEPA, 2015. ProUCL Version 5.1 User Guide. EPA/600/R-07/041 https://www.epa.gov/sites/production/files/2016-05/documents/proucl_5.1_user-guide.pdf Accessed May 22, 2020.
USEPA, 2022. ProUCL Version 5.2 User Guide. https://nepis.epa.gov/Exe/ZyPDF.cgi/P10157JD.PDF?Dockey=P10157JD.PDF Accessed November 21, 2024.

TABLE 3.3a SUMMARY OF FISH TISSUE CHEMICAL CONCENTRATIONS: SPORT FISH FILLET (2015-2021)

Taxon	Chemical Name	Year	Sample Size	*(detects)*	Mean[1]	95% UCL Value[1]	95% UCL Calculation Type
Common Carp	Mercury (mg/kg)	2015	25	*(25)*	0.20	0.31	95% H-UCL
		2016	25	*(25)*	0.20	0.24	95% Adjusted Gamma UCL
		2017	25	*(25)*	0.19	0.24	95% Student's-t UCL
		2018	25	*(20)*	0.097	0.14	95% KM Adjusted Gamma UCL
		2021	25	*(25)*	0.14	0.18	95% Standard Bootstrap UCL[2]
	Total PCBs (mg/kg)	2015	25	*(25)*	2.0	2.9	95% Adjusted Gamma UCL
		2016	25	*(25)*	1.8	2.7	95% Adjusted Gamma UCL
		2017	25	*(25)*	0.50	0.74	95% Adjusted Gamma UCL
		2018	25	*(25)*	0.27	0.44	95% Adjusted Gamma UCL
		2021	25	*(25)*	0.19	0.26	95% Student's-t UCL
	Dioxin/Furan Total TEQ (ng/kg)	2015	12	*(12)*	5.9	15	95% Adjusted Gamma UCL
		2017	12	*(12)*	4.2	9.2	95% Adjusted Gamma UCL
		2018	14	*(14)*	1.1	3.2	95% H-UCL
		2021	12	*(12)*	1.0	1.4	95% Student's-t UCL
	Hexachlorobenzene (mg/kg)	2015	25	*(23)*	0.038	0.081	Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)
		2017	25	*(13)*	0.0040	0.0056	95% KM (t) UCL
		2018	25	*(2)*	--	--	--
		2021	25	*(22)*	0.00043	0.00065	95% KM Adjusted Gamma UCL
Pumpkinseed	Mercury (mg/kg)	2015	25	*(25)*	0.28	0.32	95% Student's-t UCL
		2016	25	*(25)*	0.19	0.24	95% Adjusted Gamma UCL
		2017	25	*(25)*	0.17	0.20	95% Student's-t UCL
		2018	25	*(16)*	0.088	0.11	95% KM (t) UCL
		2021	25	*(24)*	0.13	0.16	95% KM (t) UCL
	Total PCBs (mg/kg)	2015	25	*(25)*	0.14	0.18	95% Adjusted Gamma UCL
		2016	25	*(17)*	0.045	0.21	KM H-UCL
		2017	25	*(25)*	0.096	0.13	95% Adjusted Gamma UCL
		2018	25	*(23)*	0.090	0.12	95% KM Adjusted Gamma UCL
		2021	25	*(22)*	0.017	0.021	95% KM (t) UCL
	Dioxin/Furan Total TEQ (ng/kg)	2015	12	*(9)*	0.38	0.53	95% KM (t) UCL
		2017	12	*(12)*	0.27	0.33	95% Student's-t UCL
		2018	12	*(12)*	0.54	0.73	95% Student's-t UCL
		2021	12	*(1)*	--	--	--
	Hexachlorobenzene (mg/kg)	2015	25	*(1)*	--	--	--
		2017	20	*0*	--	--	--
		2018	23	*0*	--	--	--
		2021	25	*(11)*	0.000083	0.000099	95% KM (t) UCL

Notes:
1. For 2015 - 2018, mean and 95% UCL were calculated using ProUCL version 5.1. For 2021, mean and 95% UCL were calculated using ProUCL version 5.2. UCLs were not calculated when 3 or fewer results were detects (USEPA,2015). 95% UCL is an estimate of the upper bound for the true population mean. For data sets with NDs, the stated statistical method was used for handling NDs rather than the substitution method (i.e., one-half of the detection/reporting limit).
2. In 2021, ProUCL version 5.2 suggested the 95% Student's-t UCL for datasets that did not follow a discernible distribution when all samples were detected. These circumstances were reviewed, and the non-parametric 95% Standard Bootstrap UCL was determined to be a better fit for these datasets.

Abbreviations:
-- Insufficient data to calculate Mean or 95% UCL; 3 or fewer results were detects
DDT: dichlorodiphenyltrichloroethane
KM: Kaplan-Meier
mg/kg: milligrams per kilogram
ng/kg: nanograms per kilogram
ND: non-detect
PCB: polychlorinated biphenyl
TEQ: toxicity equivalent quotient
UCL: upper confidence limit

References:
USEPA, 2015. ProUCL Version 5.1 User Guide. EPA/600/R-07/041 https://www.epa.gov/sites/production/files/2016-05/documents/proucl_5.1_user-guide.pdf Accessed May 22, 2020.
USEPA, 2022. ProUCL Version 5.2 User Guide. https://nepis.epa.gov/Exe/ZyPDF.cgi/P10157JD.PDF?Dockey=P10157JD.PDF Accessed November 21, 2024.

TABLE 3.3b SUMMARY OF FISH TISSUE CHEMICAL CONCENTRATIONS: PREY FISH WHOLE BODY (2015-2021)

Taxon	Chemical Name	Year	Sample Size	*(detects)*	Mean[1]	95% UCL Value[1]	95% UCL Calculation Type
Large Prey Fish	Mercury (mg/kg)	2015	24	*(23)*	0.19	0.24	95% KM (t) UCL
		2016	24	*(23)*	0.13	0.16	95% KM (t) UCL
		2017	24	*(24)*	0.093	0.14	95% Adjusted Gamma UCL
		2018	24	*(14)*	0.17	0.21	95% KM (t) UCL
		2021	24	*(24)*	0.12	0.16	95% Adjusted Gamma UCL
	Total PCBs (mg/kg)	2015	24	*(24)*	1.6	2.0	95% Student's-t UCL
		2016	24	*(24)*	0.73	1.0	95% Adjusted Gamma UCL
		2017	24	*(24)*	0.36	0.50	95% Adjusted Gamma UCL
		2018	24	*(23)*	0.10	0.13	95% KM (t) UCL
		2021	24	*(24)*	0.33	0.51	95% Adjusted Gamma UCL
	Sum of DDT and Metabolites (mg/kg)	2015	24	*(24)*	0.020	0.026	95% Adjusted Gamma UCL
		2017	24	*(24)*	0.016	0.021	95% Adjusted Gamma UCL
		2018	24	*(20)*	0.025	0.098	95% KM (Chebyshev) UCL
		2021	24	*(24)*	0.024	0.039	95% Adjusted Gamma UCL
	Hexachlorobenzene (mg/kg)	2015	24	*(13)*	0.0095	0.018	95% KM Adjusted Gamma UCL
		2017	24	*(10)*	0.0019	0.0023	95% KM (t) UCL
		2018	24	*(1)*	--	--	--
		2021	24	*(22)*	0.00040	0.00053	95% KM (t) UCL
Small Prey Fish	Mercury (mg/kg)	2015	24	*(24)*	0.14	0.16	95% Student's-t UCL
		2016	24	*(24)*	0.087	0.099	95% Student's-t UCL
		2017	24	*(21)*	0.057	0.074	95% KM (t) UCL
		2018	24	*(11)*	0.072	0.087	95% KM (t) UCL
		2021	24	*(24)*	0.071	0.079	95% Student's-t UCL
	Total PCBs (mg/kg)	2015	24	*(23)*	0.16	0.39	KM H-UCL
		2016	24	*(24)*	0.17	0.23	95% Adjusted Gamma UCL
		2017	24	*(24)*	0.11	0.25	95% Chebyshev (Mean, Sd) UCL
		2018	24	*(24)*	0.049	0.13	95% H-UCL
		2021	24	*(24)*	0.13	0.20	95% Standard Bootstrap UCL[2]
	Sum of DDT and Metabolites (mg/kg)	2015	24	*(13)*	0.0021	0.0029	95% KM Adjusted Gamma UCL
		2017	24	*(23)*	0.0052	0.0093	KM H-UCL
		2018	24	*(24)*	0.0061	0.0076	95% Student's-t UCL
		2021	24	*(24)*	0.0028	0.0036	95% Standard Bootstrap UCL[2]
	Hexachlorobenzene (mg/kg)	2015	24	*(3)*	--	--	--
		2017	24	*(3)*	--	--	--
		2018	24	*(0)*	--	--	--
		2021	24	*(8)*	0.000087	0.00011	95% KM (t) UCL

Notes:
1. For 2015 - 2018, mean and 95% UCL were calculated using ProUCL version 5.1. For 2021, mean and 95% UCL were calculated using ProUCL version 5.2. UCLs were not calculated when 3 or fewer results were detects (USEPA,2015). 95% UCL is an estimate of the upper bound for the true population mean. For data sets with NDs, the stated statistical method was used for handling NDs rather than the substitution method (i.e., one-half of the detection/reporting limit).
2. In 2021, ProUCL version 5.2 suggested the 95% Student's-t UCL for datasets that did not follow a discernible distribution when all samples were detected. These circumstances were reviewed, and the non-parametric 95% Standard Bootstrap UCL was determined to be a better fit for these datasets.

Abbreviations:
-- Insufficient data to calculate Mean or 95% UCL; 3 or fewer results were detects
DDT: dichlorodiphenyltrichloroethane
KM: Kaplan-Meier
mg/kg: milligrams per kilogram
ND: non-detect
PCB: polychlorinated biphenyl
TEQ: toxicity equivalent quotient

References:
USEPA, 2015. ProUCL Version 5.1 User Guide. EPA/600/R-07/041 https://www.epa.gov/sites/production/files/2016-05/documents/proucl_5.1_user-guide.pdf Accessed May 22, 2020.
USEPA, 2022. ProUCL Version 5.2 User Guide. https://nepis.epa.gov/Exe/ZyPDF.cgi/P10157JD.PDF?Dockey=P10157JD.PDF Accessed November 21, 2024.

TABLE 3.4 MERCURY CONCENTRATIONS (MG/KG WET WEIGHT) IN ONONDAGA LAKE ZOOPLANKTON COLLECTED AT SOUTH DEEP IN 2021

2021 Sampling Date	Total Mercury (mg/kg wet weight)	Validation Qualifier	Methyl Mercury (mg/kg wet weight)	Validation Qualifier	Methylmercury (as Percent of Total Mercury)
May 11	*		0.002	J	
June 15	*		0.0077		
July 07	*		0.0061		
July 20	*		0.0104		
August 03	0.0251		0.0072	J-	29%
August 17	0.0245		0.007	J-	29%
August 31	0.0676		0.0078		12%
September 08	0.0421		0.0057		14%
September 14	0.0815		0.0053		7%
September 21	*		0.0148		
September 28	*		0.0146		
October 05	0.0132		0.0105		80%
October 12	0.0169		0.0057		34%
October 19	0.0583		0.0034		6%
October 27	*		0.0067		
November 02	*		0.0019	J	
November 10	*		0.0012	U	
November 16	*		0.0071	J	
November 23	0.133		0.003		2%

Notes:
U: not detected at reporting limit specified;
J: estimated concentration
J-: estimated concentration biased low
*: insufficient mass to analyze total mercury

TABLE 4.1 SUMMARY OF MERCURY MEASURED DURING 2021 MNR COMPLIANCE EVENT SEDIMENT SAMPLES

Location ID	Field Sample ID	Depth (ft)	Date	Mercury (mg/kg dry)		Solids (%)
Littoral Zone						
S306	OL-3707-09	0 - 0.5	05/21/2021	0.11		63.4
S93	OL-3706-02	0 - 0.5	05/20/2021	0.2		56.2
S94	OL-3706-01	0 - 0.5	05/20/2021	0.057	J	46.9
S100	OL-3707-08	0 - 0.5	05/21/2021	0.057	J	56.9
S112	OL-3707-07	0 - 0.5	05/21/2021	1.9		50.2
S373	OL-3707-02	0 - 0.5	05/21/2021	0.83	J	59.8
S371	OL-3707-06	0 - 0.5	05/21/2021	0.32	J	39
S361	OL-3706-15	0 - 0.5	05/20/2021	0.18	J	48
S364	OL-3706-12	0 - 0.5	05/20/2021	0.12	J	31.3
S67	OL-3706-14	0 - 0.5	05/20/2021	0.31	J	31.9
S26	OL-3707-05	0 - 0.5	05/21/2021	0.11		62.1
S367	OL-3707-03	0 - 0.5	05/21/2021	0.26		55
S61	OL-3707-04	0 - 0.5	05/21/2021	0.19		57
S329	OL-3707-10	0 - 0.5	05/21/2021	0.12		56.6
North Basin						
OL-STA-80069	OL-3702-09	0 - 0.13	05/18/2021	0.63	J	24.2
OL-STA-80069	OL-3702-10	0.13 - 0.33	05/18/2021	1.1	J	26.3
OL-STA-80072	OL-3702-05	0 - 0.13	05/18/2021	0.54	J	26.6
OL-STA-80072	OL-3702-06	0.13 - 0.33	05/18/2021	1.4	J	24.9
OL-STA-80225	OL-3702-01	0 - 0.13	05/18/2021	0.51	J	19.6
OL-STA-80225	OL-3702-02	0.13 - 0.33	05/18/2021	1	J	23.1
OL-VC-80157	OL-3702-03	0 - 0.13	05/18/2021	0.46	J	22.2
OL-VC-80157	OL-3702-04	0.13 - 0.33	05/18/2021	0.87	J	26.1
OL-STA-80067	OL-3703-06	0 - 0.13	05/19/2021	0.66	J	26.7
OL-STA-80067	OL-3703-07	0.13 - 0.33	05/19/2021	0.86	J	28.3
OL-STA-80068	OL-3703-12	0 - 0.13	05/19/2021	0.54	J	20.2
OL-STA-80068	OL-3703-13	0.13 - 0.33	05/19/2021	0.93	J	25.9
OL-STA-80070	OL-3703-14	0 - 0.13	05/19/2021	0.3	J	22.4
OL-STA-80070	OL-3703-15	0.13 - 0.33	05/19/2021	0.92	J	23.6
OL-SS-80002-SS	OL-3704-14	0 - 0.13	05/19/2021	0.47	J	18.7
OL-SS-80002-SS	OL-3704-15	0.13 - 0.33	05/19/2021	1.1	J	22.2
OL-STA-80071	OL-3704-16	0 - 0.13	05/19/2021	0.44	J	21.1
OL-STA-80071	OL-3704-17	0.13 - 0.33	05/19/2021	1.3	J	22.7
Ninemile Creek Outlet Area						
OL-STA-80073	OL-3700-17	0 - 0.13	05/18/2021	0.6	J	28.1
OL-STA-80073	OL-3700-18	0.13 - 0.33	05/18/2021	1.2	J	27.5
OL-STA-80074	OL-3701-01	0 - 0.13	05/18/2021	0.42	J	30.5
OL-STA-80074	OL-3701-02	0.13 - 0.33	05/18/2021	1.6	J	29.5
OL-STA-80091	OL-3701-13	0 - 0.13	05/18/2021	0.44	J	33.3
OL-STA-80091	OL-3701-14	0.13 - 0.33	05/18/2021	1.2	J	28.6
OL-STA-80227	OL-3701-15	0 - 0.13	05/18/2021	0.57	J	24.5
OL-STA-80227	OL-3701-16	0.13 - 0.33	05/18/2021	1.2	J	26.6
OL-VC-80046	OL-3701-11	0 - 0.13	05/18/2021	0.46	J	35.5
OL-VC-80046	OL-3701-12	0.13 - 0.33	05/18/2021	1	J	37.1
OL-VC-80047	OL-3701-05	0 - 0.13	05/18/2021	0.24	J	32.9
OL-VC-80047	OL-3701-06	0.13 - 0.33	05/18/2021	0.46	J	43.6
OL-VC-80048	OL-3701-17	0 - 0.13	05/18/2021	0.18	J	40.8

TABLE 4.1 SUMMARY OF MERCURY MEASURED DURING 2021 MNR COMPLIANCE EVENT SEDIMENT SAMPLES (CONTINUED)

Location ID	Field Sample ID	Depth (ft)	Date	Mercury (mg/kg dry)		Solids (%)
OL-VC-80048	OL-3701-18	0.13 - 0.33	05/18/2021	0.3		58.5
OL-STA-80226	OL-3703-03	0 - 0.13	05/19/2021	0.65	J	25.3
OL-STA-80226	OL-3703-04	0.13 - 0.33	05/19/2021	1.3	J	26.9
Saddle						
OL-STA-80075	OL-3700-15	0 - 0.13	05/18/2021	0.38	J	28.8
OL-STA-80075	OL-3700-16	0.13 - 0.33	05/18/2021	0.96	J	28.9
OL-STA-80103	OL-3701-07	0 - 0.13	05/18/2021	0.43	J	26.9
OL-STA-80103	OL-3701-08	0.13 - 0.33	05/18/2021	1.4	J	25.7
OL-STA-80234	OL-3701-09	0 - 0.13	05/18/2021	0.42	J	22.6
OL-STA-80234	OL-3701-10	0.13 - 0.33	05/18/2021	1.1	J	21.7
South Basin						
OL-STA-80077	OL-3700-11	0 - 0.13	05/18/2021	0.72	J	27.8
OL-STA-80077	OL-3700-12	0.13 - 0.33	05/18/2021	1.5	J	27.7
OL-VC-80044	OL-3700-01	0 - 0.13	05/18/2021	0.32	J	31
OL-VC-80044	OL-3700-02	0.13 - 0.33	05/18/2021	1.1	J	31.7
OL-STA-80229	OL-3702-07	0 - 0.13	05/18/2021	0.47	J	24.6
OL-STA-80229	OL-3702-08	0.13 - 0.33	05/18/2021	1	J	22
OL-VC-80045	OL-3701-03	0 - 0.13	05/18/2021	0.22	J	39
OL-VC-80045	OL-3701-04	0.13 - 0.33	05/18/2021	1.1	J	35.8
OL-STA-80076	OL-3703-01	0 - 0.13	05/19/2021	0.34	J	24.4
OL-STA-80076	OL-3703-02	0.13 - 0.33	05/19/2021	1.2	J	25.7
OL-STA-80078	OL-3703-18	0 - 0.13	05/19/2021	0.45	J	27
OL-STA-80078	OL-3703-19	0.13 - 0.33	05/19/2021	1.1	J	25.8
OL-STA-80080	OL-3703-08	0 - 0.13	05/19/2021	0.78	J	25.2
OL-STA-80080	OL-3703-09	0.13 - 0.33	05/19/2021	1.9	J	26.9
OL-VC-80024	OL-3703-10	0 - 0.13	05/19/2021	0.36	J	27.6
OL-VC-80024	OL-3703-11	0.13 - 0.33	05/19/2021	0.88	J	26.7
OL-VC-80079	OL-3703-16	0 - 0.13	05/19/2021	0.28	J	27.3
OL-VC-80079	OL-3703-17	0.13 - 0.33	05/19/2021	0.77	J	28.8
OL-STA-80081	OL-3704-10	0 - 0.13	05/19/2021	0.44	J	22.4
OL-STA-80081	OL-3704-11	0.13 - 0.33	05/19/2021	0.7	J	23.1
OL-STA-80084	OL-3704-12	0 - 0.13	05/19/2021	0.25	J	24.2
OL-STA-80084	OL-3704-13	0.13 - 0.33	05/19/2021	1.2	J	21.4
OL-STA-80082	OL-3706-03	0 - 0.13	05/20/2021	0.34	J	24.1
OL-STA-80082	OL-3706-04	0.13 - 0.33	05/20/2021	1	J	24
OL-STA-80083	OL-3706-05	0 - 0.13	05/20/2021	0.39	J	25.1
OL-STA-80083	OL-3706-06	0.13 - 0.33	05/20/2021	0.65	J	24.7
ST51	OL-3706-09	0 - 0.13	05/20/2021	0.48	J	23.3
ST51	OL-3706-10	0.13 - 0.33	05/20/2021	1.1	J	22.2
South Corner						
OL-STA-80085	OL-3700-05	0 - 0.13	05/18/2021	0.3	J	29.5
OL-STA-80085	OL-3700-06	0.13 - 0.33	05/18/2021	1	J	31.2
OL-STA-80237	OL-3700-09	0 - 0.13	05/18/2021	0.16	J	47.7
OL-STA-80237	OL-3700-10	0.13 - 0.33	05/18/2021	0.96	J	35
OL-VC-80068	OL-3700-07	0 - 0.13	05/18/2021	0.39	J	35.2
OL-VC-80068	OL-3700-08	0.13 - 0.33	05/18/2021	1.2	J	35.3
OL-VC-80070	OL-3700-19	0 - 0.13	05/18/2021	0.96	J	38.9
OL-VC-80070	OL-3700-20	0.13 - 0.33	05/18/2021	1.8	J	38.9

TABLE 4.1 SUMMARY OF MERCURY MEASURED DURING 2021 MNR COMPLIANCE EVENT SEDIMENT SAMPLES (CONTINUED)

Location ID	Field Sample ID	Depth (ft)	Date	Mercury (mg/kg dry)		Solids (%)
OL-VC-80172	OL-3700-03	0 - 0.13	05/18/2021	0.35	J	32.5
OL-VC-80172	OL-3700-04	0.13 - 0.33	05/18/2021	0.94	J	32.4
OL-STA-80236	OL-3704-18	0 - 0.13	05/19/2021	0.29	J	28.4
OL-STA-80236	OL-3704-19	0.13 - 0.33	05/19/2021	1	J	26.2
OL-STA-80239	OL-3704-01	0 - 0.13	05/19/2021	0.36	J	32.1
OL-STA-80239	OL-3704-02	0.13 - 0.33	05/19/2021	1.3	J	28.8
OL-VC-80039	OL-3704-05	0 - 0.13	05/19/2021	0.18	J	33.5
OL-VC-80039	OL-3704-06	0.13 - 0.33	05/19/2021	0.3	J	45.2
OL-VC-80040	OL-3704-03	0 - 0.13	05/19/2021	0.2	J	29.3
OL-VC-80040	OL-3704-04	0.13 - 0.33	05/19/2021	0.56	J	39.4
OL-VC-80071	OL-3704-08	0 - 0.13	05/19/2021	0.18	J	21.2
OL-VC-80071	OL-3704-09	0.13 - 0.33	05/19/2021	0.31	J	38.7
OL-VC-80051	OL-3705-05	0 - 0.13	05/19/2021	0.62	J	30.9
OL-VC-80051	OL-3705-06	0.13 - 0.33	05/19/2021	1.6	J	31
OL-VC-80062	OL-3705-03	0 - 0.13	05/19/2021	0.32	J	27.5
OL-VC-80062	OL-3705-04	0.13 - 0.33	05/19/2021	0.9	J	30
OL-VC-80177	OL-3705-01	0 - 0.13	05/19/2021	0.43	J	27.7
OL-VC-80177	OL-3705-02	0.13 - 0.33	05/19/2021	1.3	J	26.1
OL-STA-80238	OL-3706-07	0 - 0.13	05/20/2021	0.34	J	28
OL-STA-80238	OL-3706-08	0.13 - 0.33	05/20/2021	0.98	J	44.3
OL-VC-80064	OL-3706-16	0 - 0.13	05/20/2021	0.21	J	25.8
OL-VC-80064	OL-3706-17	0.13 - 0.33	05/20/2021	1.4	J	33.6

TABLE 4.2 2021 SEDIMENT TRAP SLURRY MERCURY AND SOLIDS CONTENT RESULTS

Site	Trap Deploy Date	Trap Recover Date	Deployment Duration (Days)	Sample Volume (mL)	Slurry Mercury Results (µg/L)	TSS (mg/L)	TSS FD (mg/L)	TSS FD2 (mg/L)	TSS Average (mg/L)	TSS Deposition (mg per m² per day)	Mercury Concentration (mg/kg)	Mercury Deposition (µg per m² per day)
SD	5/7/2021	5/11/2021	4	136	0.5	1396	1300	1404	1367	10243	0.37	3.75
SD	5/11/2021	5/20/2021	9	138		1552	1928	2100	1860	6287	-	-
SD	5/20/2021	5/25/2021	5	128	0.5	2684	1860	1740	2095	11821	0.24	2.82
SD	5/25/2021	6/1/2021	7	113		2236	1924	3024	2395	8521	-	-
SD	6/1/2021	6/7/2021	6	140	0.05	2044	2320	2416	2260	11624	0.02	0.26
SD	6/7/2021	6/15/2021	8	113		1768	1972	2476	2072	6452	-	-
SD	6/15/2021	6/21/2021	6	124	0.05	536	472	516	508	2314	0.10	0.23
SD	6/21/2021	6/29/2021	8	118		2404	2300	1968	2224	7231	-	-
SD	6/29/2021	7/7/2021	8	131	0.05	1360	1320	1212	1297	4683	0.04	0.18
SD	7/7/2021	7/13/2021	6	97		1356	844	1216	1139	4058	-	-
SD	7/13/2021	7/20/2021	7	126	0.5	5612	5104	6092	5603	22231	0.09	1.98
SD	7/20/2021	7/27/2021	7	122		1232	1548	1292	1357	5215	-	-
SD	7/27/2021	8/3/2021	7	141	0.5	1040	884	900	941	4180	0.53	2.22
SD	8/3/2021	8/9/2021	6	137		1504	880	1208	1197	6027	-	-
SD	8/9/2021	8/17/2021	8	129	0.05	1476	1692	2032	1733	6161	0.03	0.18
SD	8/17/2021	8/24/2021	7	142	0.62	7160	10352	10168	9227	41259	0.07	2.77
SD	8/24/2021	8/31/2021	7	147	0.5	1724	1436	1632	1597	7394	0.31	2.31
SD	8/31/2021	9/8/2021	8	126	0.5	1856	2024	1988	1956	6791	0.26	1.74
SD	9/8/2021	9/14/2021	6	136	0.5	1404	1220	1156	1260	6296	0.40	2.50
SD	9/14/2021	9/21/2021	7	129	0.05	1252	1404	1348	1335	5422	0.04	0.20
SD	9/21/2021	9/28/2021	7	127	0.5	1500	1556	1356	1471	5882	0.34	2.00
SD	9/28/2021	10/5/2021	7	130	0.5	1048	732	1072	951	3892	0.53	2.05
SD	10/5/2021	10/12/2021	7	137	0.05	804	688	732	741	3198	0.07	0.22
SD	10/12/2021	10/19/2021	7	132	0.5	14052	14250	12200	13501	56120	0.04	2.08

TABLE 4.2 2021 SEDIMENT TRAP SLURRY MERCURY AND SOLIDS CONTENT RESULTS

Site	Trap Deploy Date	Trap Recover Date	Deployment Duration (Days)	Sample Volume (mL)	Slurry Mercury Results (µg/L)	TSS (mg/L)	TSS FD (mg/L)	TSS FD2 (mg/L)	TSS Average (mg/L)	TSS Deposition (mg per m^2 per day)	Mercury Concentration (mg/kg)	Mercury Deposition (µg per m^2 per day)
SD	10/19/2021	10/27/2021	8	129	0.5	7876	6704	7172	7251	25773	0.07	1.78
SD	10/27/2021	11/2/2021	6	138	0.5	11272	11536	10324	11044	55993	0.05	2.54
SD	11/2/2021	11/10/2021	8	135		3084	3628	3328	3347	12449	-	-
SD	11/10/2021	11/16/2021	6	145	0.5	2908	3128	3060	3032	16152	0.16	2.66
South Deep Arithmetic Mean			-	-	-	-	-	-	-	12988	0.19	1.72

Legend: SD - South Deep, TSS - total suspended solids.

Notes:

(1) Mercury concentration = slurry mercury average divided by TSS average times a units conversion of 1,000. Concentrations are based on dry weight. Calculations of TSS and mercury deposition include the surface area of the sediment traps (45 square centimeters).

(2) Solids and mercury deposition from June through September averaged 9,013 mg per square meter per day and 1.38 micrograms per square meter per day, respectively. June through September is when the sediment traps are below the thermocline and not subject to mixing within upper waters.

TABLE 4.3 COMPARISON OF HISTORIC LITTORAL ZONE DATA WITH 2021 COMPLIANCE DATA

Subarea	Location ID	1992/2000 Sampling		2021 Sampling (mg/kg)	
		Depth (ft)	mg/kg	Depth (ft)	mg/kg
North Basin	S94	0.0-0.066	0.96	0.0-0.5	0.057 J
	S100	0.0-0.066	0.36	0.0-0.5	0.057 J
	S112	0.0-0.066	1.1	0.0-0.5	1.9
	S373	0.0-0.066	0.56 J	0.0-0.5	0.83 J
	S93	0.0-0.066	0.39 J	0.0-0.5	0.2
Ninemile Creek Outlet	S306	0.0-0.5	0.69	0.0-0.5	0.11
Saddle	S361	0.0-0.5	0.33	0.0-0.5	0.18 J
	S371	0.0-0.5	0.49 J	0.0-0.5	0.32 J
South Basin	S61	0.0-0.066	0.94	0.0-0.5	0.19
	S67	0.0-0.066	0.92	0.0-0.5	0.31 J
	S364	0.0-0.5	0.095 U	0.0-0.5	0.12 J
	S367	0.0-0.066	0.7 J	0.0-0.5	0.26
South Corner	S329	0.0-0.5	0.11 J	0.0-0.5	0.12
	S26	0.0-0.066	0.23	0.0-0.5	0.11

TABLE 4.4 SURFACE SEDIMENT AREA-WEIGHTED AVERAGE MERCURY CONCENTRATION WITH 2021 COMPLIANCE DATA

Sub-Basin	Final Design Model-Predicted Surface Sediment Area-Wegihted Average Mercury Concentration (mg/kg)[1]	Calculated Surface Sediment Area-Weighted Average Mercury Concentration (mg/kg)[2,3]
North Basin	0.70	0.64
Ninemile Creek Outlet Area	0.51	0.32
Saddle	0.63	0.39
South Basin	0.66	0.39
South Corner	0.50	0.36

Notes:

1. Model-predicted surface sediment area-weighted average mercury concentrations are reported for the end of 2021.

2. Surface sediment area-weighted concentrations calculated utilizing 2021 monitoring data, 2019 surface sediment data from the CSX area, 2019 cap data, and 2021 littoral zone data supplemented with PDI/RI data for locations not sampled in 2021.

3. Appendix 4C shows details of calculations .

TABLE 4.5 SEDIMENTATION RATES ESTIMATED FROM CORES COLLECTED FROM MICORBEAD PLOTS

Location ID	Depth to Microbead Marker Material (cm)	Estimated Sedimentation Rate ($g/cm^2/year$)
OL-MB-80093-A	8.5–11 (scattered)	0.18[a]
OL-MB-80093-B	9.0	0.20
OL-MB-80094-A	4.5	0.10
OL-MB-80094-B	1.5	0.03
OL-MB-80095-A	6.5	0.14
OL-MB-80095-B	5.5	0.12
OL-MB-80096-B	9.0	0.20
OL-MB-80096-C	12.5	0.27
OL-MB-80097-A	4.5	0.10
OL-MB-80097-B	5.0	0.11
OL-MB-80098-A	8.5	0.18
OL-MB-80098-B	10.0	0.22
OL-MB-80099-A	8.0	0.17
OL-MB-80099-B	10.0	0.22
OL-MB-80100-A	7.5	0.16
OL-MB-80100-B	9.0	0.20
OL-MB-80101-A	10.5	0.23
OL-MB-80101-B	12.0	0.26

Note:

a. The depth to microbead marker material was assumed to be 8.5 cm for estimating sedimentatation rate at this location.

TABLE 5.1 2021 NITRATE ADDITION SUMMARY

Date/Location[1]	Metric Tons (as N) of CN-8 Applied[2]	Application Water Depth[3] (feet)	Dilution Water to CN-8 Volume Ratio[4]
July 20 / S1	2.09	60	244
July 22 / S2	2.15	60	271
July 26/ S1	2.00	60	271
July 28 / S2	2.09	60	250
August 2 / N	1.67	55	290
August 4 / S1	2.09	60	340
August 10 / S2	2.09	60	328
August 30 / S2	2.09	60	299
September 1 / S1	2.09	60	231
September 7 / S1	2.09	60	318
September 9 / S2	2.09	60	297
September 13 / S1	1.52	60	296
September 15 / N	2.09	55	330
September 16 / S2	2.09	60	324
September 20 / S2	2.09	60	307
September 22 / N	2.09	55	319
September 23 / S1	2.09	60	336
September 27 / S2	1.22	60	385
September 28 / S2	0.87	60	431
September 29 / N	2.16	55	413
September 30 / S1	1.97	60	427
October 4 / S1	0.78	60	534
October 5 / S1	1.45	60	523
October 6 / S1	2.10	60	458
October 7 / S1	0.98	60	519

[1] S1 is the South Location 1, S2 is the South Location 2, and N is the North Location (Figure 5.1)
[2] 1 metric ton = 2,204.6 lbs
[3] Same as target depth presented in Appendix 5A
[4] Same as dilution factor presented in Appendix 5A

TABLE 5.2 ONONDAGA LAKE MONITORING SCOPE FOR 2021 NITRATE ADDITION

Date (Week of:)	South Deep # of Depths Sampled	Analysis Suite	Field Nitrate Profiling Locations	Zooplankton	Sediment Trap Mercury (10 m water depth)
3/29/2021			3		
4/5/2021			2		
4/12/2021			2		
4/19/2021			2		
4/26/2021			3		
5/3/2021			2		
5/10/2021	3	2,3	2	x	x
5/17/2021			2		x
5/24/2021					x
5/31/2021			11		x
6/7/2021			11		x
6/14/2021	3	2,3	11	x	x
6/21/2021			11		x
6/28/2021	3	2,3	11		x
7/5/2021	5	1,3,4	34	x	x
7/12/2021	4	2,3	34,11		x
7/19/2021	5	1,3,4	34,11	x	x
7/26/2021	4	2,3	34,11		x
8/2/2021	5	1,3,4	34,11	x	x
8/9/2021	4	2,3	34,11		x
8/16/2021	5	1,3,4	34,11	x	x
8/23/2021	4	2,3	34,11		x
8/30/2021	5	1,3,4	34,11	x	x
9/6/2021	4	2,3	34,11	x	x
9/13/2021	5	1,3,4	34,11	x	x
9/20/2021	4	2,3	34,11	x	x
9/27/2021	5	1,3,4	34,11	x	x
10/4/2021	4	2,3	34,11	x	x
10/11/2021	5	1,3,4	34,11	x	x
10/18/2021	4	2,3	34,11	x	x
10/25/2021	5	2,3,4	34	x	x
11/1/2021	4	2,3	34	x	x
11/8/2021	5	1,3,4	34	x	x
11/15/2021	3	2,3	11	x	x
11/22/2021	3	2,3	11	x	

1: LLHg/meHg; 2: LLHg/meHg/diss-Hg; 3: NOx/NO_2/ t-NH_3, 4: SRP

Additional Notes:

1. Sediment traps were deployed typically for seven days.
2. Sediment trap results for 2021 are reported in Section 4 of this report.
3. Summer thermal stratification extended through November 6, 2021; however, the lake remained density/chemically stratified until November 19, 2021.

TABLE 5.3 KEY NITRATE ADDITION INTER-ANNUAL VARIATIONS IN ONONDAGA LAKE

Year	Spring Turnover Nitrate-N, mg/L	Metric Tons of Calcium-Nitrate Applied	Duration of Summer Stratification, days*
2011	2.0	88	184
2012	2.6	72	163
2013	2.9	63	178
2014	2.3	57	167
2015	2.5	56	180
2016	2.5	67	191
2017	2.2	88	203
2018	1.6	105	172
2019	1.7	118	168
2020	2.3	78	176
2021	3.3	46	188

* The duration of stratification is calculated from South Deep buoy profiles as the number of consecutive days with a temperature difference of at least 1°C between the surface and bottom waters. The lake was temperature stratified from May 3 to November 6, 2021; salinity stratification persisted until November 19.

TABLE 5.4 2021 MERCURY CONCENTRATIONS (NG/L) IN SURFACE WATER NEAR THE LAKE BOTTOM AT THE 18-METER WATER DEPTH AT SOUTH DEEP, ONONDAGA LAKE

2021 Sampling Collection Date	Total Mercury	Validation Qualifier	Methyl Mercury	Validation Qualifier
11-May	0.58		0.026	U
15-Jun	0.48	J	0.026	U
29-Jun	2.34		0.026	U
7-Jul	1.10	J+	0.026	U
13-Jul	1.24		0.026	U
20-Jul	0.61		0.025	U
27-Jul	0.20	J	0.026	U
3-Aug	0.60		0.026	U
9-Aug	0.08	UJ	0.111	J
17-Aug	0.57		0.060	
24-Aug	0.49	J	0.043	J
31-Aug	0.31	J	0.026	U
8-Sep	1.00		0.060	
14-Sep	1.36		0.093	
21-Sep	1.04		0.026	U
28-Sep	0.97		0.089	
5-Oct	0.83	U	NA*	
12-Oct	1.19		0.060	
19-Oct	0.80		0.080	
27-Oct	0.95		0.050	U
2-Nov	1.42		0.104	
10-Nov	1.36		0.041	J
16-Nov	1.15		0.050	J-
23-Nov	1.09		0.041	J

* Samples collected on October 5 were improperly preserved and could not be analyzed for methylmercury.

U – not detected at reporting limit specified
J – estimated concentration
J+ – estimated concentration that may have positive bias
J- – estimated concentration that may have negative bias
UJ – not detected at reporting limit specified and is estimated concentration

TABLE 5.5 2021 DISSOLVED MERCURY CONCENTRATIONS (NG/L) IN SURFACE WATER AT THE 2-METER WATER DEPTH AT SOUTH DEEP, ONONDAGA LAKE

2021 Sampling Collection Date	Total Dissolved Mercury (ng/L)	Validation Qualifier
5/11/2021	0.23	J
6/15/2021	0.64 (0.36)	J
6/29/2021	2.15	
7/13/2021*		R
7/27/2021	0.09	J
8/9/2021	0.08	UJ
8/24/2021	0.48 (1.02)	J
9/8/2021*		R
9/21/2021	0.27 (0.47)	J
10/5/2021	0.5 (0.62)	UJ
10/19/2021	0.42 (0.5)	J
10/27/2021	0.35 (0.26)	J
11/2/2021	0.45 (0.48)	J
11/10/2021	1.02 (0.5)	J
11/16/2021	0.36 (0.42)	J
11/23/2021	0.29 (0.27)	J

U – not detected at reporting limit specified
J – estimated concentration
R – rejected
Note: Values in parentheses are from field duplicate samples.
* Rejected data on 7/13/2021 and 9/8/2021 include both the parent sample and the field duplicate sample.

TABLE 6.1 2021 CAP THICKNESS MEASUREMENTS

Rem. Area	Model Area	Zone[1]	Location ID	Cap Type	Design[2]/Target[3] Thickness (inches)				Measured Thickness (inches)															Comment
					Habitat Layer	Erosion Protection Layer[4]	Chemical Isolation Layer	Total	Core A Thickness					Core B Thickness					Core C Thickness					
									Habitat Layer	Chemical Isolation Layer	Total	Overlying Sediment	Native Plug (Y/N)[5]	Habitat Layer	Chemical Isolation Layer	Total	Overlying Sediment	Native Plug (y/n)[5]	Habitat Layer	Chemical Isolation Layer	Total	Overlying Sediment	Native Plug (y/n)[5]	
RA-A	A1	1	OL-RAA-0033	Multi-layer	12/9		12	**24/21**			**38**	0	y			**32**	**0**	**y**			**36**	**0**	**y**	
	A1	1	OL-RAA-0034	Multi-layer	12/9		12	**24/21**			**28**	0	y			**31**	**0**	**y**			**24**	**0**	**y**	
RA-C	RA-C-1C	1	OL-RAC-0056	GAC Direct App.				**0**			**5**	0	y			**3**	**0**	**y**						
	RA-C-1C	1	OL-RAC-0057	GAC Direct App.				**0**			**9**	0	y			**6**	**0**	**y**						
Remediation Area D	D-Center	2	OL-RAD-0017	Multi-layer	12/9		12	**24/21**	12	13	**25**	0.25	y	10	20	**30**	0	y						
	D-East	1	OL-RAD-0033	Multi-layer	12/9		12	**24/21**			**26**	1	y			**23**	0.25	y						
	D-East	2	OL-RAD-0036	Multi-layer	12/9		12	**24/21**	11	19	**30**	0	n	12	15	**27**	3	n						
	D-SMU-2	1	OL-RAD-0051	Multi-layer	12/9		12	**24/21**			**55**	0	n			**28**	0	y						
	RA-D-2	1	OL-RAD-0052	MPC Multi-layer	10.5/7.5		7.5	**18/15**			**16**	0.25	y			**34**	0	y						
	D-East	1	OL-RAD-0053	Multi-layer	12/9		12	**24/21**			**35**	0.25	y			**58**	0	n			**35**	**1.25**	**y**	Drillers noted core B felt like it went in sideways, so they took a third core.
	D-East	2	OL-RAD-0054	Multi-layer	18/9		12	**30/21**	18	20	**38**	1	y	11	16	**26**	0	y						
	RA-D-1B	1	OL-RAD-0055	MPC Monolayer				**4.5**			**40**	<.25	y			**44**	<.25	y						
	RA-D-1B	1	OL-RAD-0056	MPC Monolayer				**4.5**			**53**	0	y			**47**	0.25	y						
Remediation Area E	E-1(B)	2	OL-RAE-0020A	Multi-layer	12/9		12	**24/21**	18	17	**35**	0.25	y	9	11	**20**	0	y						
	E-1(B)	2	OL-RAE-0020C	Multi-layer	12/9		12	**24/21**	16	17	**33**	2	y	8	17	**25**	2	y						
	E-1(B)	1	OL-RAE-0021	Multi-layer	12/9		6	**18/15**			**18**	6	y			**24**	0	y						
	E-1(B)	2	OL-RAE-0022	Multi-layer	12/9		12	**24/21**	12	19	**31**	1	y	17	11	**28**	3	y						
	E-1(B)	2	OL-RAE-0022D	Multi-layer	12/9		12	**24/21**	8	10	**18**	0	y	11	10	**21**	0	y						
	E-1(B)	2	OL-RAE-0022E	Multi-layer	12/9		12	**24/21**	8	7	**15**	0	y	10	11	**21**	0	y						
	E-1(B)	2	OL-RAE-0022G	Multi-layer	12/9		12	**24/21**	8	8	**16**	0	y	6	8	**14**	0	y						
	E-1(B)	2	OL-RAE-0022I	Multi-layer	12/9		12	**24/21**	10	13	**23**	0	y	9	8	**17**	0	y						
	E-3	1	OL-RAE-0025	Multi-layer	12/9		6	**18/15**			**14**	0.5	y			**12**	2	y						
	E-1(B)	2	OL-RAE-0058	Multi-layer	12/9		12	**24/21**	6	9	**15**	2	y	4	6	**10**	0	y						
	E-1(B)	2	OL-RAE-0061	Multi-layer	12/9		12	**24/21**	7	18	**25**	0	y	6	13	**19**	0	y						
	E-1(B)	2	OL-RAE-0062	Multi-layer	12/9		12	**24/21**	48		**48**	0	n	48	2	**50**	0	n						
	E-1(B)	2	OL-RAE-0063	Multi-layer	12/9		12	**24/21**	11	16	**27**	0	y	20	16	**36**	3	y						
	E-1(B)	2	OL-RAE-0064	Multi-layer	12/9		12	**24/21**	7	27	**34**	0.5	y	10	16	**26**	8	n						
	E-1(B)	2	OL-RAE-0065	Multi-layer	12/9		12	**24/21**	13	19	**32**	0.25	y	9	15	**24**	0	y						
	E-1(B)	2	OL-RAE-0066	Multi-layer	12/9		12	**24/21**	7	9	**16**	0	y	5	8	**13**	0	y						
	E-3	2	OL-RAE-0067	Multi-layer	12/9		12	**24/21**	10	15	**25**	0	y	10	15	**25**	0	y						

[blue box] Measured thickness is less than the minimum target thickness specified in the OLMMP.

[1] The coarsest substrates in Zones 1, 2, and 3 are sand, fine gravel and coarse gravel/cobble, respectively.
[2] Design thickness specified as a minimum.
[3] Listed thickness is the target minimum thickness specified in the OLMMP
[4] When the habitat and erosion protection layer are the same substrate, the total thickness of this habitat/erosion protection layer is listed under the habitat layer.
[5] The presence of a plug of native sediment in the bottom of the core indicates the core fully penetrated the cap material, allowing measurement of the total cap thickness.
[6] Design thickness for MERC monolayer caps is specified as an average thickness over the cap area.
NA - Not applicable

TABLE 7.1 2021 TRIBUTARY SURFACE WATER SAMPLING FLOW DATA

<table>
<tr><th rowspan="2">Site Location</th><th colspan="2">Sampling Event 1</th><th colspan="2">Sampling Event 2 [1]</th><th colspan="2">Sampling Event 3 [2]</th><th colspan="2">Sampling Event 4 [3]</th></tr>
<tr><th>Date</th><th>Flow (cfs)</th><th>Date</th><th>Flow (cfs)</th><th>Date</th><th>Flow (cfs)</th><th>Date</th><th>Flow (cfs)</th></tr>
<tr><td>ONCK-SPENCER</td><td rowspan="6">8/3/2021</td><td rowspan="6">96.3 [4]</td><td rowspan="10">9/14/2021</td><td rowspan="10">188.2 [5]</td><td rowspan="10">11/17/2021</td><td rowspan="10">375.4 [6]</td><td rowspan="3">1/5/2022</td><td rowspan="3">238 [6]</td></tr>
<tr><td>ONCK-HIA</td></tr>
<tr><td>NMCK-RTE48</td></tr>
<tr><td>LEYCK-PARK</td><td rowspan="3">12/15/2021</td><td rowspan="3">220.3 [5]</td></tr>
<tr><td>HB-BASELINE-NEW</td></tr>
<tr><td>UHB-OFFISTE-01</td></tr>
<tr><td>BB-BASELINE</td><td colspan="2">N/A</td><td colspan="2">N/A</td></tr>
<tr><td>SC-BASELINE</td><td colspan="2">N/A</td><td colspan="2">N/A</td></tr>
<tr><td>T5A-BASELINE-NEW</td><td colspan="2">N/A</td><td colspan="2">N/A</td></tr>
<tr><td>T5A-SW-15-NEW</td><td colspan="2">N/A</td><td colspan="2">N/A</td></tr>
</table>

Notes:
1. Sampling Event 2 coincided with Pre-turnover lake sampling event
2. Sampling Event 3 coincided with Post-turnover lake sampling event
3. Sampling Event 4 consisted of 2 sampling dates due to bottle breakage associated with first sampling date.
4. Low flow (less than median flow or less than 132 cfs)
5. Standard flow (flow greater than 132 cfs, less than 225 cfs)
6. High flow (upper quartile of flow distribution or greater than 225 cfs)

Median flow and upper flow of distribution calculated using all daily average flow from USGS gage Onondaga Creek at Spencer from 9/1/1970 to 1/5/2022

TABLE 7.2 TOTAL PCBs AND TOTAL SUSPENDED SOLIDS RESULTS FOR 2021 TRIBUTARY SURFACE WATER SAMPLING

Period	Location	Sample Date	Sample Depth (ft)	No. of Congeners Sampled For	Total No. of Congeners Detected	Total PCBs[1,2] (ng/L)	Total Suspended Solids (mg/L)	
Tributary-Event 1	HB-BASELINE-NEW	8/3/2021	1	168	27	0.80	2.6	J
	LEYCK-PARK	8/3/2021	1.5	168	101	59	3.4	
	NMC-RTE48	8/3/2021	2	168	29	0.96	25	
	ONCK-HIA	8/3/2021	1.5	168	19	0.48	6.4	
	ONCK-SPENCER	8/3/2021	1.15	168	9	0.10	7	
	UHB-OFFSITE-01	8/3/2021	1	168	31	1.1	1.9	J
Tributary-Event 2	BB-BASELINE	9/14/2021	0.75	168	40	1.8	3.1	
	HB-BASELINE-NEW	9/14/2021	0.9	168	39	1.3	5	
	LEYCK-PARK	9/14/2021	1.5	168	105	71	6.2	
	NMC-RTE48	9/14/2021	1.9	168	41	1.7	20	
	ONCK-HIA	9/14/2021	1	168	6	0.076	88	
	ONCK-SPENCER	9/14/2021	1.5	168	5	0.078	60	
	SC-BASELINE-NEW	9/14/2021	0.5	168	3	0.061	5.6	
	T5A-BASELINE-NEW	9/14/2021	0.3	168	67	7.8	3.7	
	T5A-SW-15-NEW	9/14/2021	0.25	168	77	9.2	2.4	J
	UHB-OFFSITE-01	9/14/2021	1.25	168	37	1.1	2.2	J
Tributary-Event 3	BB-BASELINE	11/17/2021	1.9	168	43	1.6	2.3	J
	HB-BASELINE-NEW	11/17/2021	2	168	48	1.7	11	J
	LEYCK-PARK	11/17/2021	2	168	73	15	5.3	
	NMC-RTE48	11/17/2021	2.2	168	40	1.6	26	
	ONCK-HIA	11/17/2021	1	168	2	0.029	37	
	ONCK-SPENCER	11/17/2021	1.5	168	3	0.030	42	
	SC-BASELINE-NEW	11/17/2021	1.4	168	8	0.19	1.9	J
	T5A-BASELINE-NEW	11/17/2021	2	168	47	3.1	2.2	J
	T5A-SW-15-NEW	11/17/2021	0.45	168	68	5.5	3	U
	UHB-OFFSITE-01	11/17/2021	1	168	26	0.61	13	
Tributary-Event 4	HB-BASELINE-NEW	12/15/2021	1.25	168	14	0.24	4.7	J
	LEYCK-PARK	12/15/2021	1.7	168	72	21		
	NMC-RTE48	1/5/2022	2.25	168	1	0.0091	4.8	
	ONCK-HIA	1/5/2022	1.5	168	13	0.22	3	
	ONCK-SPENCER	1/5/2022	1.75	168	1	0.032	6.1	
	UHB-OFFSITE-01	12/15/2021	1.5	168	20	0.42	4.2	

Notes:
1. When calculating Total PCBs, ND=0.
2. Goals for PCB concentration of 0.12 ng/L for the Protection of Wildlife and 0.001 ng/L for the protection of human health via fish consumption.
J: estimated concentration
U: not detected at specified reporting limit

TABLE 7.3 LAKE AND TRIBUTARY AVERAGE PCB CONCENTRATIONS

Location	Average Total PCB Concentration(ng/L)
Sawmill Creek	0.13
Bloody Brook	1.72
Ley Creek	41.49
Onondaga Creek – Spencer (Upstream)	0.06
Onondaga Creek – Hiawatha (Downstream)	0.2
Upper Harbor Brook (Upstream)	0.8
Harbor Brook (Downstream)	1.02
Tributary 5A SW 15 (Upstream)	7.31
Tributary 5A Baseline (Downstream)	5.43
Ninemile Creek	1.06
Lake Average	1.43
Lake Average (without OL-RAE-SW-03)	0.63
Rainwater	0.07

TABLE 7.4 TOTAL PCBs AND TOTAL SUSPENDED SOLIDS RESULTS FOR 2021 IN-LAKE WATER SAMPLING

Period	Location	Sample Date	Sample Depth (ft)	No. of Congeners Sampled For	Total No. of Congeners Detected	Total PCBs[1,2] (ng/L)	Total Suspended Solids (mg/L)	
Pre-Turnover	North Deep	9/14/2021	6.6	168	17	0.37	1.3	J
	South Deep	9/14/2021	6.6	168	25	0.71	1.8	J
	OL-RAA-SW-01	9/14/2021	1.6	168	14	0.26	5.5	
	OL-RAB-SW-01	9/14/2021	1.6	168	18	0.37	1.4	J
	OL-RAB-SW-02	9/14/2021	1.6	168	14	0.27	2	J
	OL-RAC-SW-01	9/14/2021	6.6	168	18	0.43	1.8	J
	OL-RAC-SW-02	9/14/2021	3.3	168	18	0.36	1.1	J
	OL-RAD-SW-01	9/14/2021	4.9	168	19	0.45	1.7	J
	OL-RAD-SW-02	9/14/2021	2.5	168	19	0.45	1.6	J
	OL-RAE-SW-01	9/14/2021	1.6	168	22	0.53	1.7	J
	OL-RAE-SW-02	9/14/2021	1.6	168	24	0.78	1.5	J
	OL-RAE-SW-03	9/14/2021	1.6	168	60	13	1.4	J
Post-Turnover	North Deep	11/17/2021	6.6	168	27	1.0	3.9	
	South Deep	11/17/2021	6.6	168	32	1.2	4.1	
	OL-RAA-SW-01	11/17/2021	1.6	168	12	0.21	3.4	
	OL-RAB-SW-01	11/17/2021	1.6	168	27	0.96	3.3	
	OL-RAB-SW-02	11/17/2021	3.3	168	26	0.91	2.1	J
	OL-RAC-SW-01	11/17/2021	9.8	168	30	1.1	3.1	
	OL-RAC-SW-02	11/17/2021	3.3	168	27	0.92	2.7	J
	OL-RAD-SW-01	11/17/2021	3.3	168	23	0.81	1.9	J
	OL-RAD-SW-02	11/17/2021	4.9	168	26	0.87	2.2	J
	OL-RAE-SW-01	11/17/2021	1.6	168	25	0.68	3	
	OL-RAE-SW-02	11/17/2021	8.2	168	12	0.17	16	
	OL-RAE-SW-03	11/17/2021	3.3	168	62	7.2	3	

Notes:

1. When calculating Total PCBs, ND=0.
2. Goals for PCB concentration of 0.12 ng/L for the Protection of Wildlife and 0.001 ng/L for the protection of human health via fish consumption.

J: estimated concentration

U: not detected at specified reporting limit

TABLE 7.5 TOTAL PCBs RESULTS FOR 2021 RAINWATER SAMPLING

Period	Location	Sample Date	No. of Congeners Sampled For	Total No. of Congeners Detected	Total PCBs[1,2]
Precip-Event1	OL-RAIN-01	8/19/2021	168	1	0.023
Precip-Event2	OL-RAIN-01	9/23/2021	168	0	ND
Precip-Event3	OL-RAIN-01	11/12/2021	168	7	0.12

Notes:

1. When calculating Total PCBs, ND=0.
2. Goals for PCB concentration of 0.12 ng/L for the Protection of Wildlife and 0.001 ng/L for the protection of human health via fish consumption

TABLE 7.6 MERCURY RESULTS FOR 2021 IN-LAKE SURFACE WATER SAMPLING

Period	Location ID	Sample Date	Sample Depth (ft)	Units	Dissolved Mercury[1,2]		Mercury		Methyl Mercury	
Pre-Turnover	North Deep	09/14/2021	6.6	ng/L	0.63		0.94		0.05	U
	South Deep	09/14/2021	6.6	ng/L	0.65	J	0.77	J	0.118	J
	OL-RAA-SW-01	09/14/2021	1.6	ng/L	0.76		1.93		0.076	
	OL-RAB-SW-01	09/14/2021	1.6	ng/L	0.81		1.02		0.05	U
	OL-RAB-SW-02	09/14/2021	1.6	ng/L	0.84		1.23		0.214	
	OL-RAC-SW-01	09/14/2021	6.6	ng/L	0.65		0.91		0.11	
	OL-RAC-SW-02	09/14/2021	3.3	ng/L	0.76		1.01		0.259	
	OL-RAD-SW-01	09/14/2021	4.9	ng/L	0.77		1.75		0.087	
	OL-RAD-SW-02	09/14/2021	2.5	ng/L	1.34		1.14		0.072	
	OL-RAE-SW-01	09/14/2021	1.6	ng/L		R	1.03		0.198	
	OL-RAE-SW-02	09/14/2021	1.6	ng/L		R	0.97		0.061	U
	OL-RAE-SW-03	09/14/2021	1.6	ng/L	1.68		1.23		0.054	U
Post-Turnover	North Deep	11/17/2021	6.6	ng/L	0.17	J	0.79		0.032	J
	South Deep	11/17/2021	6.6	ng/L	0.21	J	0.96		0.077	J
	OL-RAA-SW-01	11/17/2021	1.6	ng/L	0.18	J	1.06		0.036	J
	OL-RAB-SW-01	11/17/2021	1.6	ng/L	0.18	J	0.9		0.038	J
	OL-RAB-SW-02	11/17/2021	3.3	ng/L	0.16	J	0.59		0.026	U
	OL-RAC-SW-01	11/17/2021	9.8	ng/L	0.16	J	0.71		0.031	J
	OL-RAC-SW-02	11/17/2021	3.3	ng/L	0.18	J	0.6		0.038	J
	OL-RAD-SW-01	11/17/2021	3.3	ng/L	0.15	J	0.53		0.035	J
	OL-RAD-SW-02	11/17/2021	4.9	ng/L	0.27	J	0.58		0.027	J
	OL-RAE-SW-01	11/17/2021	1.6	ng/L	0.18	J	0.82		0.041	J
	OL-RAE-SW-02	11/17/2021	8.2	ng/L	0.15	J	1.65		0.046	J
	OL-RAE-SW-03	11/17/2021	3.3	ng/L	0.51		3.18		0.064	

Notes:

1. Goal for dissolved mercury concentrations for the protection of wildlife is 2.6 ng/L or lower.
2. Goal for dissolved mercury concentrations for human health via fish consumption is 0.7 ng/L or lower.

J: estimated concentration

R: rejected

U: not detected at specified reporting limit

FIGURES

IN LAKE AND WETLAND PLANTED AREAS

COVER TYPE	2021 ACRES
OPEN FIELD/SCRUB SHRUB UPLAND	0.32
SCRUB SHRUB WETLAND	0.06
EMERGENT WETLAND	5.19
AQUATIC BED/FLOATING AQUATICS	12.79
UNCONSOLIDATED BED	0

NOTES:

1. TOTAL WETLAND ACREAGE TEMPORARILY LOST DURING REMEDIATION THAT REQUIRED RESTORATION OF THE NINEMILE CREEK SPITS TO MEET MITIGATION SUCCESS CRITERIA IS 1.9 ACRES (TABLE 7.5A OF THE OLMMP).
2. MITIGATION WETLAND ACREAGE WILL BE ACCESSED HOLISTICALLY ACROSS RESPECTIVE SITES THAT COMPROMISE THE MITIGATION AREAS TO DETERMINE IF MITIGATION ACREAGES HAVE BEEN ATTAINED.
3. COVER TYPE AREAS ARE ESTIMATED BASED ON QUALITATIVE AND QUANTITATIVE MONITORING EFFORTS CONDUCTED IN 2021. QUALITATIVE COVER TYPES ARE ESTIMATED ANNUALLY AND ARE NOT USED IN WETLAND MITIGATION ACCOUNTING. IN 2021, A FORMAL YEAR FIVE WETLAND DELINEATION WAS CARRIED OUT PER USACOE (USACOE, 2012) AND NYSDEC (NYSDEC, 1995) METHODS AND IS INCLUDED IN APPENDIX C OF THIS REPORT.

KEY PLAN
NOT TO SCALE

LEGEND:

- LAKE CONTOURS–1' INTERVAL (POST REMEDY CONTOURS SHOWN)
- SHORELINE
- REMEDIATION AREA CAP BOUNDARY
- PROTECTIVE EDGE

150 0 150 300

SCALE: 1"=150'

FIGURE 2.1

Honeywell
ONONDAGA LAKE
SYRACUSE, NEW YORK

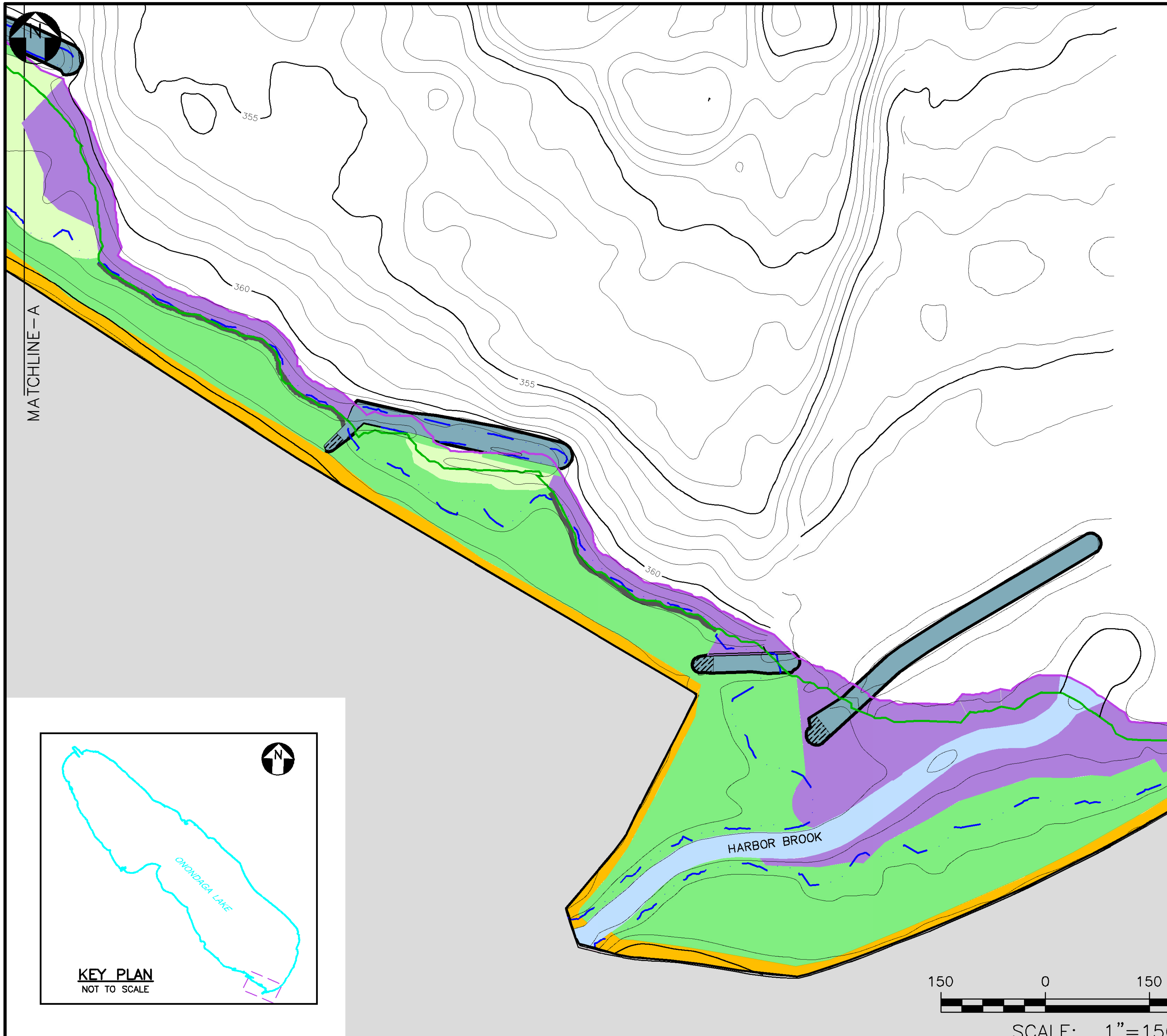
MOUTH OF NINEMILE CREEK
VEGETATION COVER TYPES
2021

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450704 2017-2018 OL PVM\10 TECHNICAL CATEGORIES\10.1 CAD\2021 ANNUAL REPORT\450704_VEG_2021-NMC-COVER-TYPES.DWG
PLOT DATE: 2/22/2024 8:46 AM PLOTTED BY: RUSSO, JILL [US-US]

IN LAKE AND WETLAND PLANTED AREAS

COVER TYPE	2021 ACREAGES OUTBOARD	2021 ACREAGES 25' BUFFER
UPLAND	2.06	0.01
SCRUB SHRUB WETLAND	1.18	–
EMERGENT WETLAND	7.51	0.21
AQUATIC BED/FLOATING AQUATICS	2.04	0.23
UNCONSOLIDATED BED	1.66	1.82



NOTES:

1. COVER TYPE ACREAGES ARE CALCULATED FOR BOTH EASTERN AND WESTERN WASTEBED B/HARBOR BROOK OUTBOARD AREAS.
2. TOTAL WETLAND ACREAGE TEMPORARILY LOST DURING REMEDIATION THAT REQUIRED RESTORATION INSIDE OF THE OUTBOARD BOUNDARY TO MEET MITIGATION SUCCESS CRITERIA IS 7.5 ACRES (TABLE 7.5A OF THE OLMMP).
3. MITIGATION WETLAND ACREAGE WILL BE ACCESSED HOLISTICALLY ACROSS RESPECTIVE SITES THAT COMPROMISE THE MITIGATION AREAS TO DETERMINE IF MITIGATION ACREAGES HAVE BEEN ATTAINED.
4. THE DATA FROM THE VEGETATION MONITORING PROGRAM ARE USED TO ESTIMATE ANNUAL WETLAND ACRES BASED ON VEGETATIVE COVER TYPES IN YEARS WHERE A FORMAL SURVEY OR DELINEATION ARE NOT REQUIRED. IN YEAR THREE FOLLOWING, A FORMAL WETLAND SURVEY WILL BE PERFORMED BY A CERTIFIED WETLAND DELINEATOR BASED ON VEGETATION AND HYDROLOGY. IN YEAR FIVE, A WETLAND DELINEATION CARRIED OUT PER USACOE (USACOE, 2012) AND NYSDEC (NYSDEC, 1995) METHODS WILL BE COMPLETED IN YEAR FIVE TO QUANTIFY WETLAND MITIGATION ACREAGE, AS PER THE OLMMP.

LEGEND:

- LAKE CONTOURS–1' INTERVAL (POST REMEDY CONTOURS SHOWN)
- SHORELINE
- OUTBOARD BOUNDARY
- 25' PLANTED BUFFER LIMIT
- REMEDIATION AREA CAP BOUNDARY
- PROTECTIVE EDGE
- PROTECTIVE BERMS

150 0 150 300

SCALE: 1"=150'

FIGURE 2.2

Honeywell

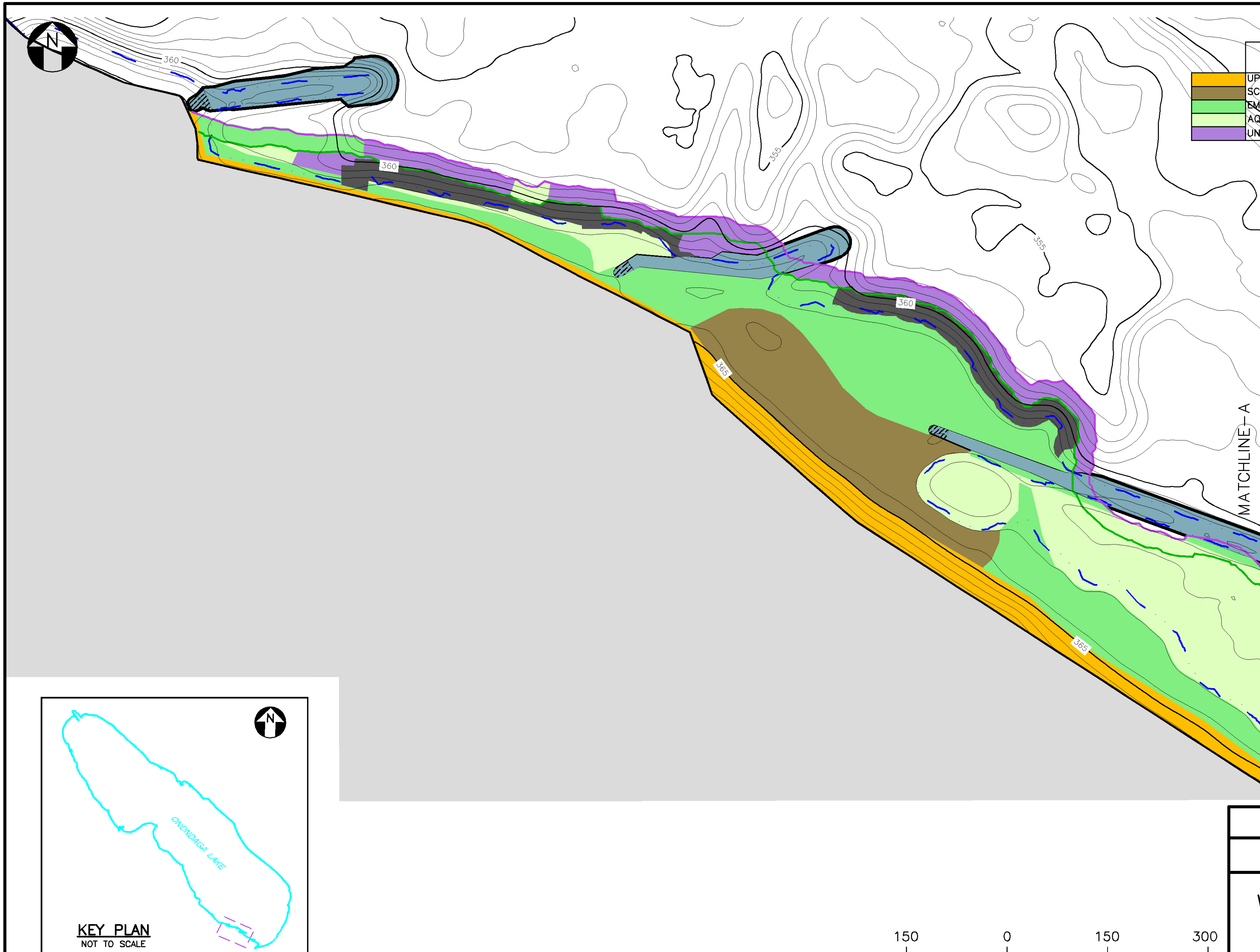
ONONDAGA LAKE
SYRACUSE, NEW YORK

EASTERN WASTEBED B/HARBOR BROOK OUTBOARD AREA COVER TYPES 2021

PARSONS

301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450704 2017-2018 OL PVM\10 TECHNICAL CATEGORIES\10.1 CAD\VEG COVER\450704_VEG_2021-002.DWG
PLOT DATE: 4/29/2025 4:41 PM PLOTTED BY: RUSSO, JILL [US-US]



IN LAKE AND WETLAND PLANTED AREAS

COVER TYPE	2021 ACREAGES OUTBOARD	2021 ACREAGES 25' BUFFER
UPLAND	2.06	0.01
SCRUB SHRUB WETLAND	1.18	–
EMERGENT WETLAND	7.51	0.21
AQUATIC BED/FLOATING AQUATICS	2.04	0.23
UNCONSOLIDATED BED	1.66	1.82

NOTE:

1. COVER TYPE ACREAGES ARE CALCULATED FOR BOTH EASTERN AND WESTERN WASTEBED B/HARBOR BROOK OUTBOARD AREAS.

LEGEND:

- LAKE CONTOURS–1' INTERVAL (POST REMEDY CONTOURS SHOWN)
- SHORELINE
- OUTBOARD BOUNDARY
- 25' PLANTED BUFFER LIMIT
- REMEDIATION AREA CAP BOUNDARY
- PROTECTIVE EDGE
- PROTECTIVE BERMS

150 0 150 300

SCALE: 1"=150'

FIGURE 2.3

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

WESTERN WASTEBED B/HARBOR BROOK OUTBOARD AREA COVER TYPES 2021

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450704 2017-2018 OL PVM\10 TECHNICAL CATEGORIES\10.1 CAD\VEG COVER\450704_VEG_2021-002.DWG
PLOT DATE: 4/29/2025 4:42 PM PLOTTED BY: RUSSO, JILL [US-US]

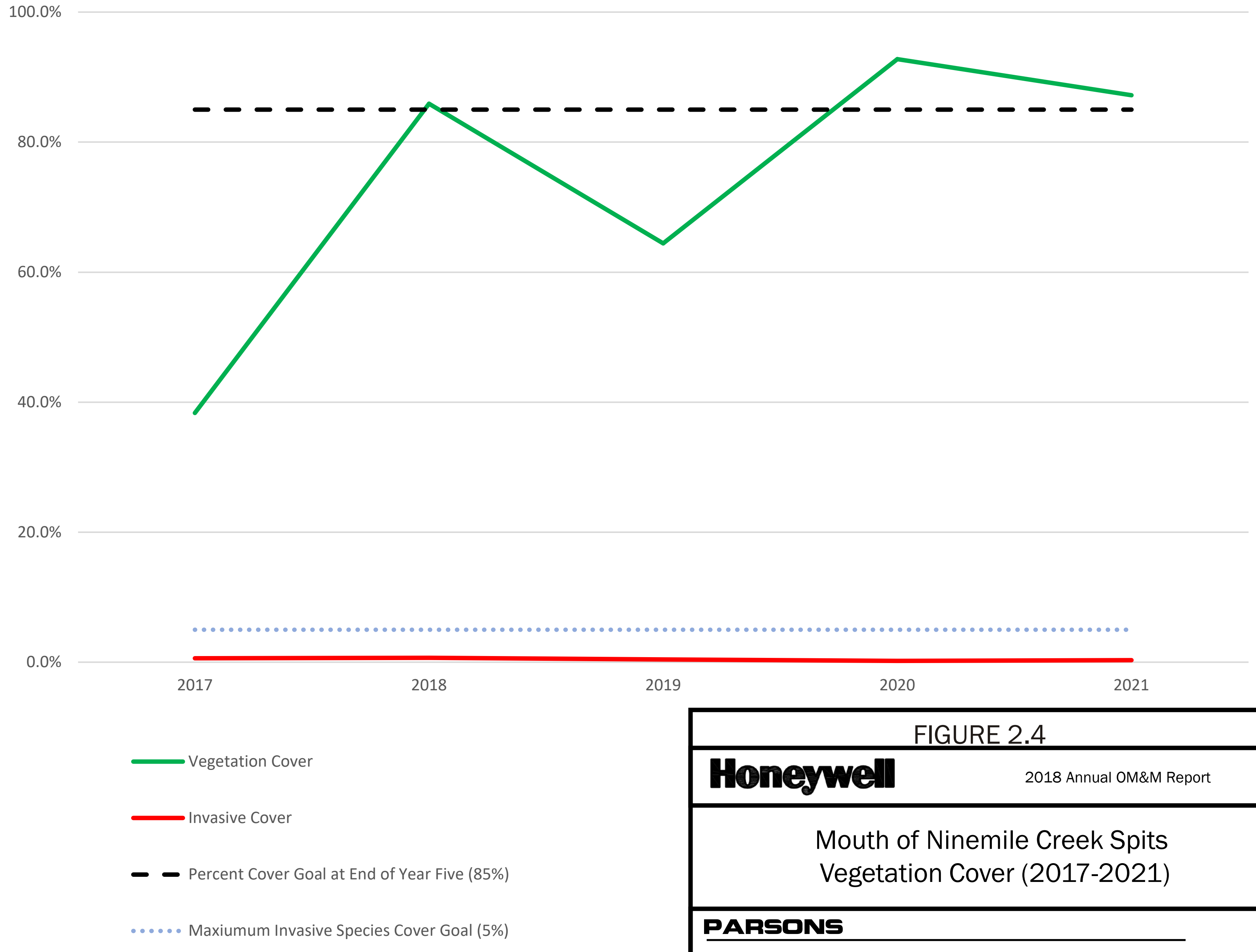


FIGURE 2.4

Honeywell

2018 Annual OM&M Report

Mouth of Ninemile Creek Spits
Vegetation Cover (2017-2021)

PARSONS

301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 PHONE: (315) 451-9560

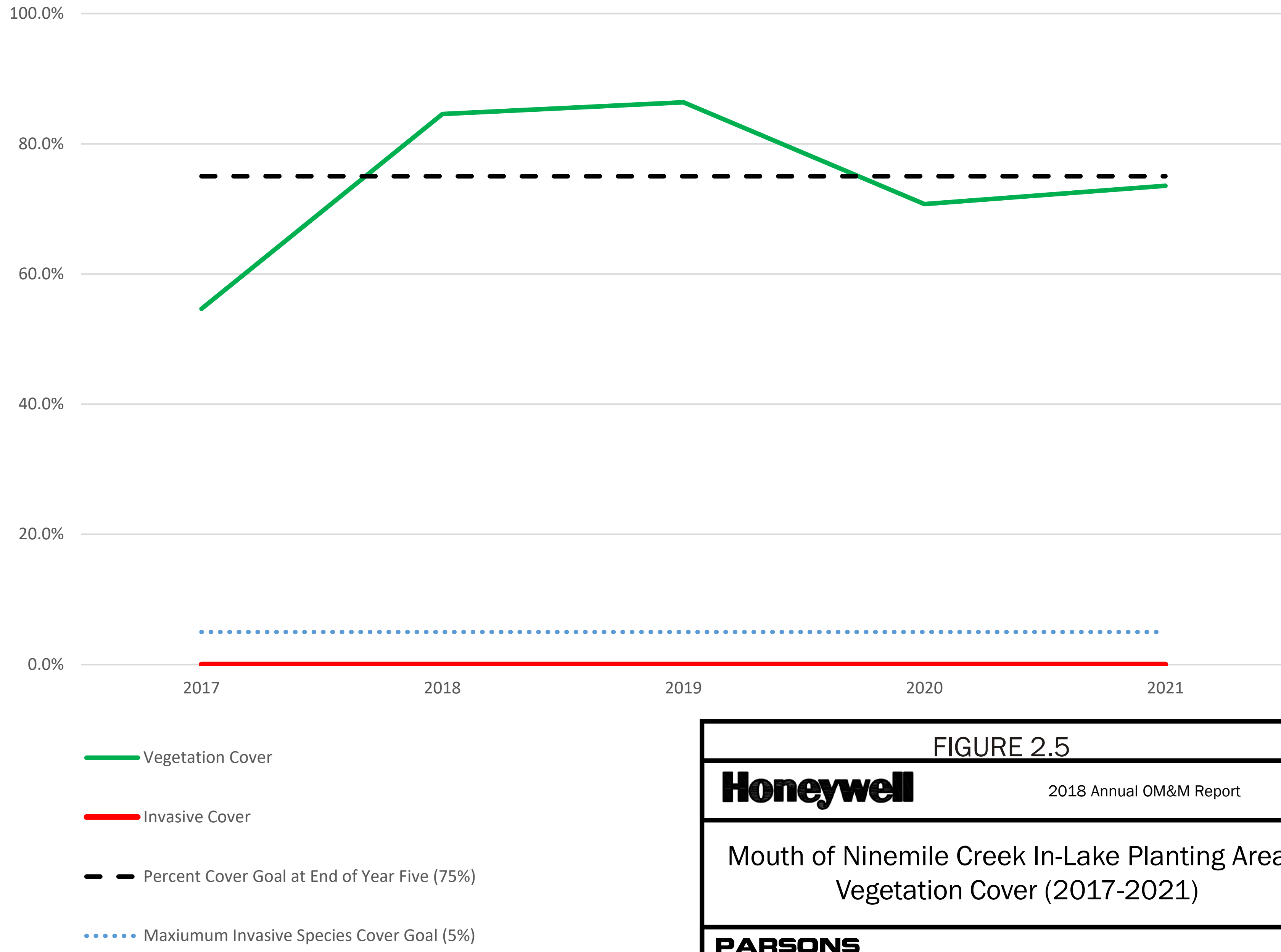


FIGURE 2.5

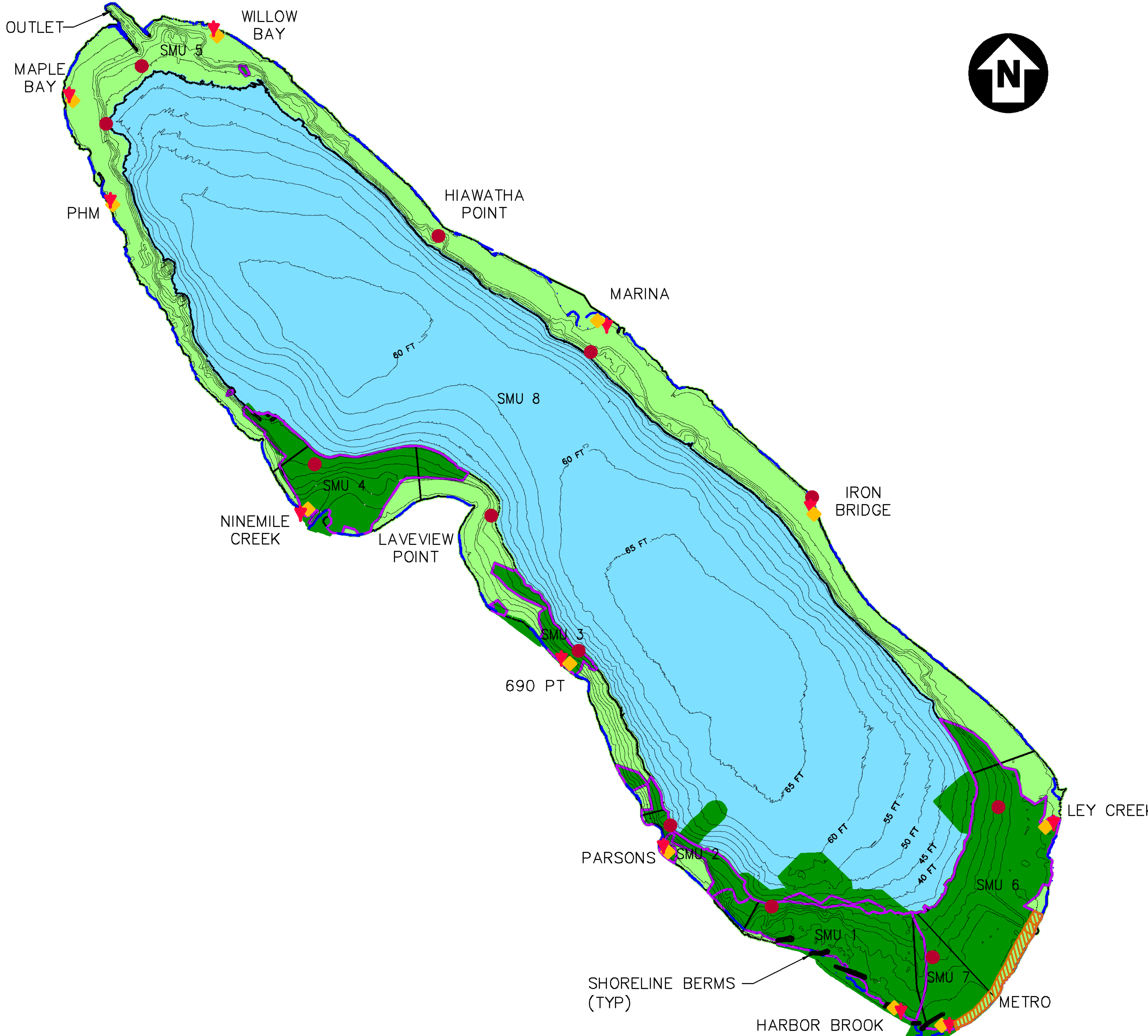
Honeywell

2018 Annual OM&M Report

Mouth of Ninemile Creek In-Lake Planting Areas
Vegetation Cover (2017-2021)

PARSONS

301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 PHONE: (315) 451-9560



TRAP NET

GILL NET

SEINE

REMEDIATION AREA BOUNDARY

SMU BOUNDARY

PROFUNDAL ZONE (SMU 8)

LITTORAL ZONE

CAPPED AREAS (INCLUDES ALL ISOLATION, THIN LAYER, AND MODIFIED PROTECTIVE CAPS)

CSX SHORELINE

NOTES:

1. WATER DEPTH CONTOUR INTERVAL IS 5 FT. (POST-REMEDY CONTOURS SHOWN)
2. SEINE SITES CO-LOCATED WITH SMALL PREY FISH TISSUE COLLECTION LOCATIONS (DETAILED IN SECTION 3 OF THIS REPORT).
3. EXACT LOCATIONS WERE ADJUSTED SLIGHTLY IN THE FIELD BASED ON WATER DEPTH AND WITH THE INTENT OF BEING PROTECTIVE OF NEWLY INSTALLED VEGETATION (WHERE APPLICABLE).

2000 1000 0 2000 4000

SCALE: 1"=2000'

FIGURE 2.6

Honeywell — ONONDAGA LAKE, SYRACUSE, NEW YORK

2021 FISH COMMUNITY SAMPLING LOCATIONS

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450704 2017-2018 OL PVM\10 TECHNICAL CATEGORIES\10.1 CAD\2021 ANNUAL REPORT\450704-MNR-FISH-2021.DWG
PLOT DATE: 6/8/2022 9:31 AM PLOTTED BY: RUSSO, JILL [US-US]

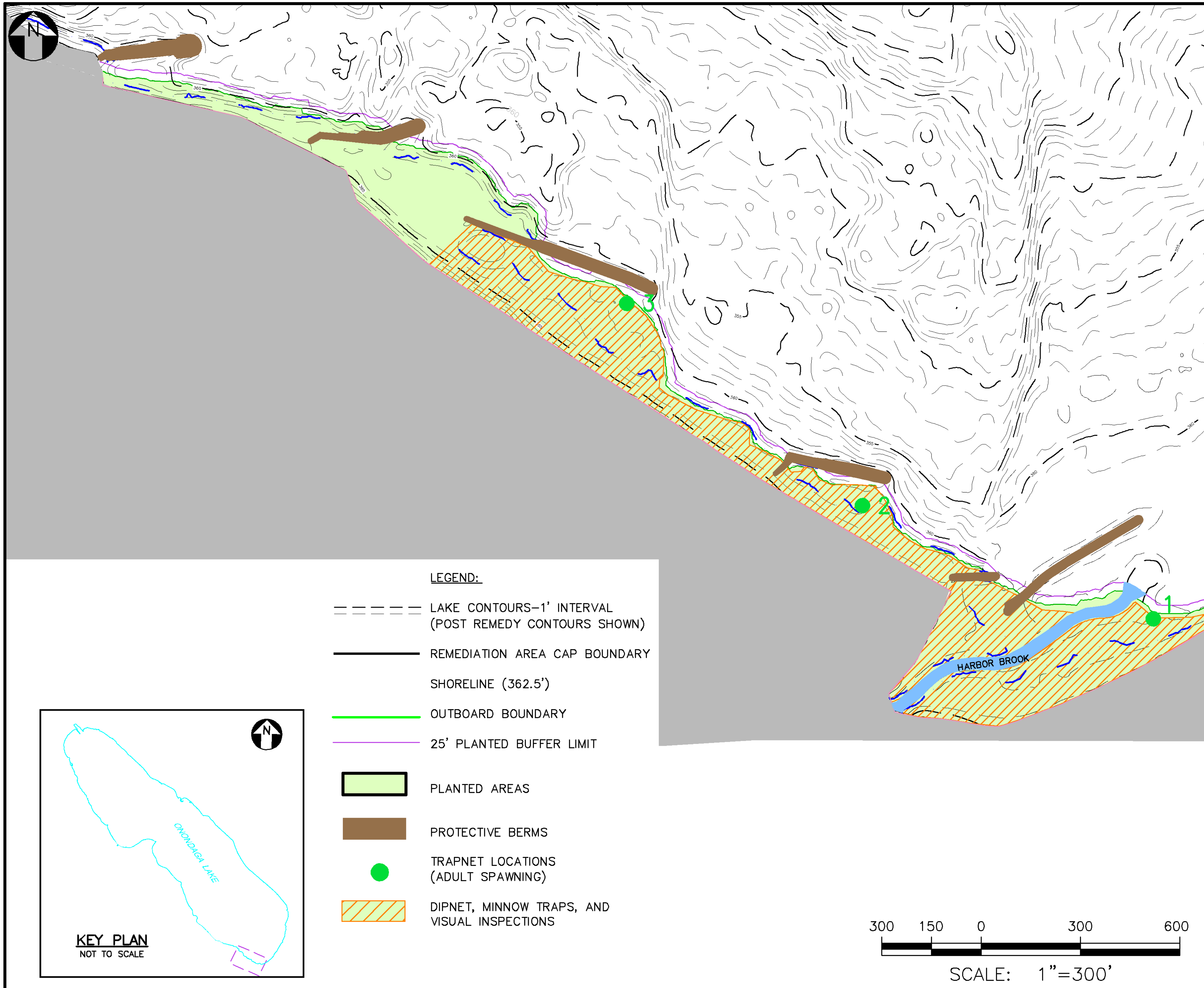


FIGURE 2.7

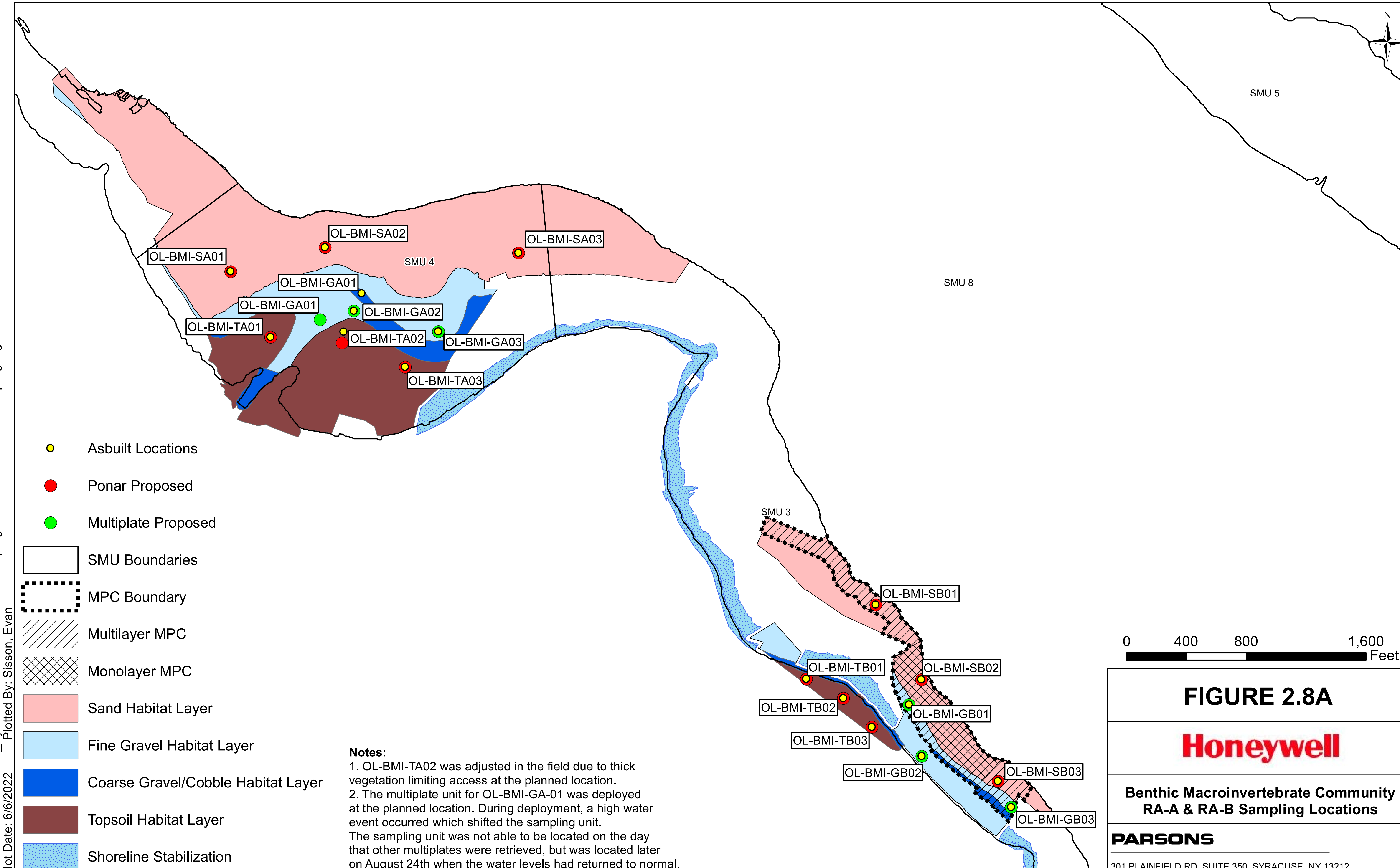
Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

2021 WETLAND SPAWNING ADULT AND JUVENILE MONITORING LOCATIONS

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450704 2017-2018 OL PVM\10 TECHNICAL CATEGORIES\10.1 CAD\2021 ANNUAL REPORT\450704-ANNUALRPT-SPAWN-2021.DWG
PLOT DATE: 6/8/2022 9:46 AM PLOTTED BY: RUSSO, JILL [US-US]



Notes:
1. OL-BMI-TA02 was adjusted in the field due to thick vegetation limiting access at the planned location.
2. The multiplate unit for OL-BMI-GA-01 was deployed at the planned location. During deployment, a high water event occurred which shifted the sampling unit. The sampling unit was not able to be located on the day that other multiplates were retrieved, but was located later on August 24th when the water levels had returned to normal.

FIGURE 2.8A

Honeywell

Benthic Macroinvertebrate Community RA-A & RA-B Sampling Locations

PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\BMI Sampling\OLMMP BMI Asbuilt Sampling Figures 2021.mxd
Plot Date: 6/6/2022 Plotted By: Sisson, Evan

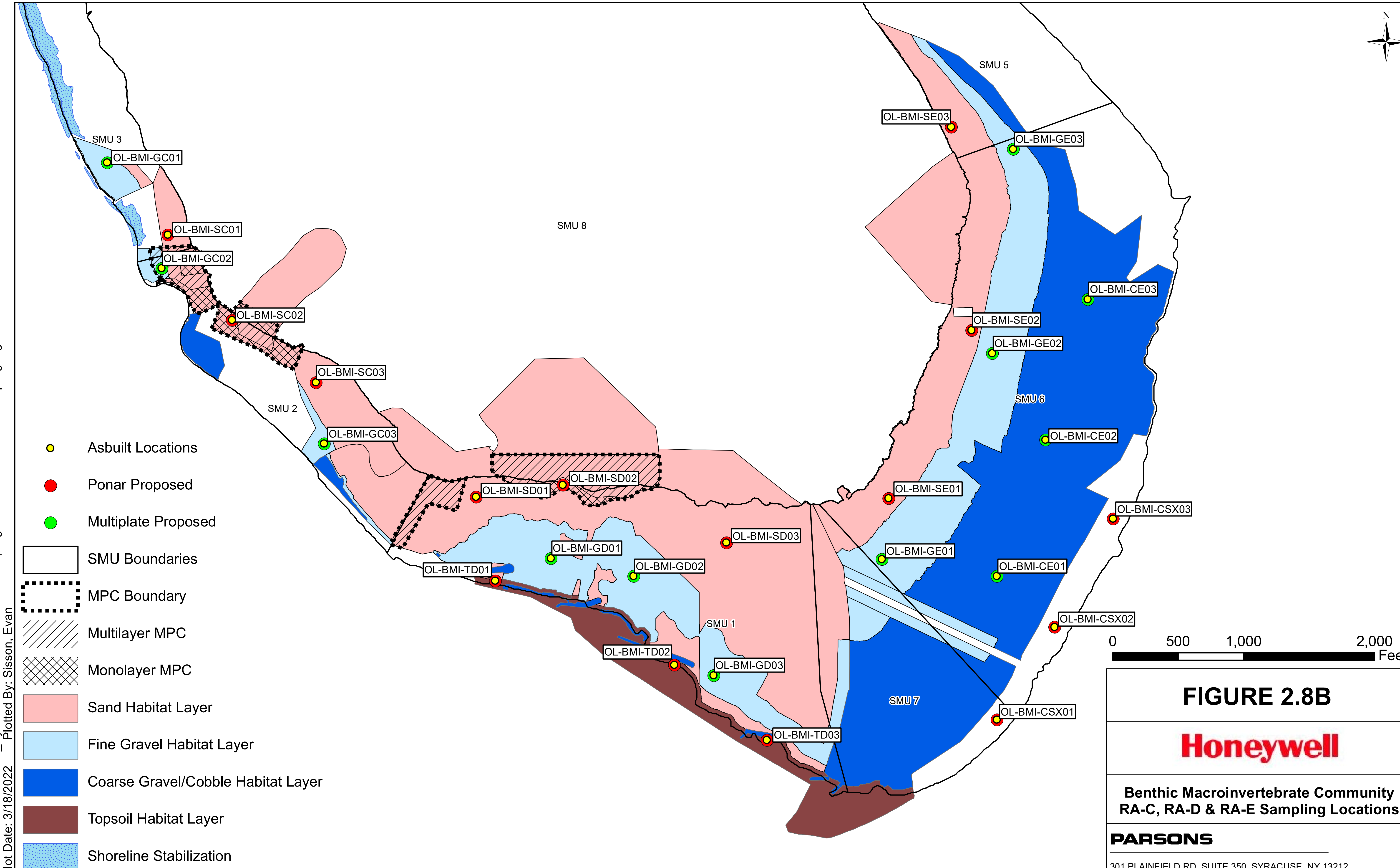


FIGURE 2.8B

Honeywell

Benthic Macroinvertebrate Community RA-C, RA-D & RA-E Sampling Locations

PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\BMI Sampling\OLMMP BMI Asbuilt Sampling Figures 2021.mxd
Plot Date: 3/18/2022 Plotted By: Sisson, Evan

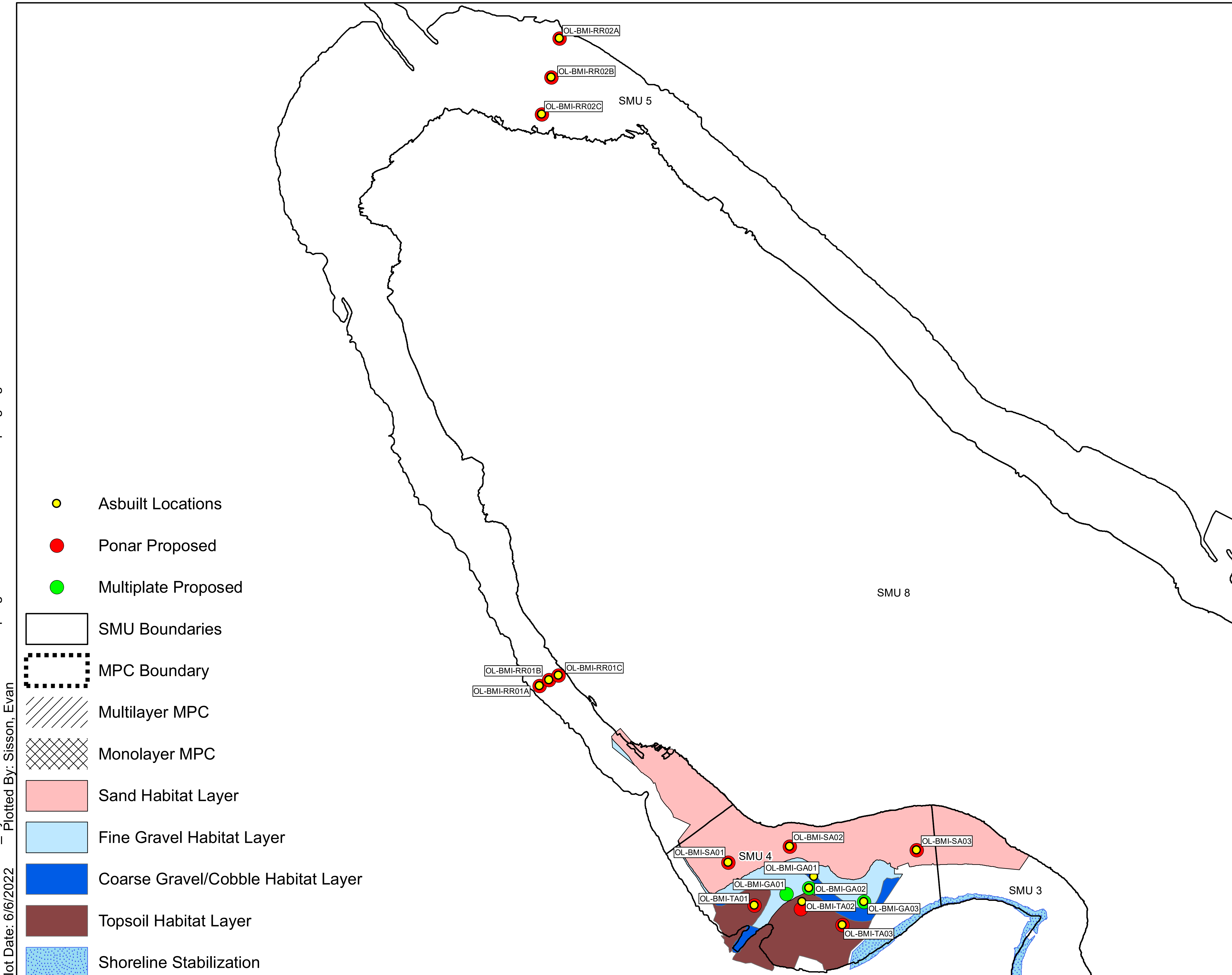


FIGURE 2.8C

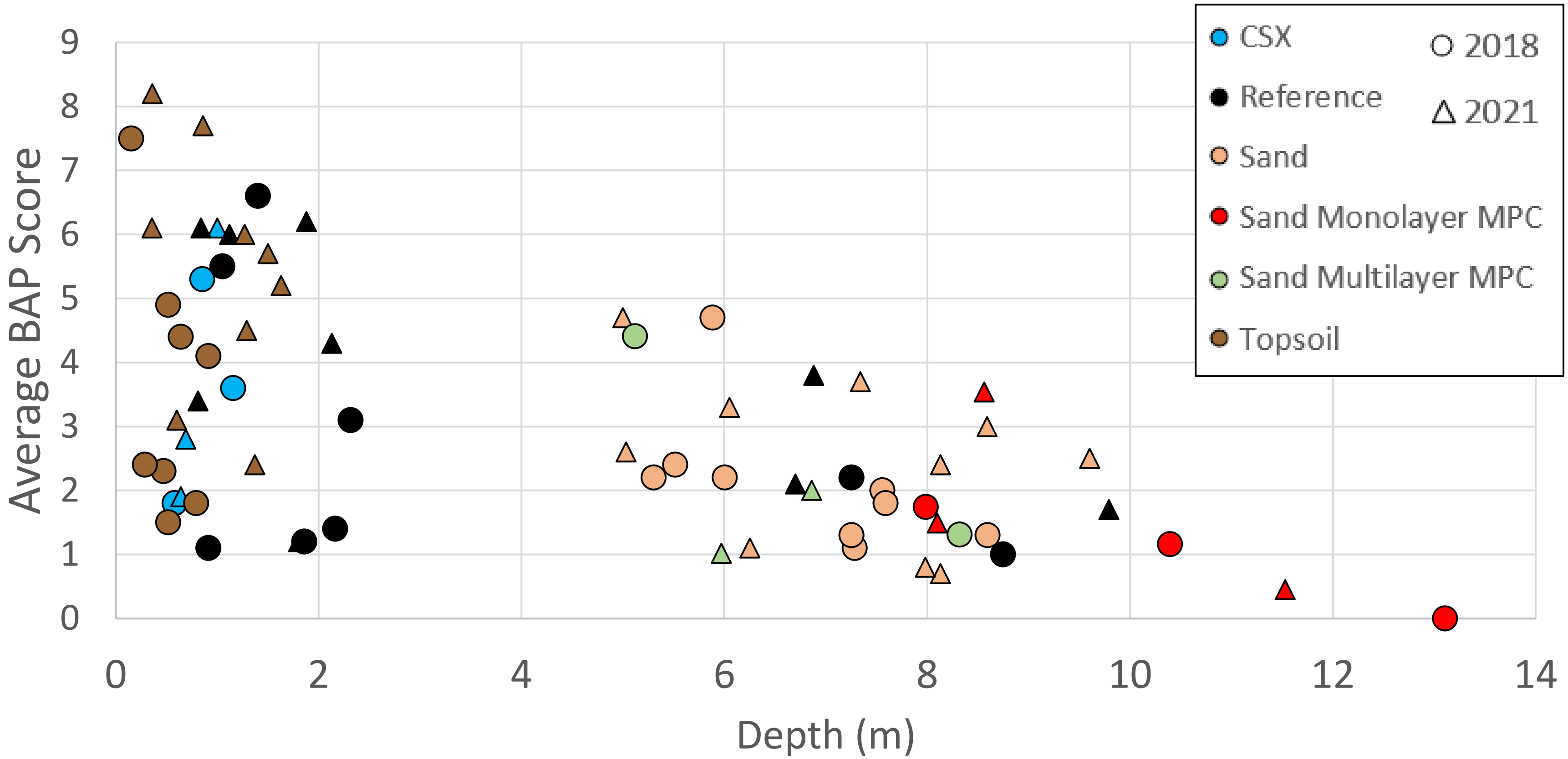
Honeywell

Benthic Macroinvertebrate Community Unremediated Areas Sampling Locations

PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\BMI Sampling\OLMMP BMI Asbuilt Sampling Figures 2021.mxd
Plot Date: 6/6/2022   Plotted By: Sisson, Evan



Note:
Depths are based on field measurements.

FIGURE 2.9

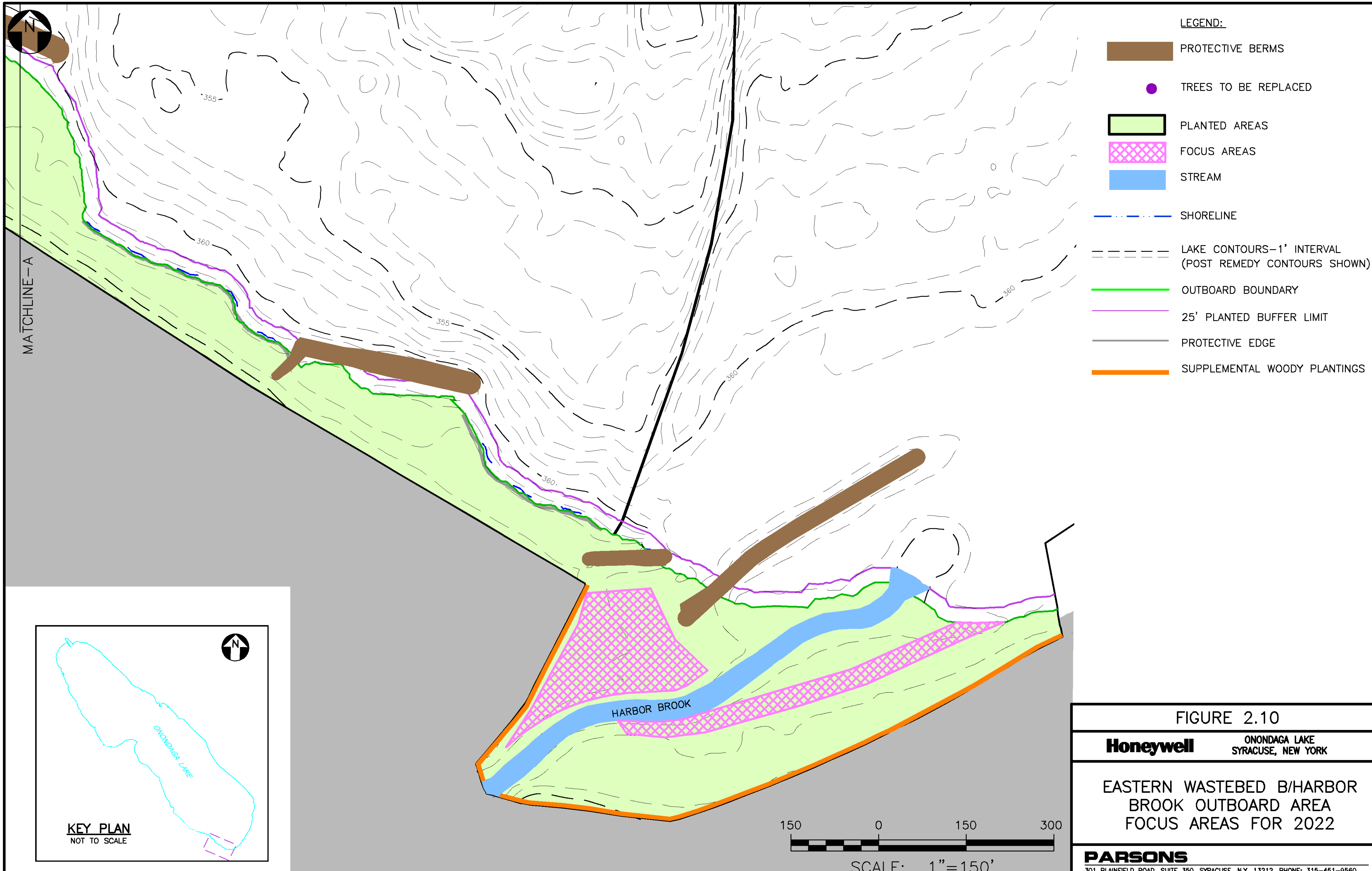
Honeywell

Onondaga Lake
Syracuse, New York

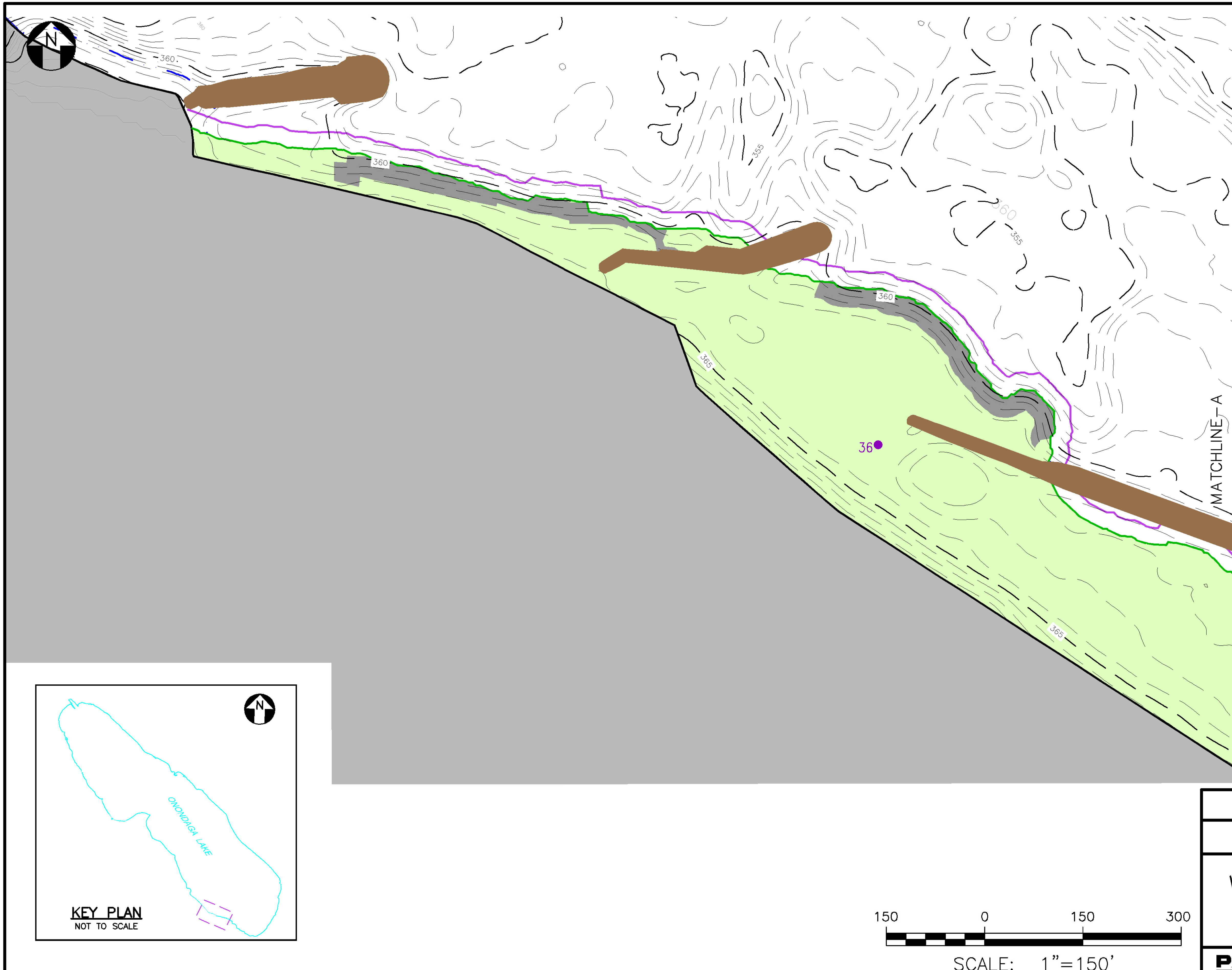
Average BAP Scores and Depths for Benthic Macroinvertebrate Ponar Samples (2018 and 2021)

PARSONS

301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 PHONE: (315) 451-9560



FILE NAME: P:\HONEYWELL -SYR\450704 2017-2018 OL PVM\10 TECHNICAL CATEGORIES\10.1 CAD\FOCUS-2022\450704_FOCUS_WBB-HB-2022.DWG
PLOT DATE: 4/4/2024 9:23 AM PLOTTED BY: NASSIMOS, JEFFREY [US-US]



LEGEND:

- PROTECTIVE BERMS
- TREES TO BE REPLACED
- PLANTED AREAS
- SHORELINE
- LAKE CONTOURS–1' INTERVAL (POST REMEDY CONTOURS SHOWN)
- OUTBOARD BOUNDARY
- 25' PLANTED BUFFER LIMIT
- PROTECTIVE EDGE

NOTE: NO PLANTING FOCUS AREAS ARE DESIGNATED FOR THE WESTERN WASTEBED B/ HARBOR BROOK OUTBOARD AREA FOR 2022.

FIGURE 2.11

Honeywell ONONDAGA LAKE SYRACUSE, NEW YORK

WESTERN WASTEBED B/HARBOR BROOK OUTBOARD AREA FOCUS AREAS FOR 2022

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450704 2017-2018 OL PVM\10 TECHNICAL CATEGORIES\10.1 CAD\FOCUS-2022\450704_FOCUS_WBB-HB-2022.DWG
PLOT DATE: 4/4/2024 9:35 AM PLOTTED BY: NASSIMOS, JEFFREY [US-US]

LEGEND:

- ZOOPLANKTON SAMPLE LOCATION
- SMALL PREY FISH LOCATIONS
- ADULT SPORT FISH AND LARGE PREY FISH LOCATIONS
- REMEDIATION AREA BOUNDARY
- SMU BOUNDARY
- SMU 8
- LITTORAL ZONE
- CAPPED AREAS (INCLUDES ALL ISOLATION, THIN LAYER, AND MODIFIED PROTECTIVE CAPS)

2000 1000 0 2000 4000

SCALE: 1"=2000'

FIGURE 3.1

Honeywell

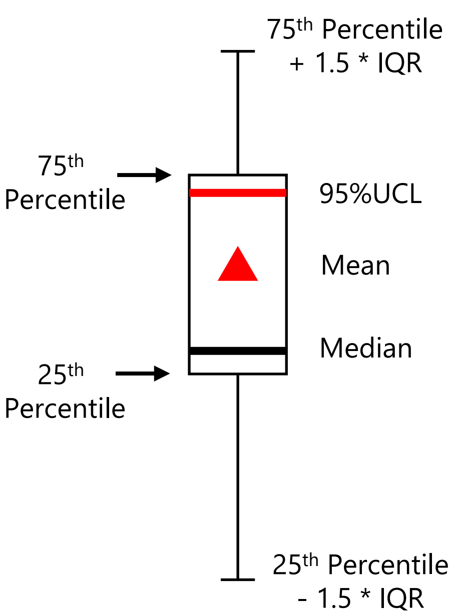
ONONDAGA LAKE
SYRACUSE, NEW YORK

SAMPLING LOCATIONS FOR ZOOPLANKTON AND FISH TISSUE AND CHEMICAL ANALYSIS

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450704 2017-2018 OL PVM\10 TECHNICAL CATEGORIES\10.1 CAD\2019 ANNUAL REPORT\450704-2019-ZOO-FISH.DWG
PLOT DATE: 6/18/2021 2:55 PM PLOTTED BY: RUSSO, JILL

Box and Whisker Plot



Plot Notes

- 95%UCL: estimate of the upper bound for the true population mean; calculated using ProUCL Version 5.1 for years prior to 2021 and using ProUCL Version 5.2 for 2021; not calculated when 3 or fewer results were detects. For data sets with NDs, ProUCL selected the statistical method. The substitution method (i.e., one-half of the MDL or RL) was not used.
- Mean: mean or average concentration; calculated by ProUCL using the same statistical method used for 95%UCL unless 3 or fewer results were detects. In that case, for plots showing the 95%UCL, the arithmetic mean was calculated with non-detects substituted at 1/2 MDL for mercury and 1/2 RL for most organic analytes (substitution method). The arithmetic mean was also calculated using the substitution method for all standard error plots.
- Median: median or midpoint concentration
- 25th and 75th Percentiles: concentrations below which 25% and 75% of concentrations are found. The lower whisker extends to the minimum or smallest value within Q1 minus 1.5 times the IQR, whichever is higher. The upper whisker extends to the maximum or largest value within Q3 plus 1.5 times the IQR, whichever is lower.
- IQR: Interquartile Range – the range between the 25th and 75th percentiles.
- △ Open symbol indicates 3 or fewer results were detects in box and whisker plots, and ND in standard error plots.
- "ND" indicates all results were non-detects and no statistics are shown.
- Data source: 2008 through 2011 Baseline Monitoring Program and 2012 through 2021 Remedial Goal Monitoring.

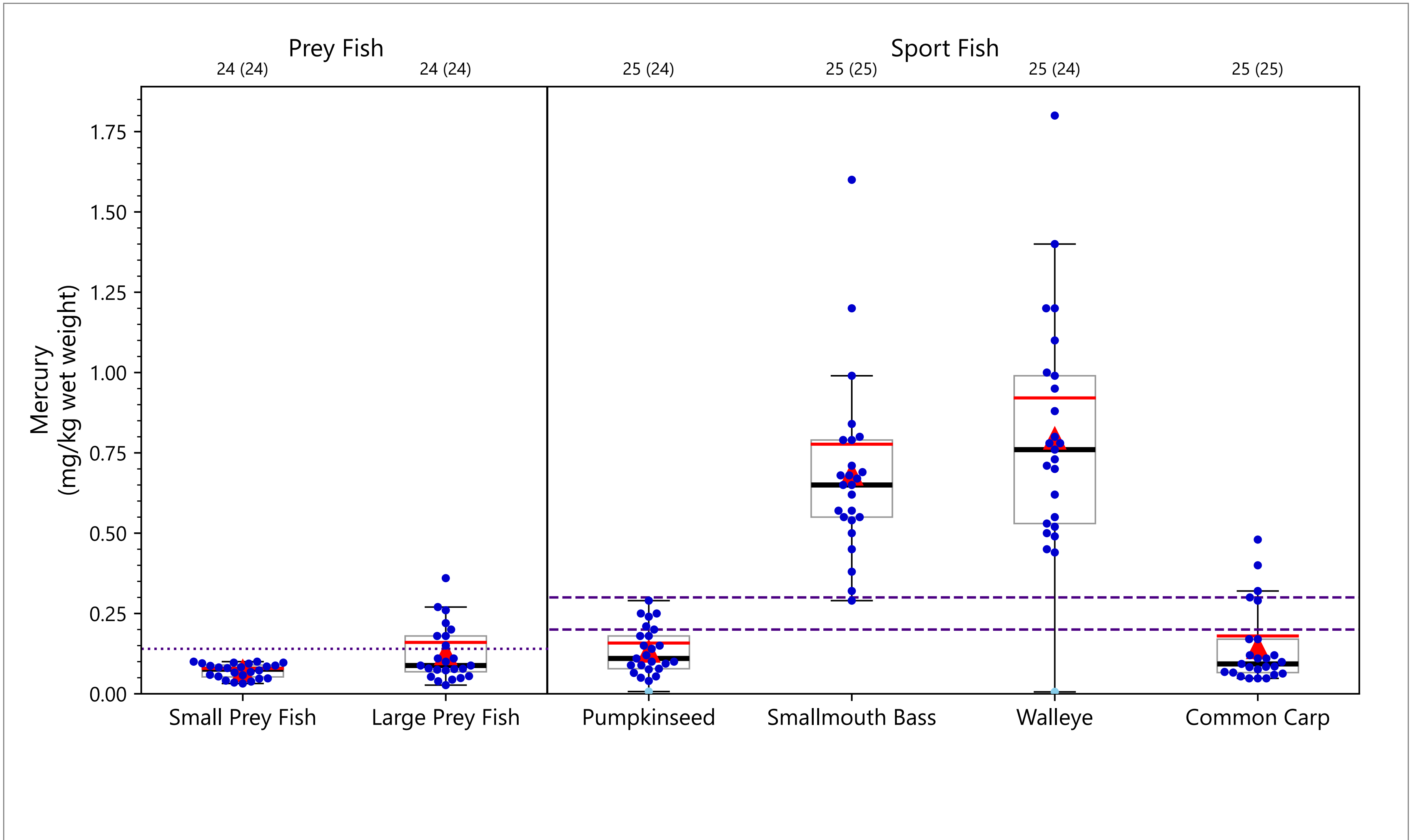
Analyte-Specific Details

- Total PCB is the sum of detected Aroclors. If all Aroclors are non-detects, 1/2 the maximum RL is used.
- For Dioxin/Furan Total TEQ, non-detects summed at 1/2 MDL, except for 2014 and 2015, which used 1/2 RDL; plots for 2021 data show non-detects at 0 and 1/2 MDL. TEQs calculated using the World Health Organization 2005 human and mammalian toxic equivalency factors (TEFs) from Van den Berg et al. (2006).
- 2010 organic analyte data are excluded from temporal plots due to analytical issues.
- 2019 and 2020 data are excluded due to incomplete homogenization.
- Dioxin/furans, DDT and metabolites, and hexachlorobenzene were not analyzed on an annual basis.
- Nitrate addition began in 2011.

Fish Details

- Sport fish for comparison to human health criteria and targets
  - Smallmouth Bass, Walleye, Pumpkinseed, and Common Carp
  - Collection of Common Carp began in 2014
  - NYSDEC standard fillets
- Small prey fish for comparison to ecological criteria and targets
  - Primarily Banded Killifish but Golden Shiner, Brook Silverside, Minnow, Bluntnose Minnow, and Round Goby were collected if Banded Killifish are unavailable (Alewife excluded).
  - Whole body composite samples
- Large prey fish for comparison to ecological criteria and targets
  - White Sucker and Shorthead Redhorse
  - Collection began in 2014
  - Individual whole-body samples
- All ages and both sexes were combined.
- In 2012, in-lake remediation began in late July; small prey fish were sampled in early August, and remaining species were sampled in mid-June to early-July.

Figure 3.2
Nomenclature, Data Treatment, and Analyte-Specific Details

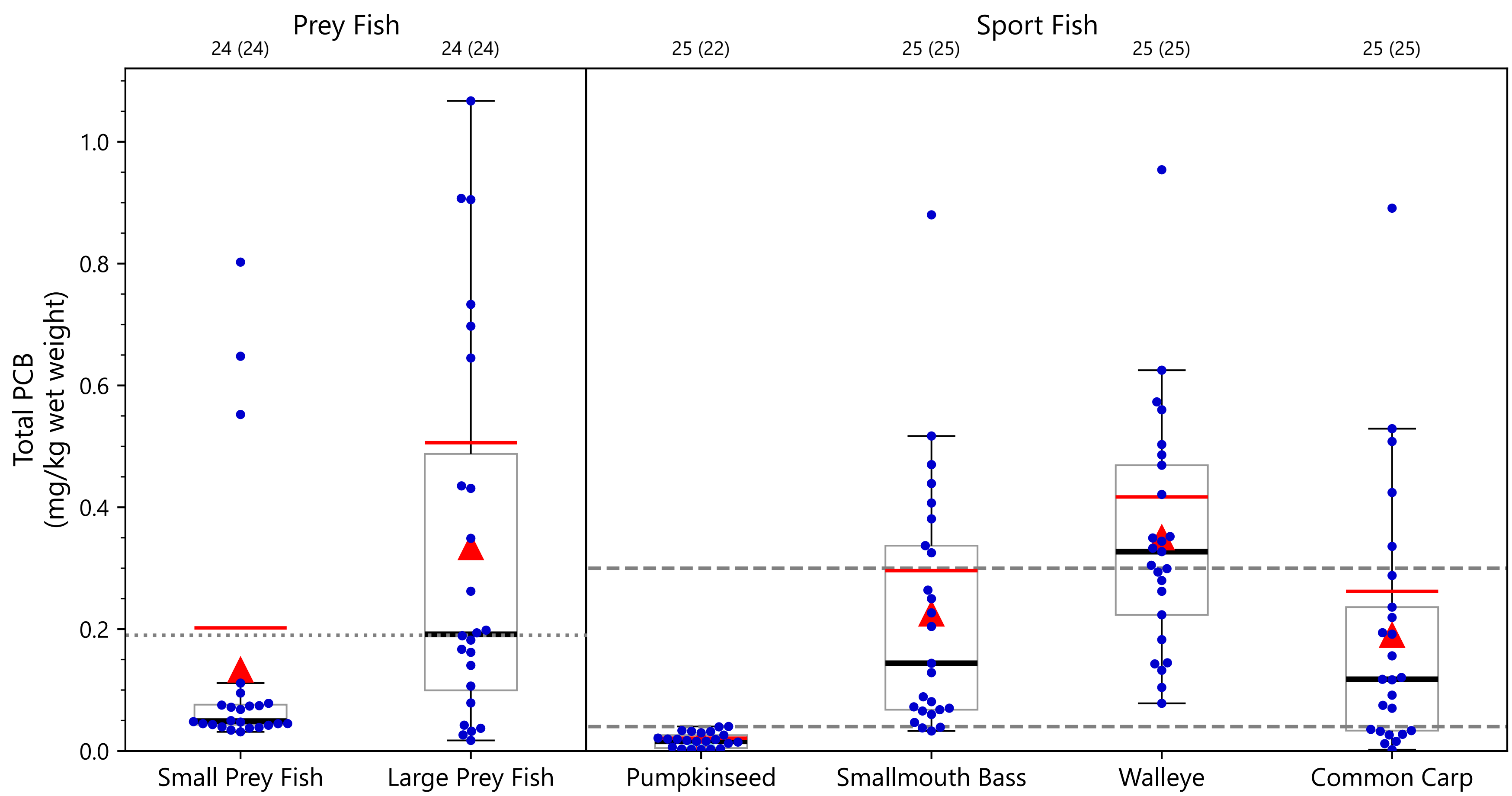


Number of samples provided above the plot with number of detected results in parentheses.
Non-detect results are set to 1/2 MDL.

Publish Date: 05/14/2025 08:59 AM | User: BAL-CWRI2
\\wcl-fs1\syracuse\Projects\Honeywell\Onondaga_Lake_OLMMS_(E60287)\ANALYSIS\FISH\2021_OMM\Python\Species_boxplots_w_AllPoint.py

ANCHOR QEA

Figure 3.3
Box and Whisker Plots of Mercury Concentrations in Onondaga Lake Fish (2021)



Number of samples provided above the plot with number of detected results in parentheses.
TPCB is the sum of detected Aroclors. If all Aroclors are non-detect, the result value is set to 1/2 the maximum RL for all Aroclors.

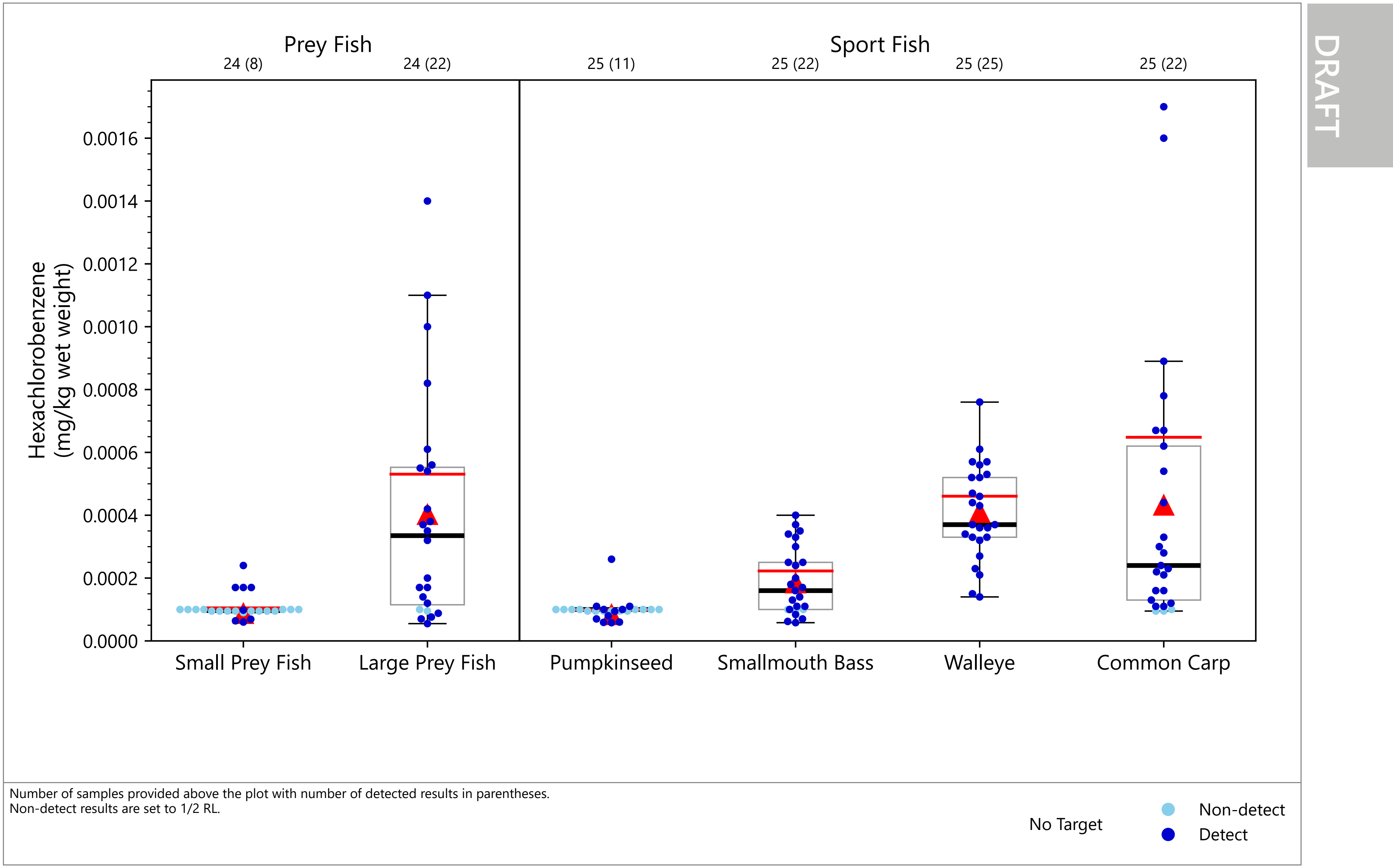
Ecological Target (0.19 mg/kg)
Human Health Target (0.04 to 0.3 mg/kg)
Non-detect
Detect

DRAFT

Publish Date: 05/14/2025 08:59 AM | User: BAL-CWRI2
\\wcl-fs1\syracuse\Projects\Honeywell\Onondaga_Lake_OLMMS_(E60287)\ANALYSIS\FISH\2021_OMM\Python\Species_boxplots_w_AllPoint.py

ANCHOR QEA

Figure 3.4
Box and Whisker Plots of Total PCB Concentrations in Onondaga Lake Fish (2021)



Publish Date: 05/14/2025 08:59 AM | User: BAL-CWRI2
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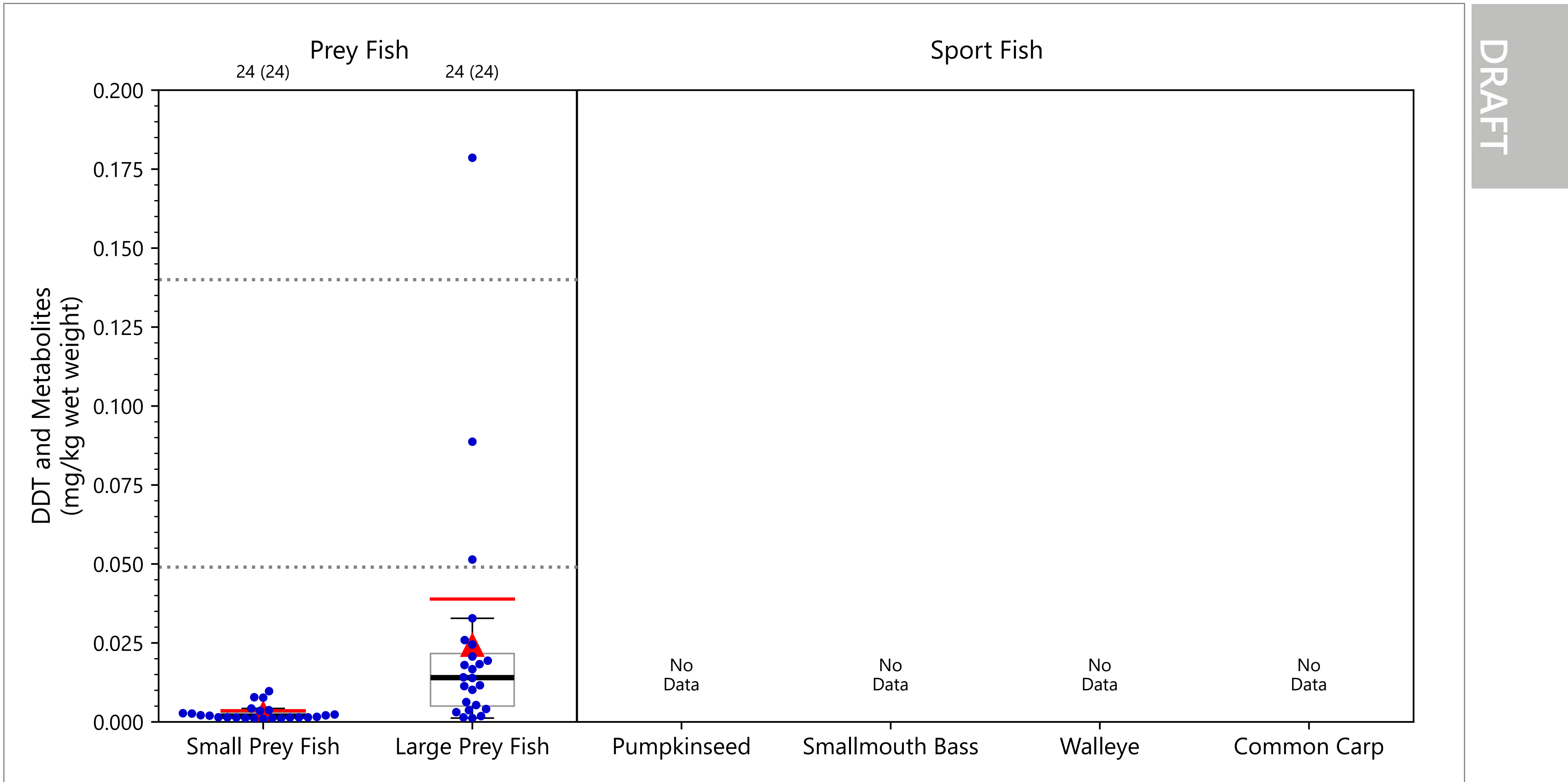
ANCHOR QEA

Figure 3.5
Box and Whisker Plots of Hexachlorobenzene Concentrations in Onondaga Lake Fish (2021)



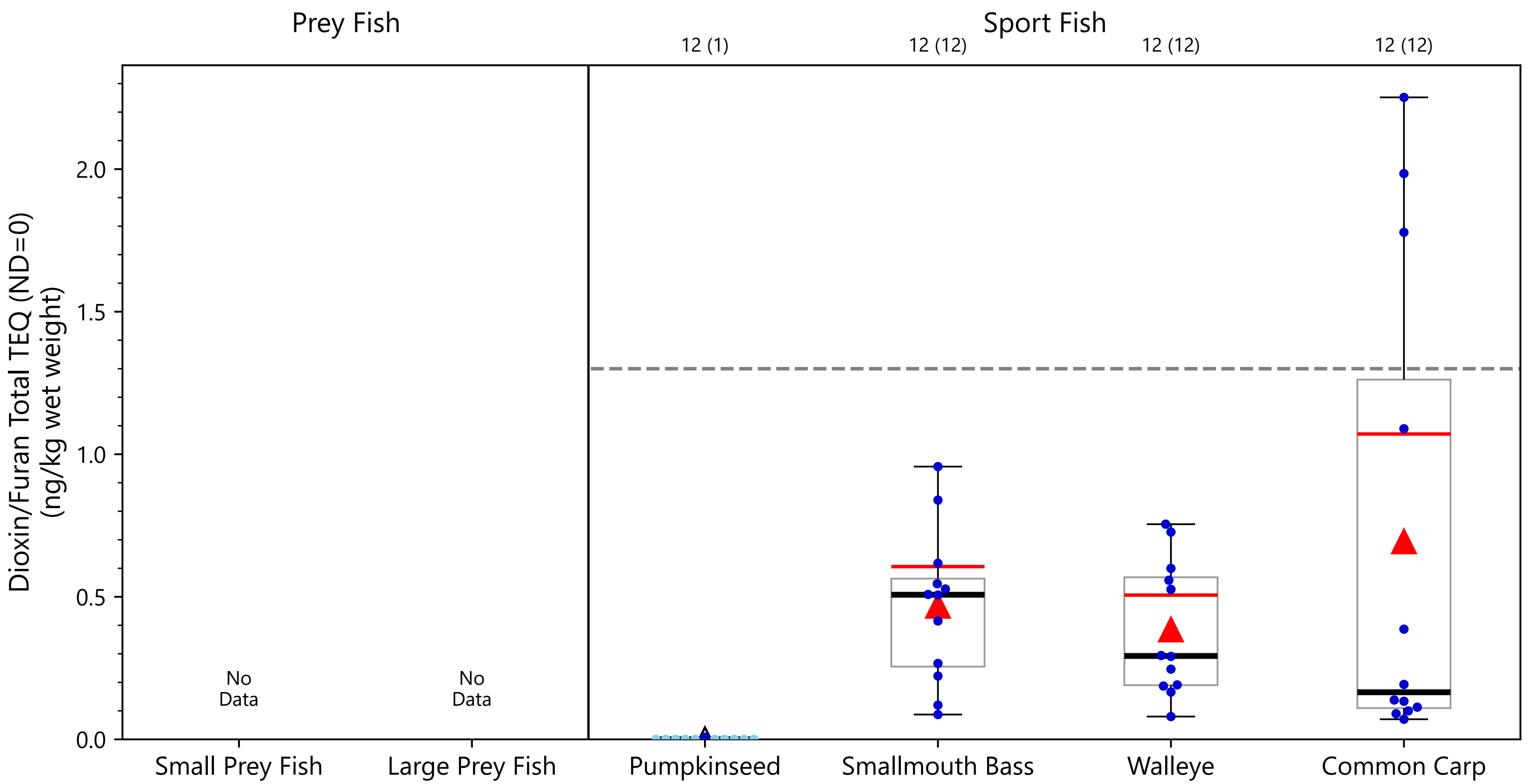
Number of samples provided above the plot with number of detected results in parentheses.

Small Prey Fish Ecological Target (0.049 mg/kg)
Large Prey Fish Ecological Target (0.14 mg/kg)
Non-detect
Detect

Publish Date: 05/14/2025 08:59 AM | User: BAL-CWRI2
\\wcl-fs1\syracuse\Projects\Honeywell\Onondaga_Lake_OLMMS_(E60287)\ANALYSIS\FISH\2021_OMM\Python\Species_boxplots_w_AllPoint.py

ANCHOR QEA

Figure 3.6
Box and Whisker Plots of DDT and Metabolites Concentrations in Onondaga Lake Fish (2021)

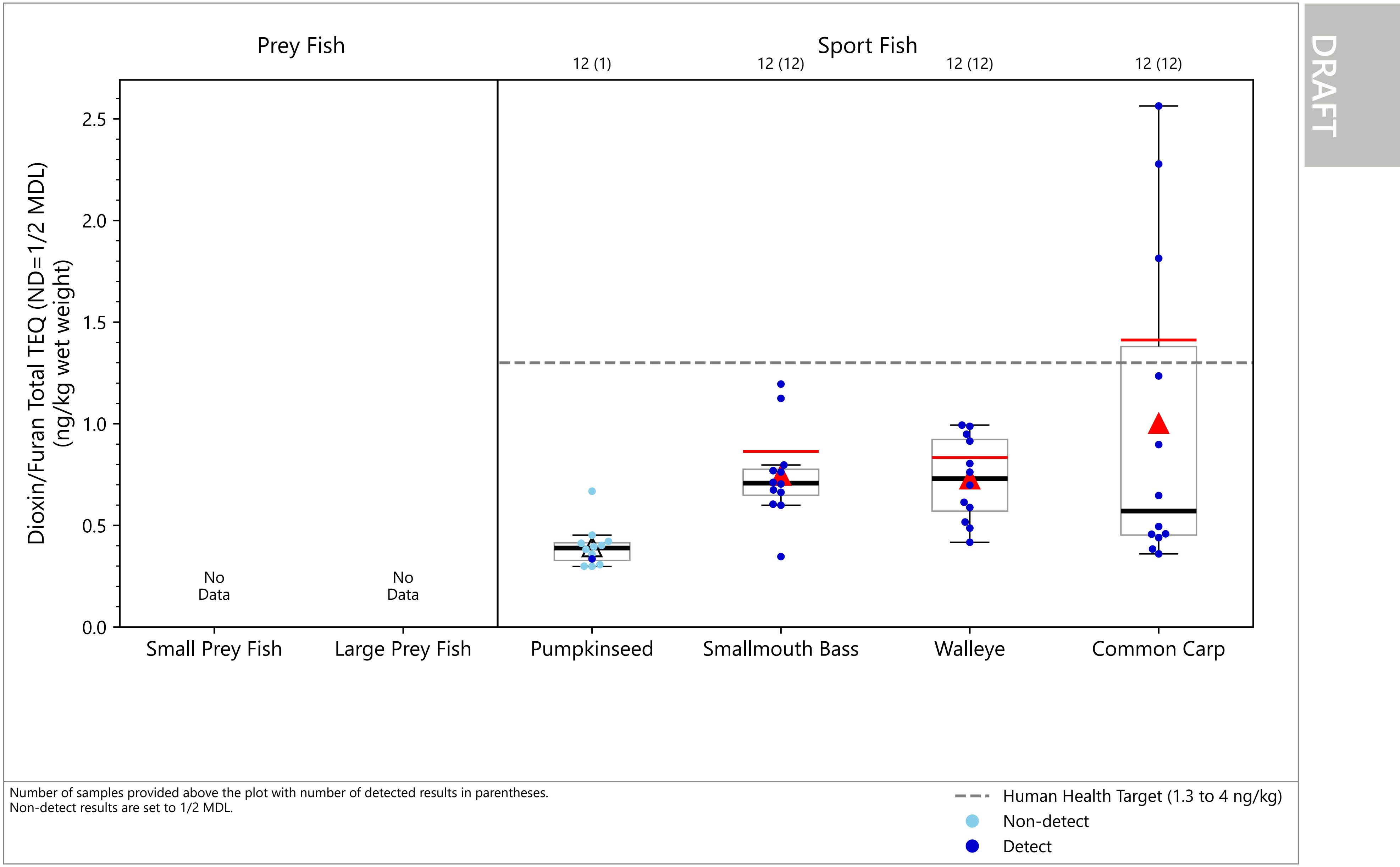


Number of samples provided above the plot with number of detected results in parentheses.
Non-detect results are set to 0.

Human Health Target (1.3 to 4 ng/kg)
Non-detect
Detect

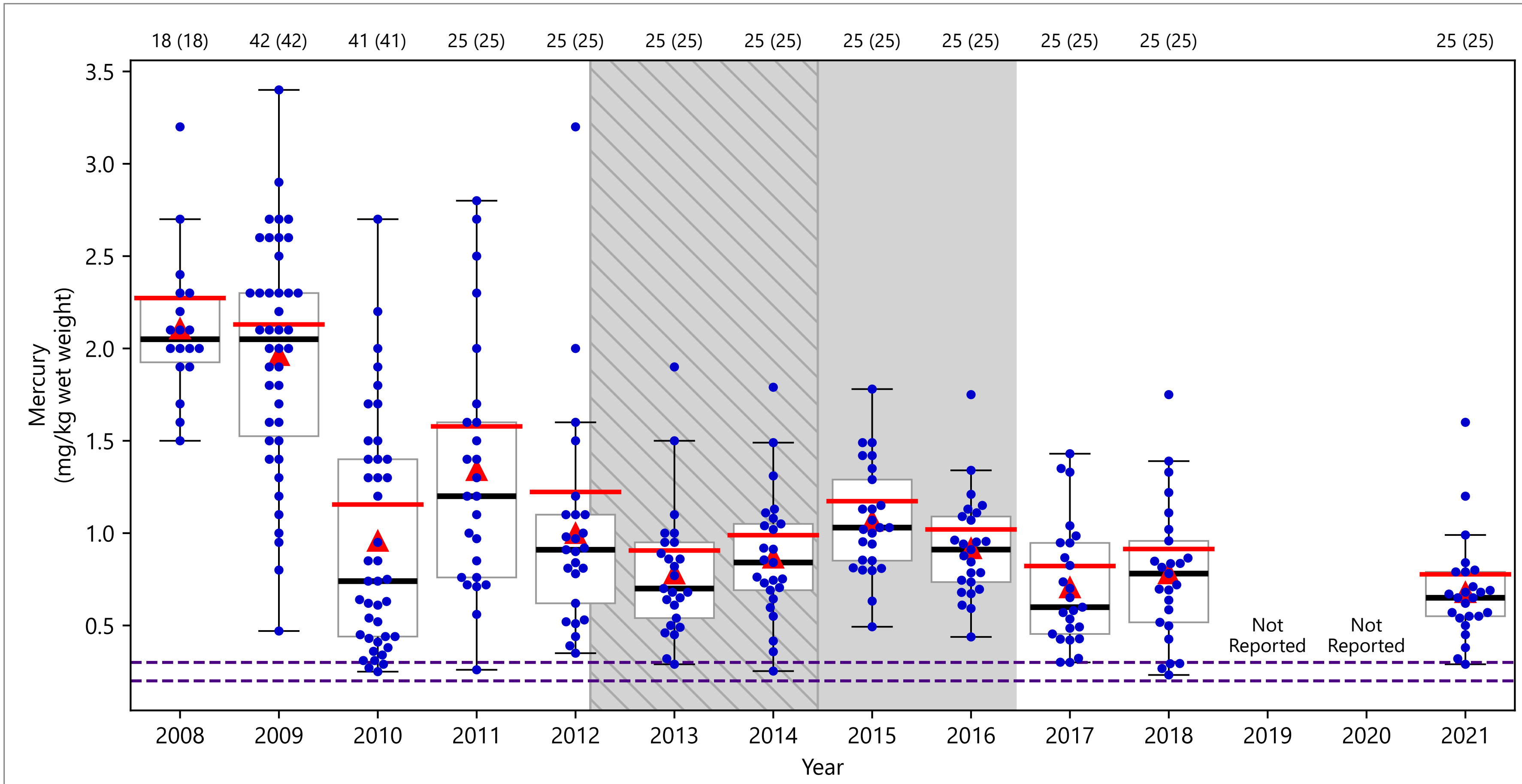
ANCHOR QEA

Figure 3.7
Box and Whisker Plots of Dioxin/Furan Total TEQ (ND=0) Concentrations in Onondaga Lake Fish (2021)



Publish Date: 05/14/2025 08:59 AM | User: BAL-CWRI2
\\wcl-fs1\syracuse\Projects\Honeywell\Onondaga_Lake_OLMMS_(E60287)\ANALYSIS\FISH\2021_OMM\Python\Species_boxplots_w_AllPoint.py

Figure 3.8
Box and Whisker Plots of Dioxin/Furan Total TEQ (ND=1/2 MDL) Concentrations in Onondaga Lake Fish (2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are shown at 1/2 MDL.

Human Health Performance Criteria (0.2 to 0.3 mg/kg)

Dredging
Capping
Non-detect
Detect

DRAFT

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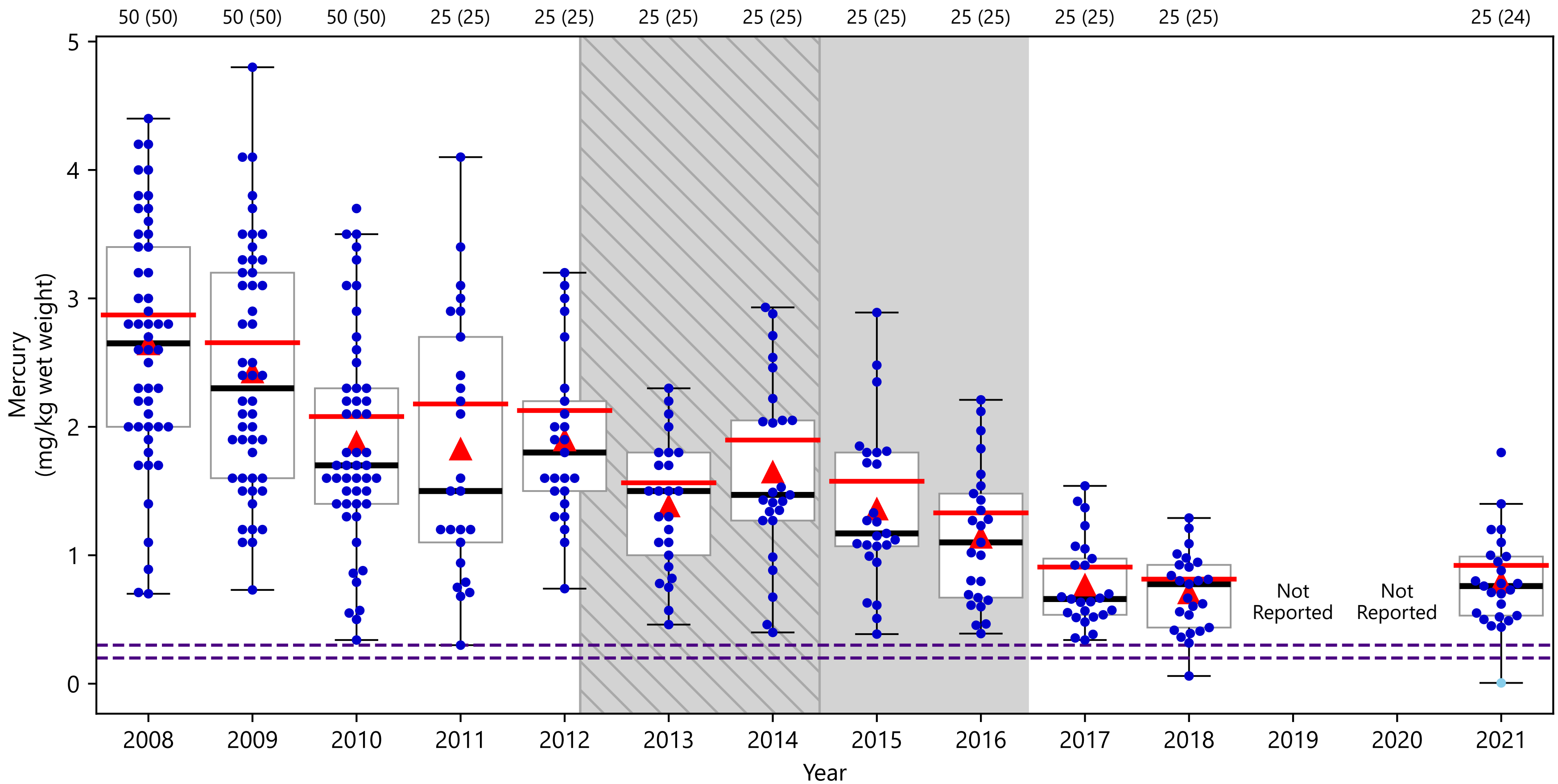
ANCHOR QEA

Figure 3.9
Mercury Concentrations in Smallmouth Bass (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are shown at 1/2 MDL.

Human Health Performance Criteria (0.2 to 0.3 mg/kg)

Dredging
Capping
Non-detect
Detect

DRAFT

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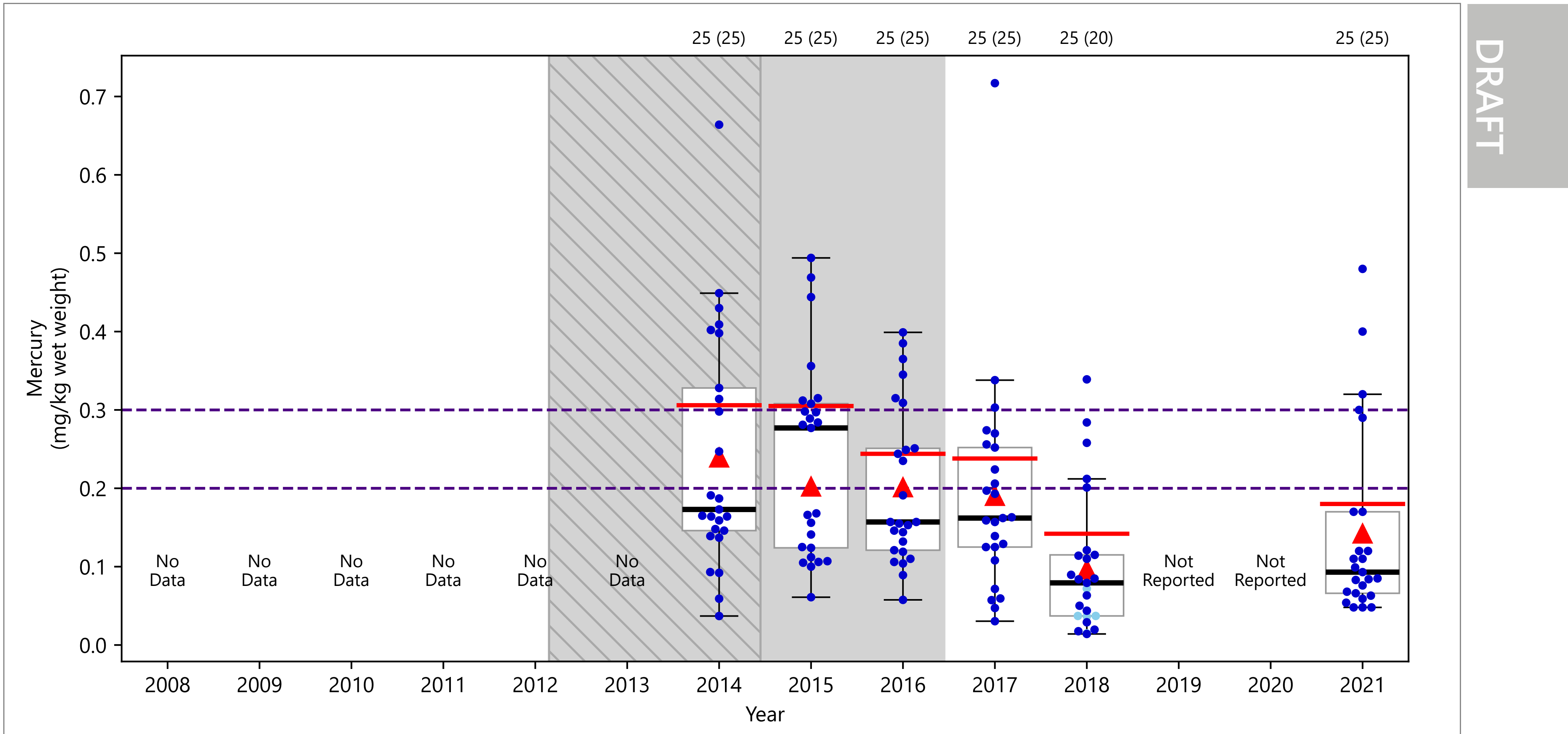
Figure 3.10
Mercury Concentrations in Walleye (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are shown at 1/2 MDL.

Human Health Performance Criteria (0.2 to 0.3 mg/kg)

Dredging
Capping
Non-detect
Detect

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Figure 3.11
Mercury Concentrations in Common Carp (2008 - 2021)

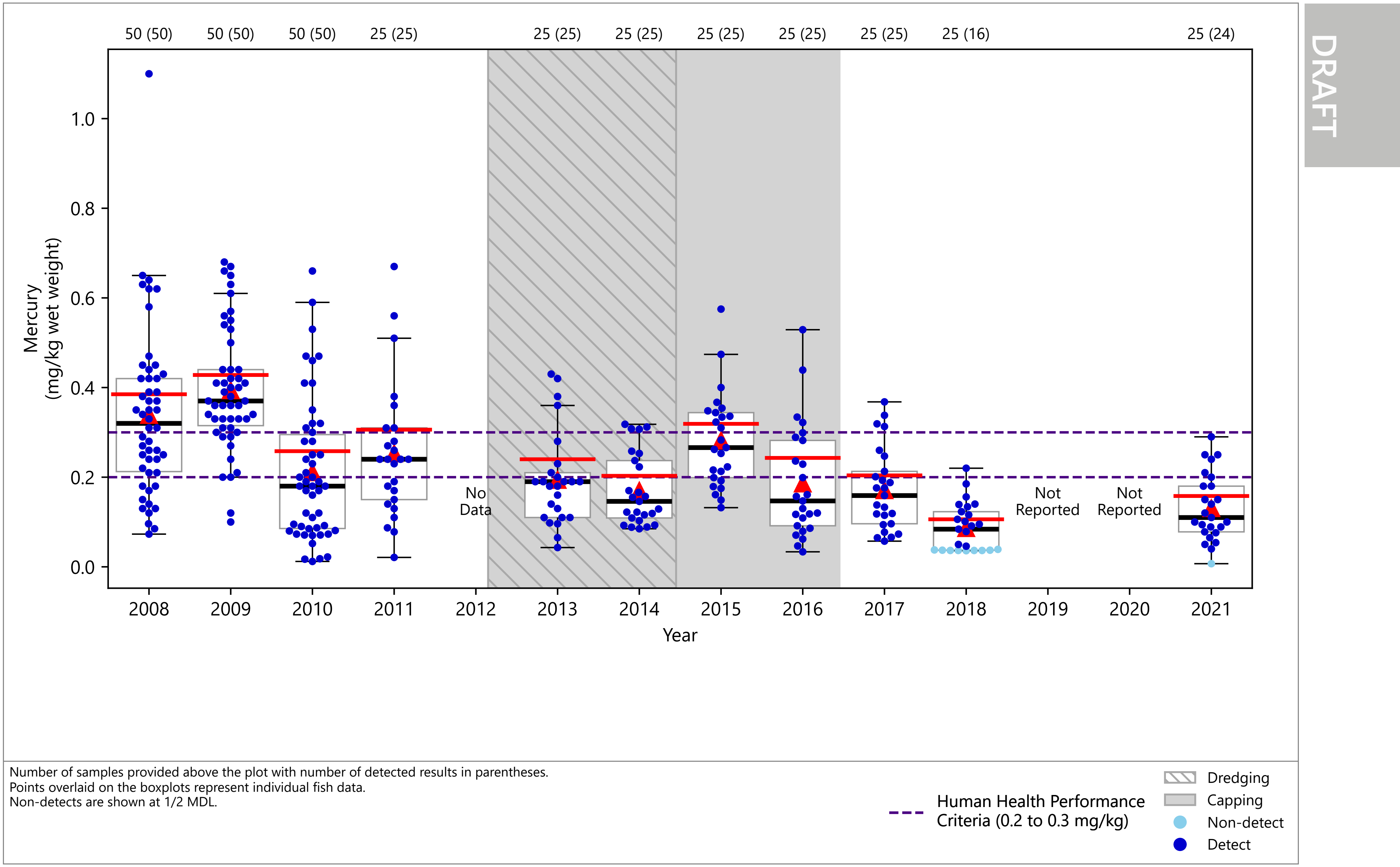

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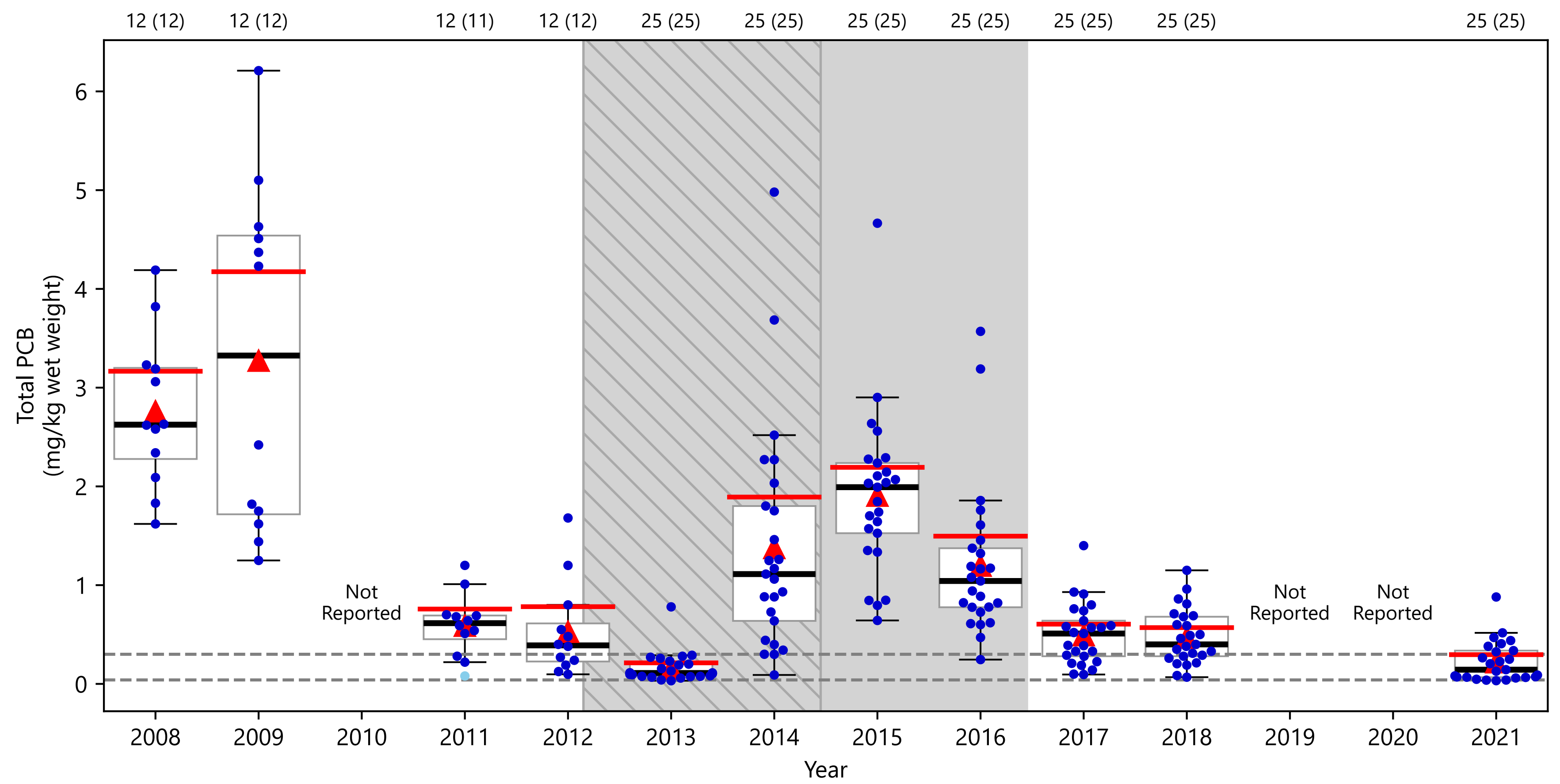
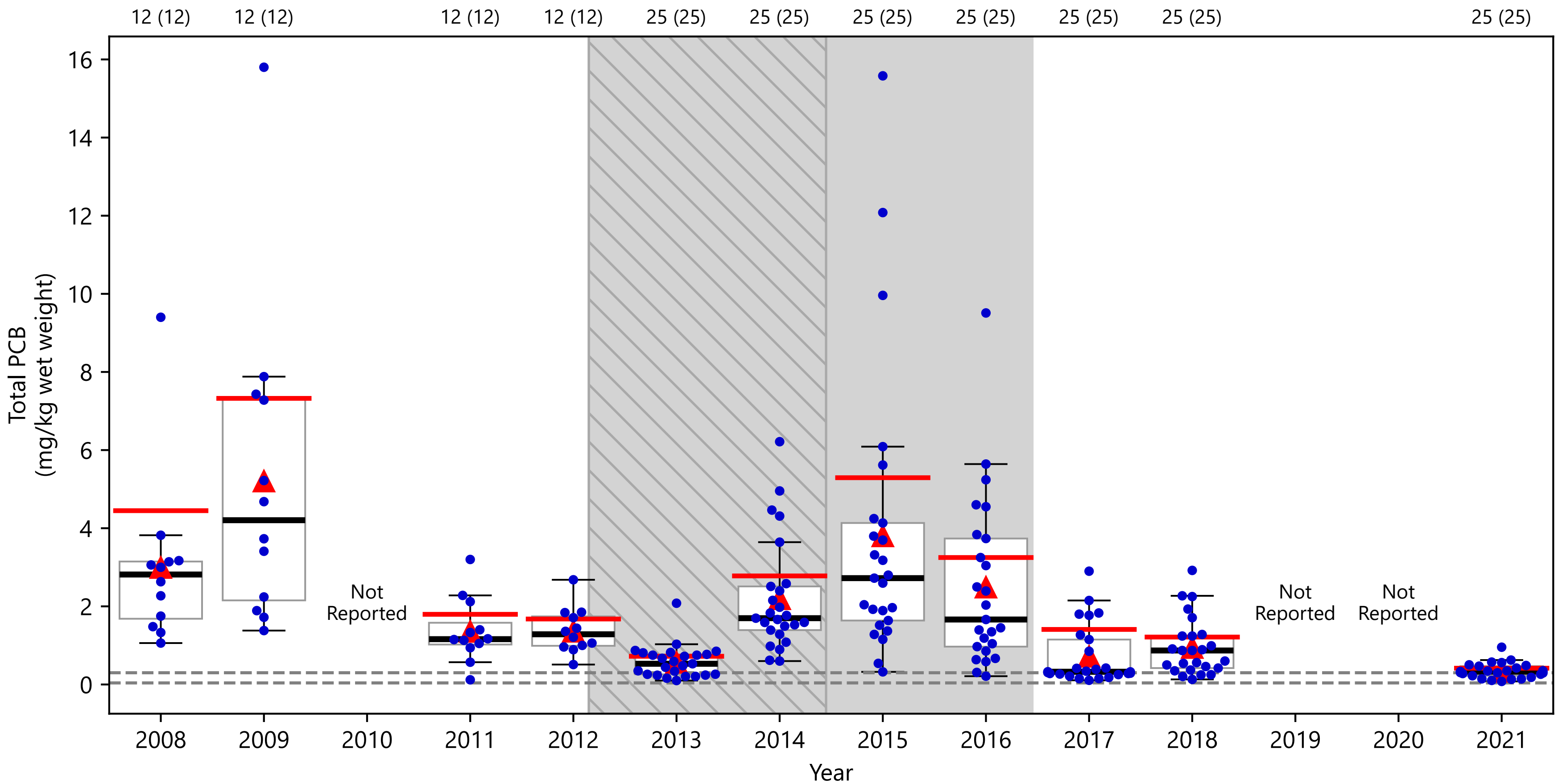
Figure 3.12
Mercury Concentrations in Pumpkinseed (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
TPCB is the sum of detected Aroclors. If all Aroclors are non-detect, the result value is set to 1/2 the maximum RL for all Aroclors.

Human Health Target (0.04 to 0.3 mg/kg)
Dredging
Capping
Non-detect
Detect

Figure 3.13
Total PCB Concentrations in Smallmouth Bass (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
TPCB is the sum of detected Aroclors. If all Aroclors are non-detect, the result value is set to 1/2 the maximum RL for all Aroclors.

Human Health Target (0.04 to 0.3 mg/kg)
Dredging
Capping
Non-detect
Detect

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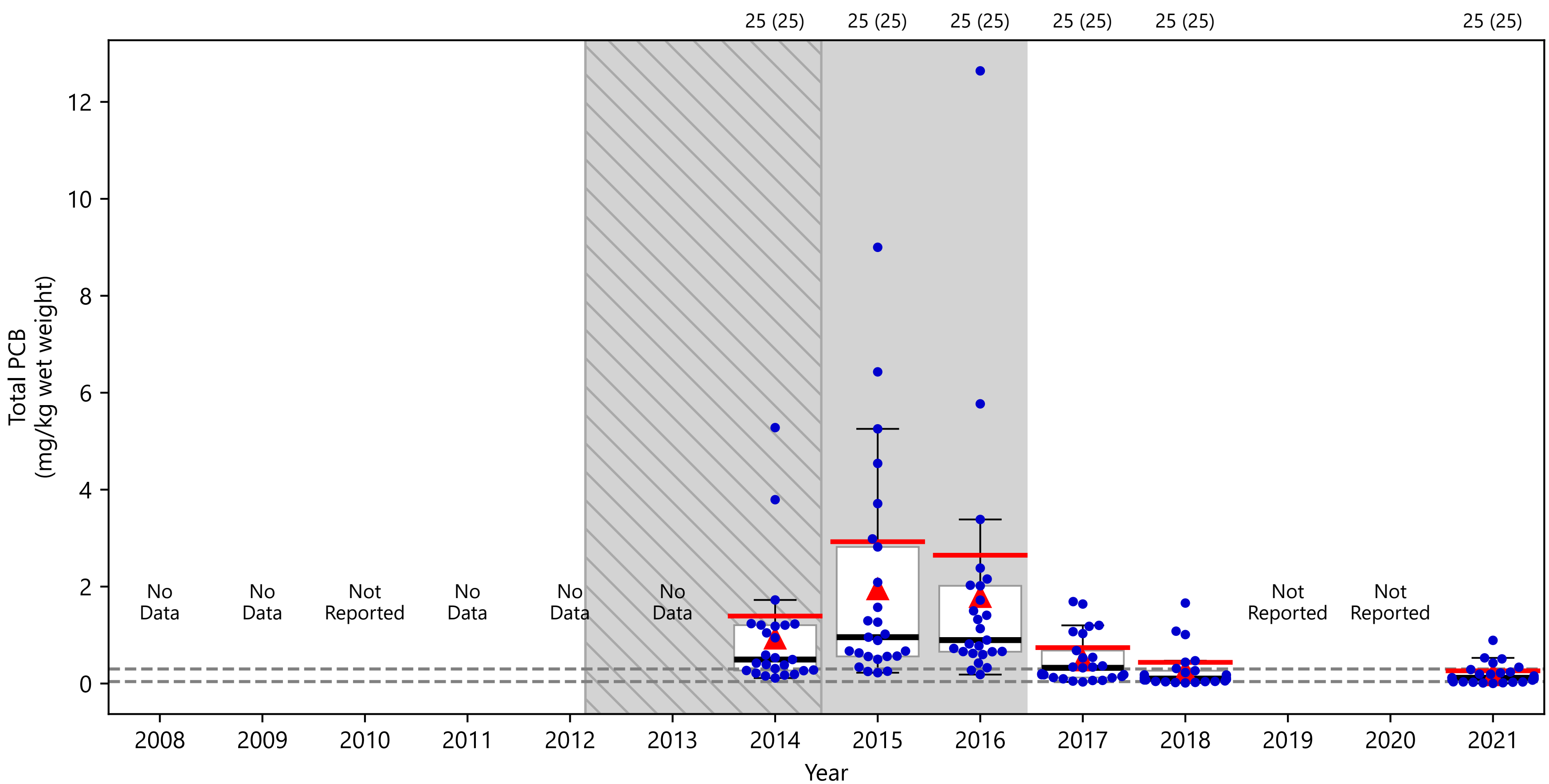
Figure 3.14
Total PCB Concentrations in Walleye (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
TPCB is the sum of detected Aroclors. If all Aroclors are non-detect, the result value is set to 1/2 the maximum RL for all Aroclors.

Human Health Target (0.04 to 0.3 mg/kg)
Dredging
Capping
Non-detect
Detect

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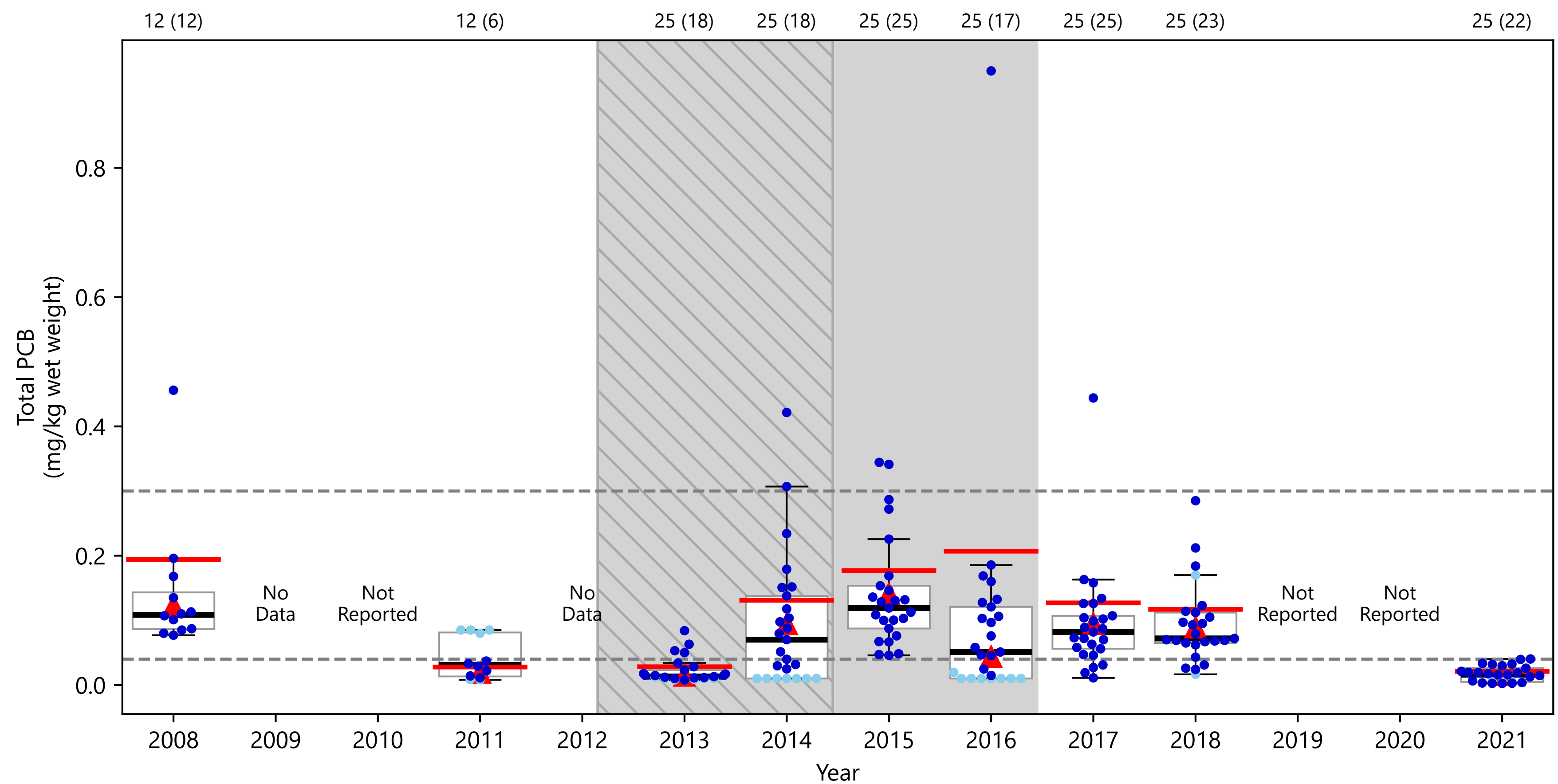
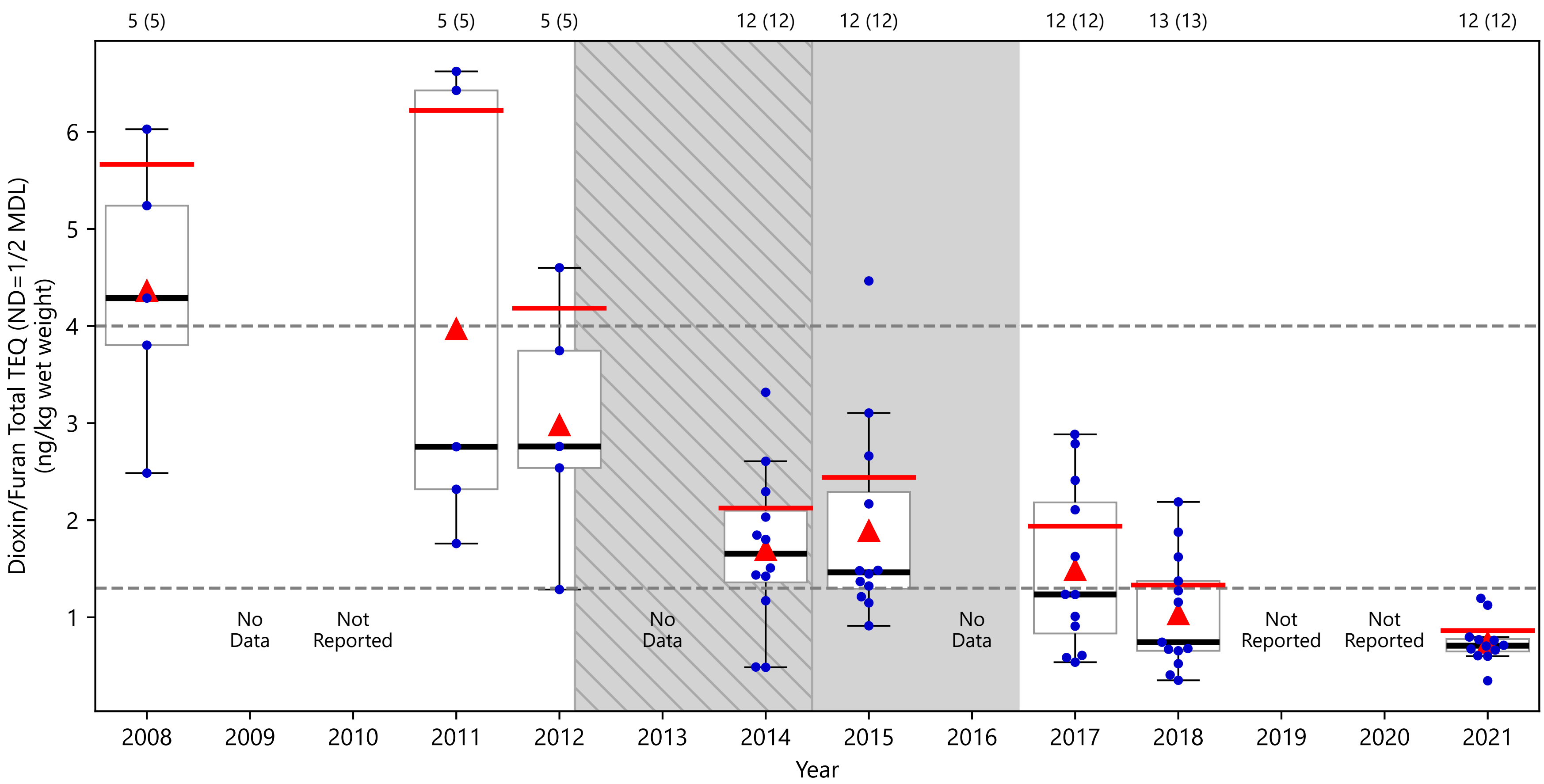
Figure 3.15
Total PCB Concentrations in Common Carp (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
TPCB is the sum of detected Aroclors. If all Aroclors are non-detect, the result value is set to 1/2 the maximum RL for all Aroclors.

ANCHOR QEA

Figure 3.16
Total PCB Concentrations in Pumpkinseed (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are set to 1/2 MDL in TEQ calculation.

Human Health Target (1.3 to 4.0 ng/kg)
Dredging
Capping
Non-detect
Detect

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Figure 3.17
Dioxin/Furan Total TEQ (ND = 0.5 MDL) Concentrations in Smallmouth Bass (2008 - 2021)

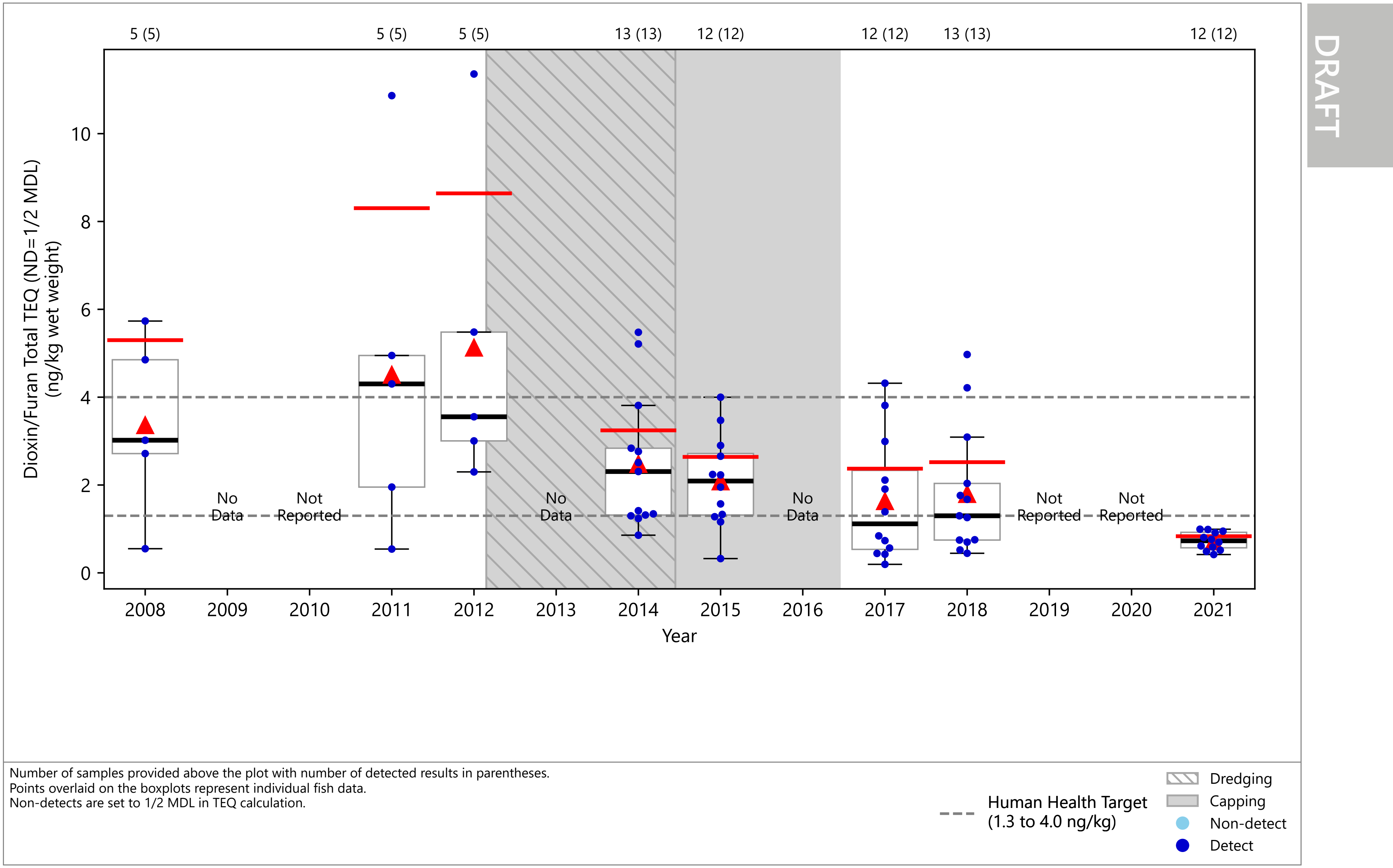

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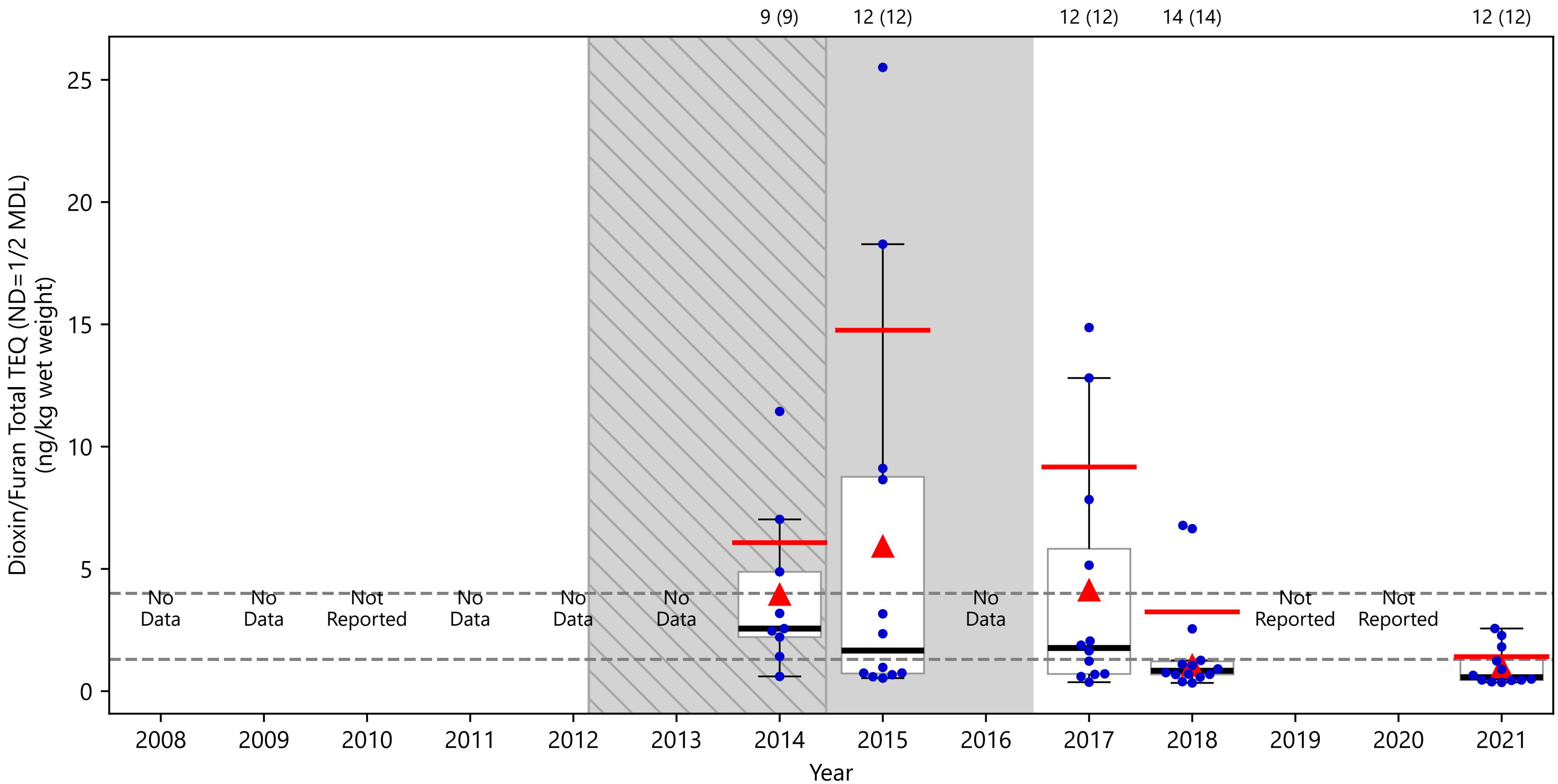
Figure 3.18
Dioxin/Furan Total TEQ (ND = 0.5 MDL) Concentrations in Walleye (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are set to 1/2 MDL in TEQ calculation.

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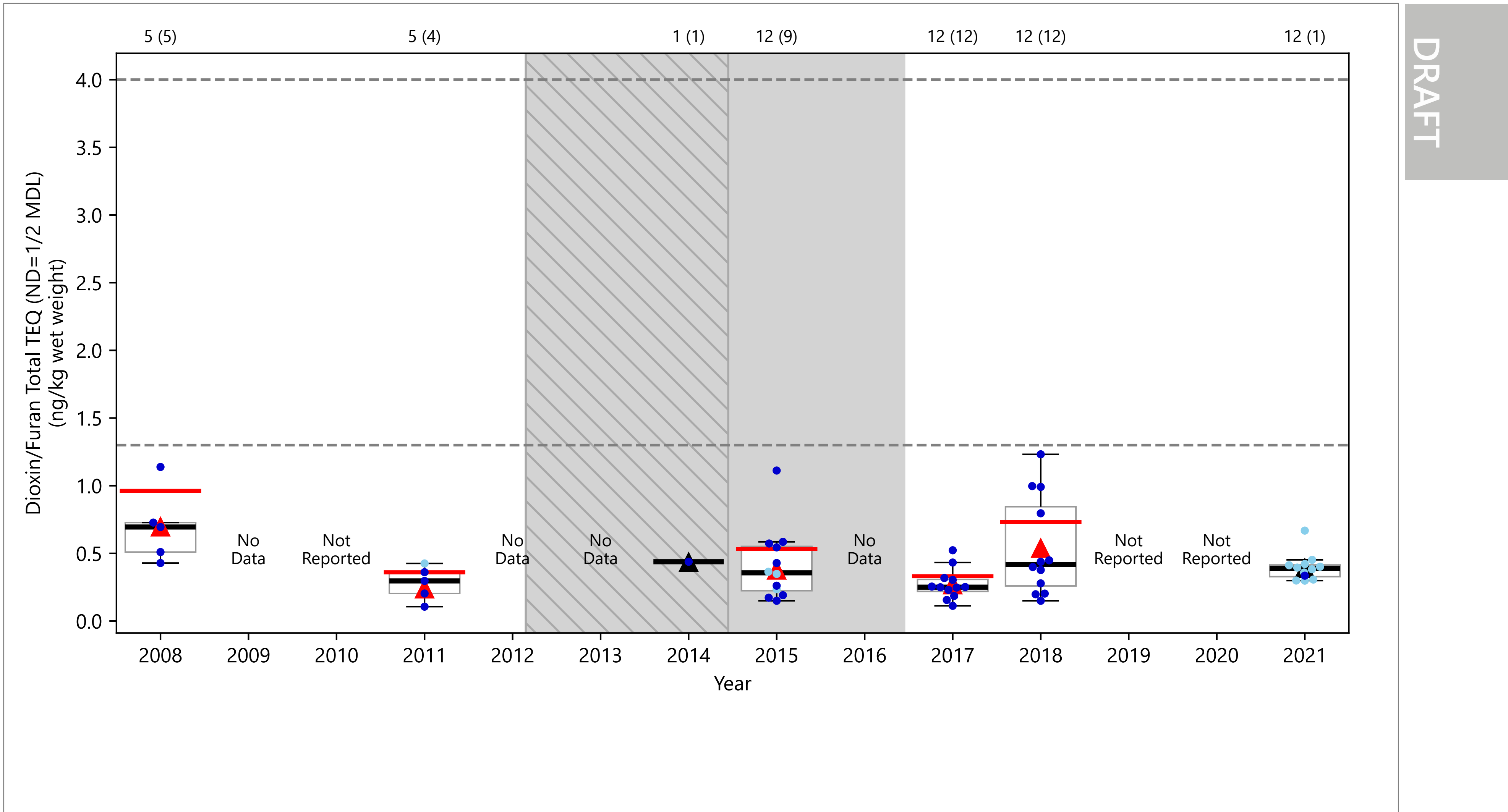
Figure 3.19
Dioxin/Furan Total TEQ (ND = 0.5 MDL) Concentrations in Common Carp (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are set to 1/2 MDL in TEQ calculation.

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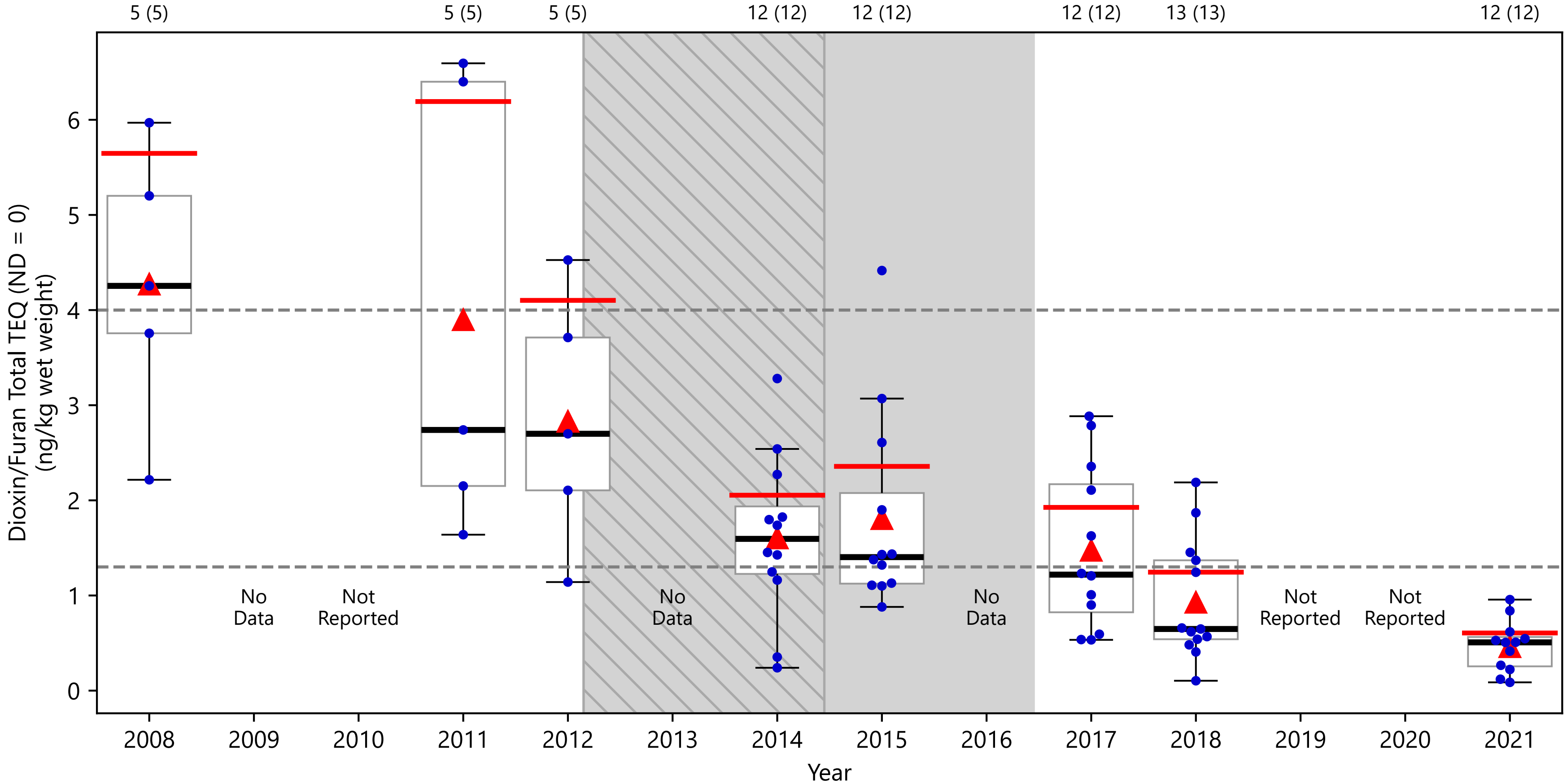
Figure 3.20
Dioxin/Furan Total TEQ (ND = 0.5 MDL) Concentrations in Pumpkinseed (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are set to 0 in TEQ calculation.

Human Health Target (1.3 to 4.0 ng/kg)

Dredging
Capping
Non-detect
Detect

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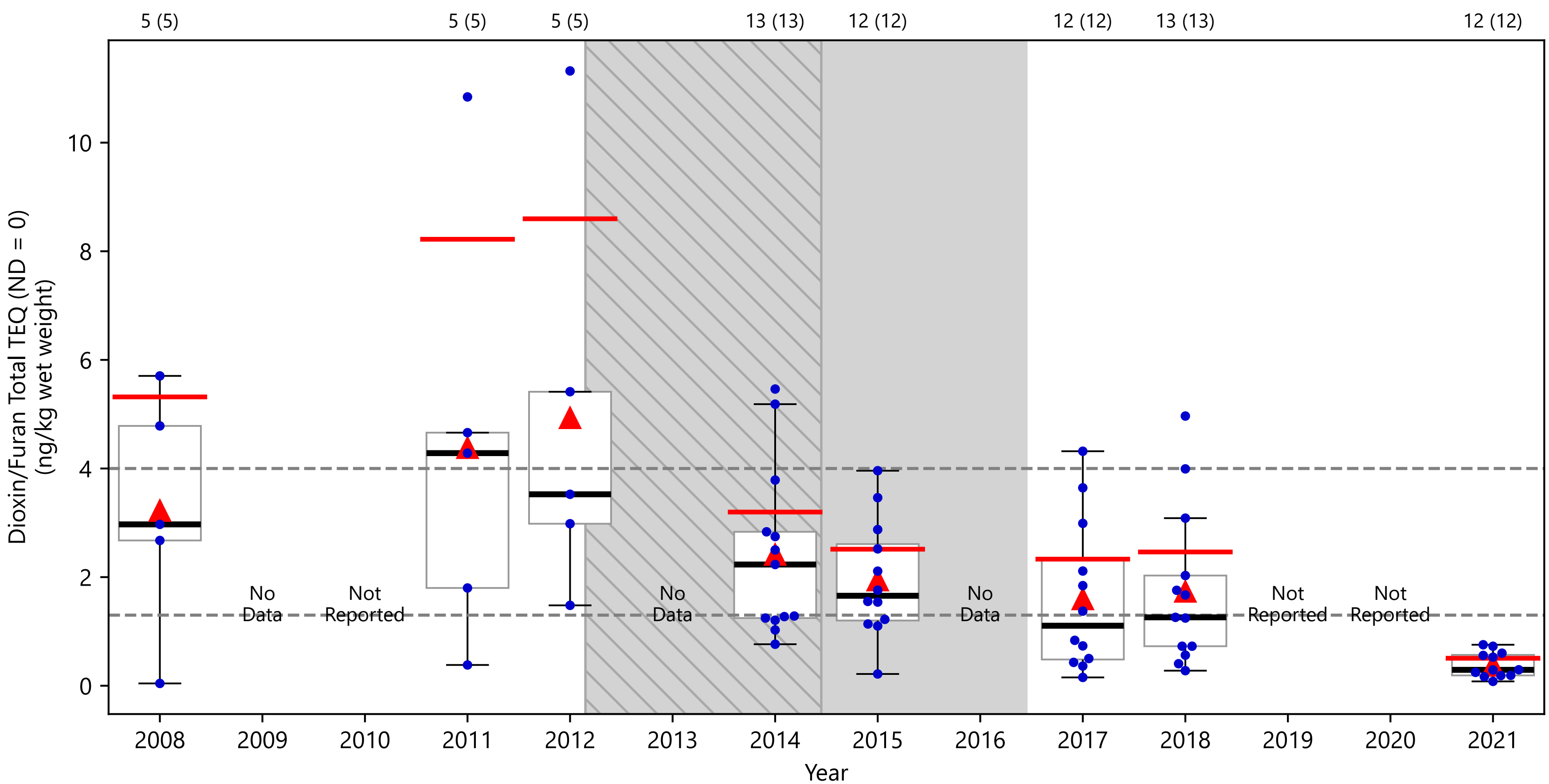
Figure 3.21
Dioxin/Furan Total TEQ (ND = 0) Concentrations in Smallmouth Bass (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are set to 0 in TEQ calculation.

Human Health Target (1.3 to 4.0 ng/kg)
Dredging
Capping
Non-detect
Detect

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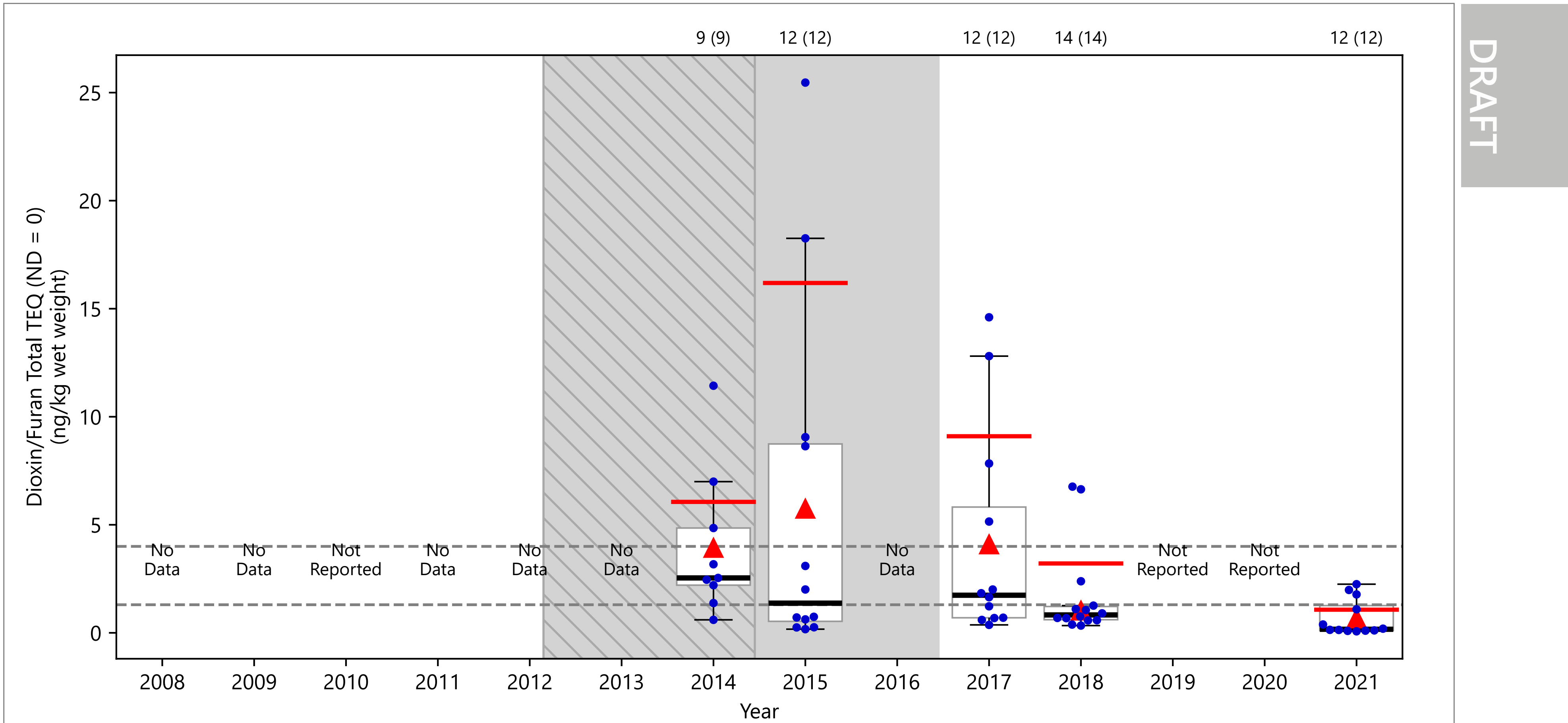
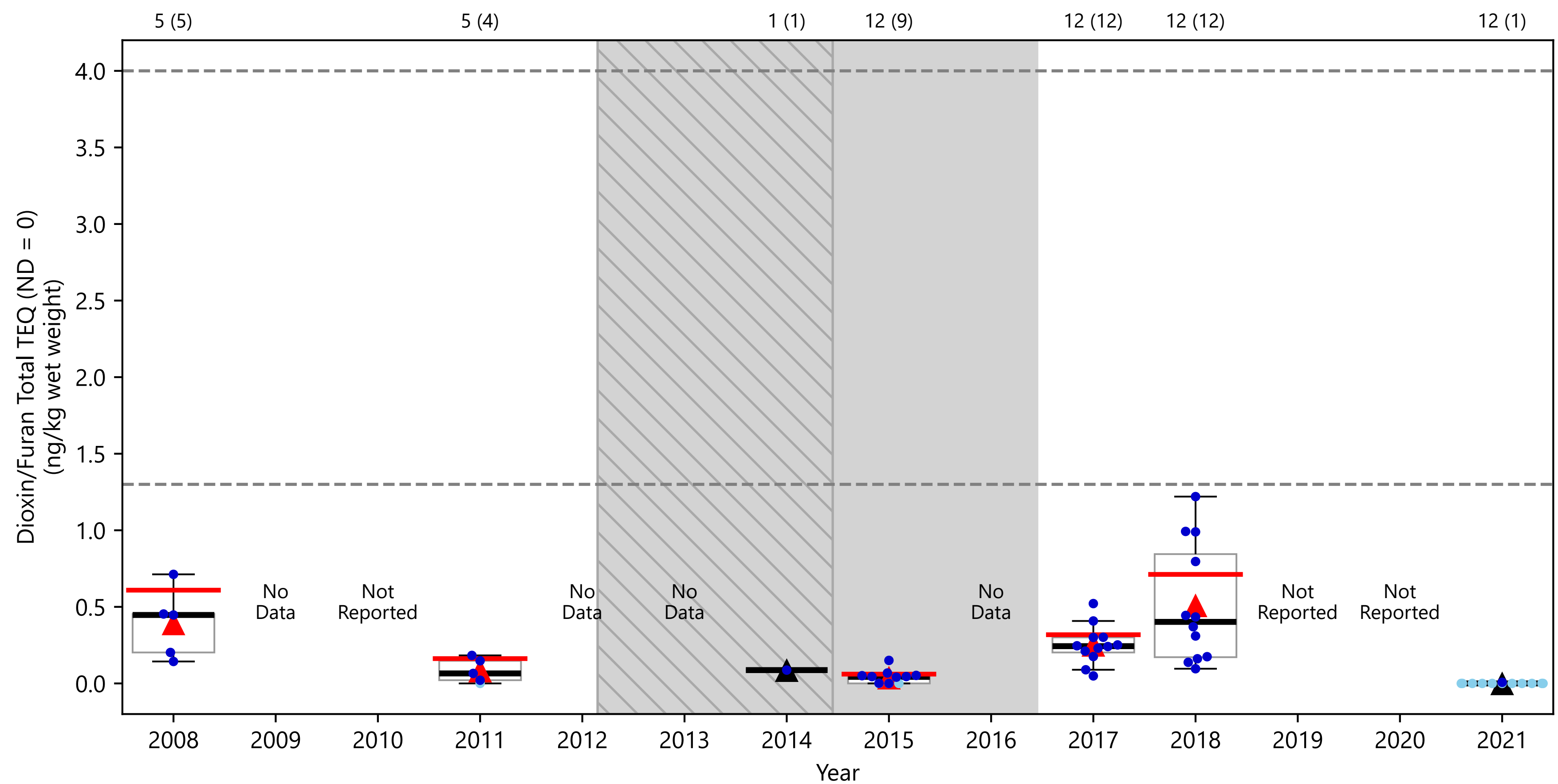
Figure 3.22
Dioxin/Furan Total TEQ (ND = 0) Concentrations in Walleye (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are set to 0 in TEQ calculation.

Figure 3.23
Dioxin/Furan Total TEQ (ND = 0) Concentrations in Common Carp (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are set to 0 in TEQ calculation.

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Figure 3.24
Dioxin/Furan Total TEQ (ND = 0) Concentrations in Pumpkinseed (2008 - 2021)

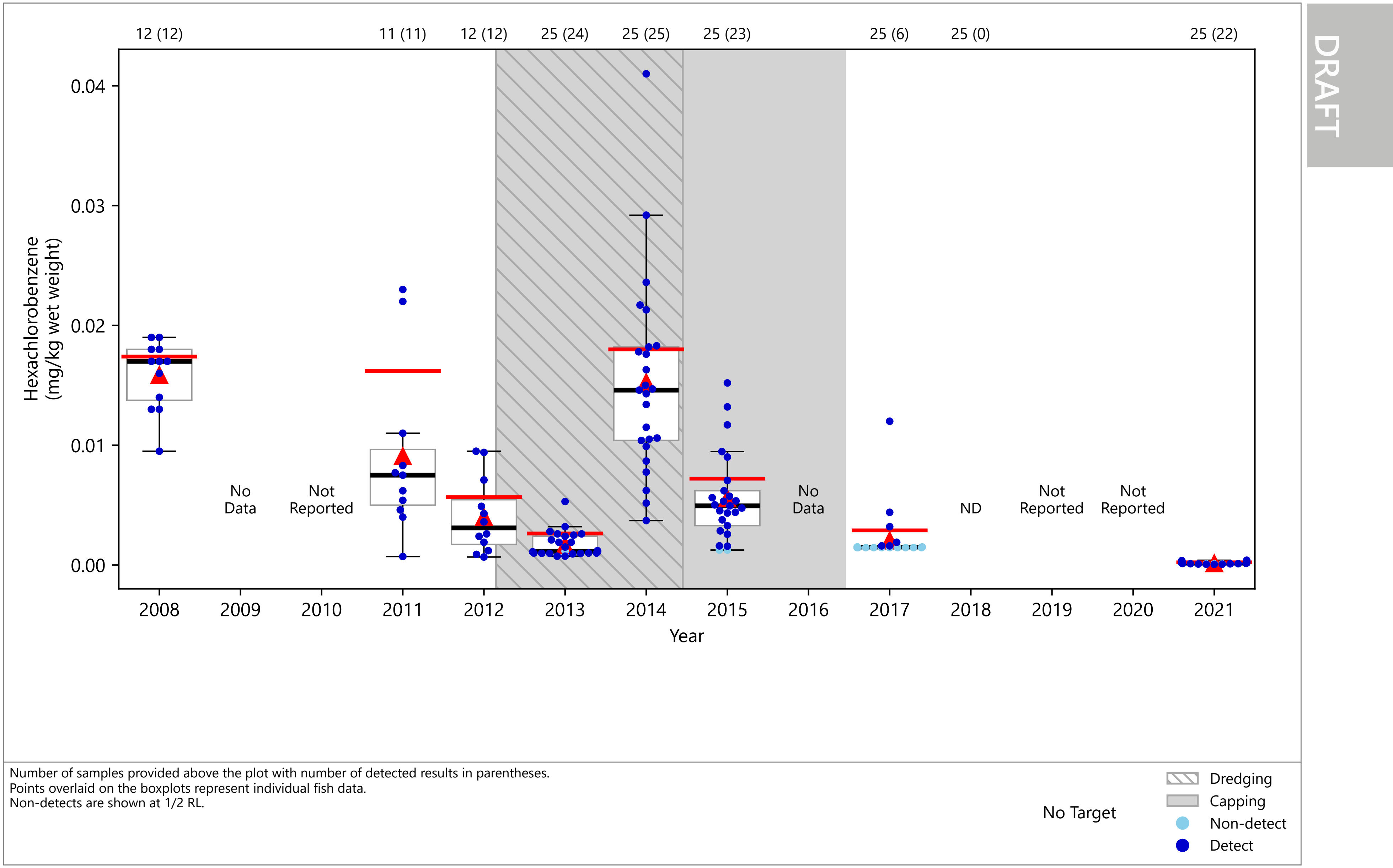

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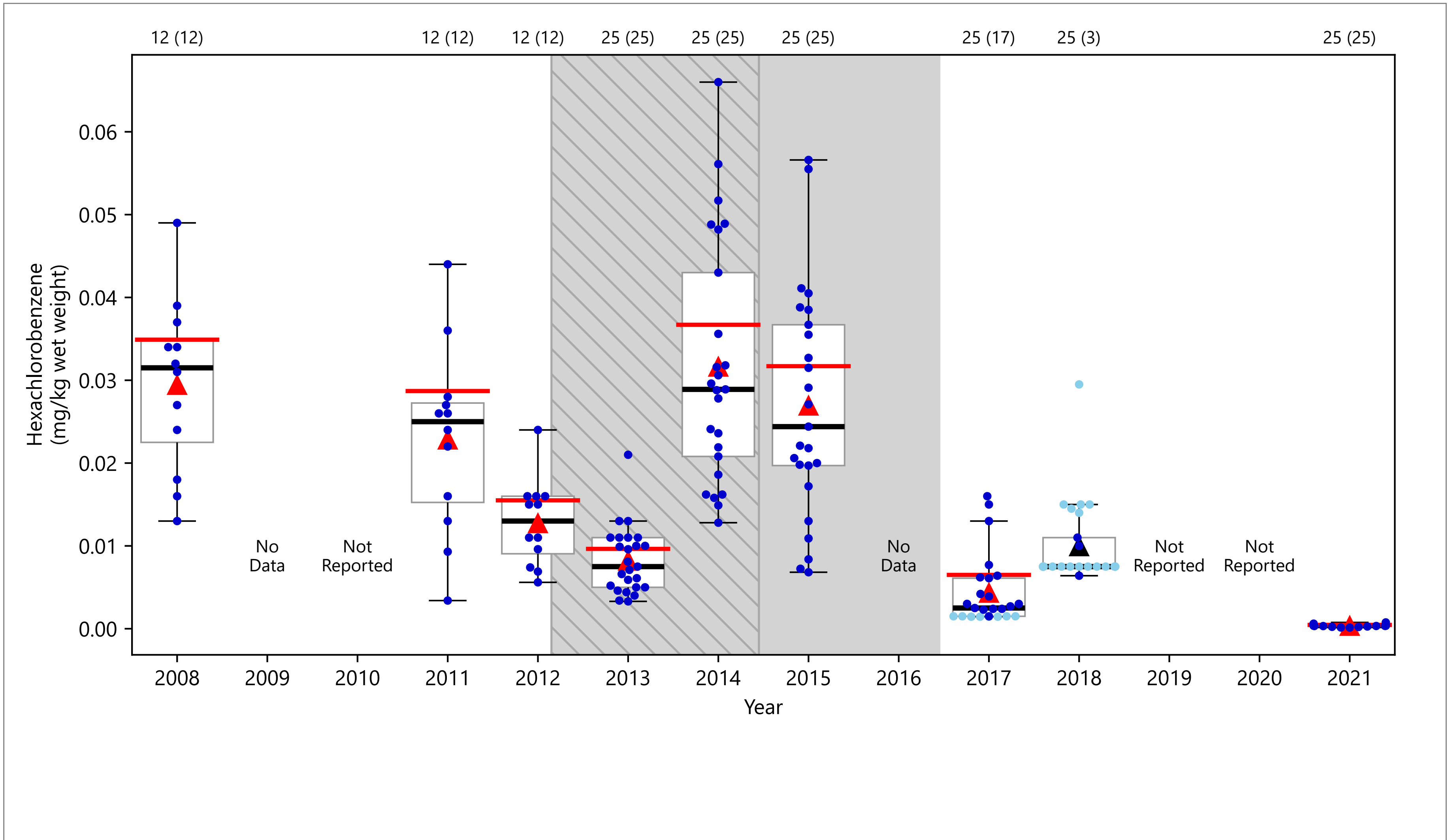
Figure 3.25
Hexachlorobenzene Concentrations in Smallmouth Bass (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are shown at 1/2 RL.

No Target

Dredging
Capping
Non-detect
Detect

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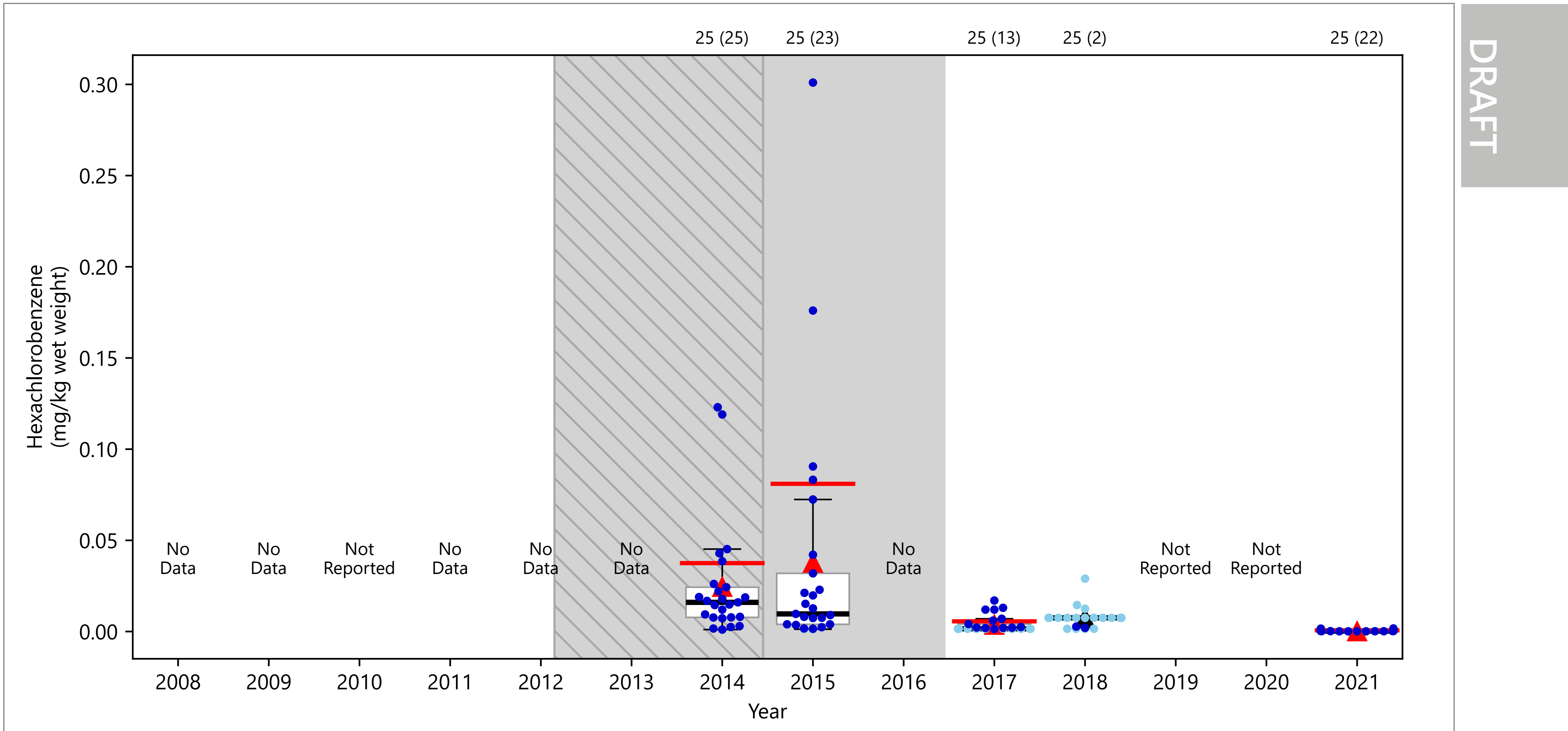
ANCHOR QEA

Figure 3.26
Hexachlorobenzene Concentrations in Walleye (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are shown at 1/2 RL.

No Target

Dredging
Capping
Non-detect
Detect

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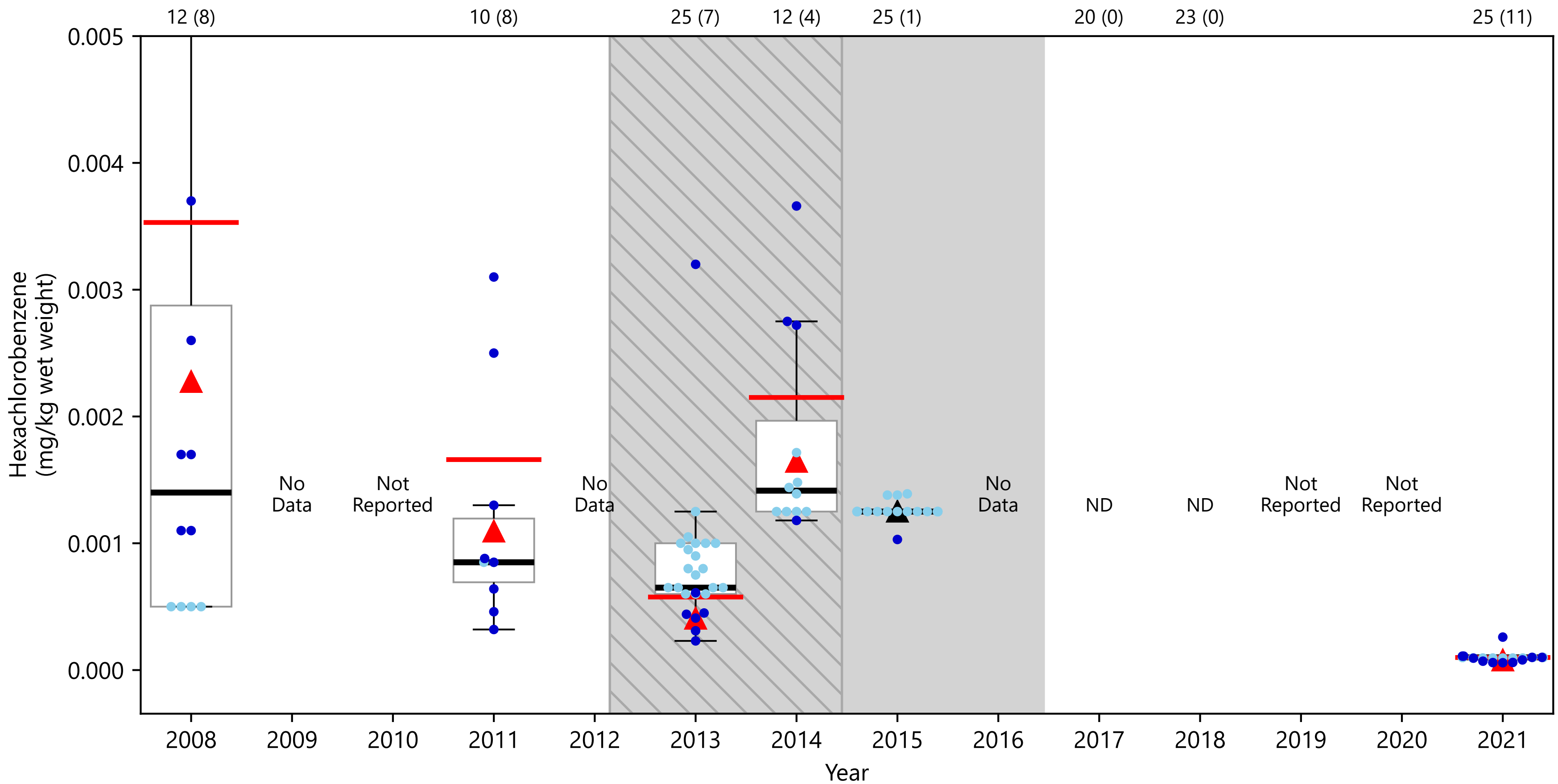
Figure 3.27
Hexachlorobenzene Concentrations in Common Carp (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are shown at 1/2 RL.

No Target

Dredging
Capping
Non-detect
Detect

DRAFT

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\\wcl-fs1\syracuse\Projects\Honeywell\Onondaga_Lake_OLMMS_(E60287)\ANALYSIS\FISH\2021_OMM\Python\temporal_box_and_scatter_whole_fillet_preyfish.py

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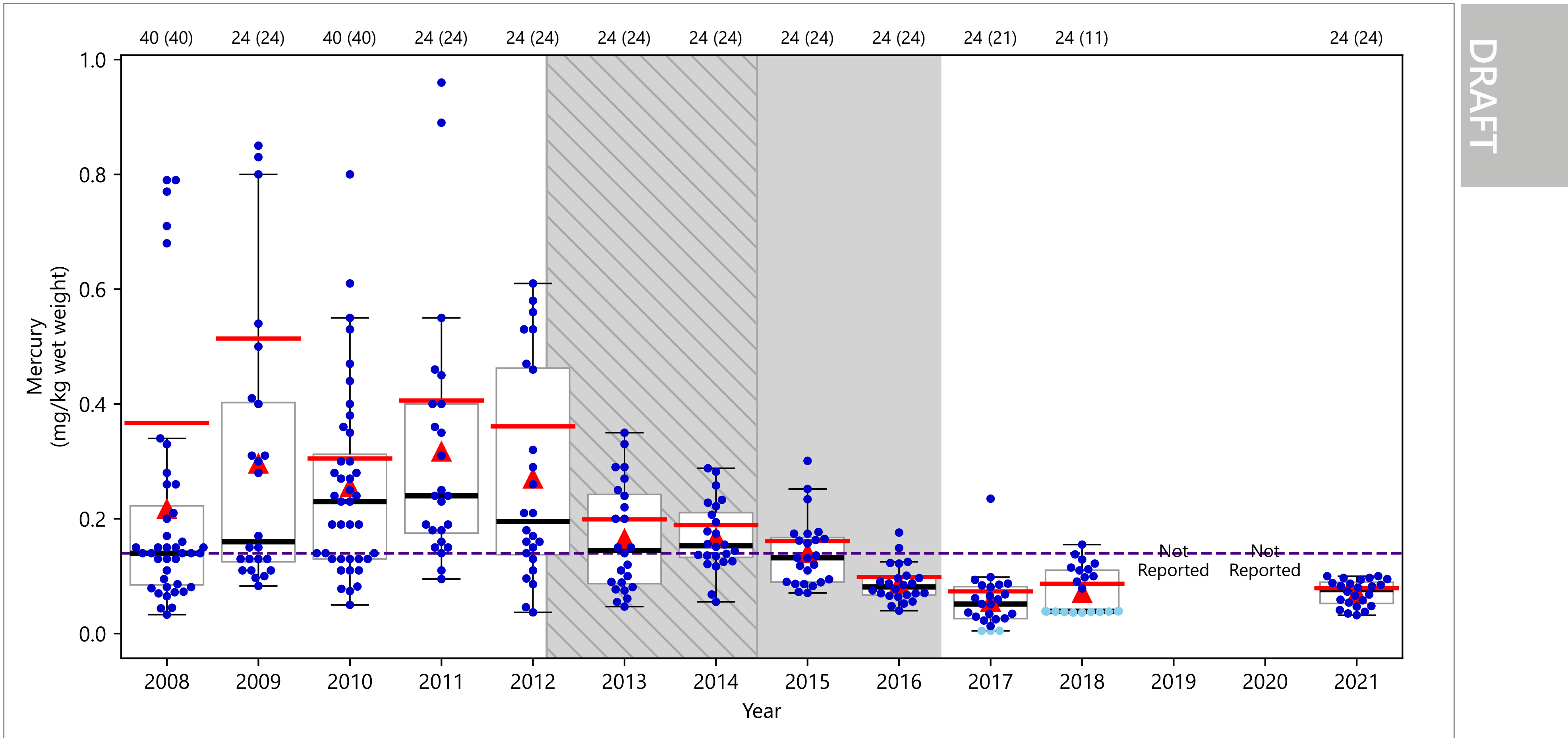
Figure 3.28
Hexachlorobenzene Concentrations in Pumpkinseed (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are shown at 1/2 MDL.

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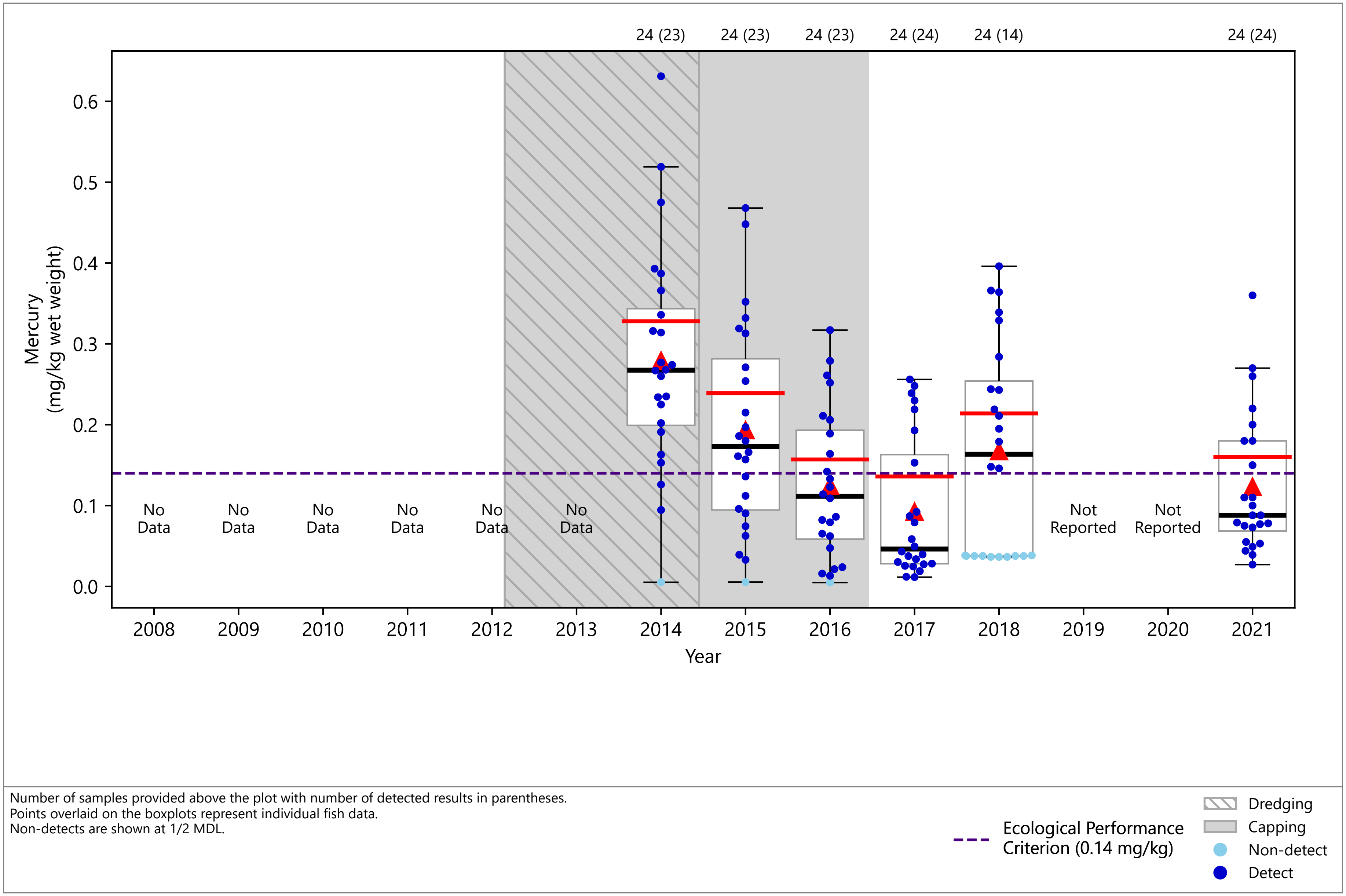
Figure 3.29
Mercury Concentrations in Small Prey Fish (2008 - 2021)



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\\wcl-fs1\syracuse\Projects\Honeywell\Onondaga_Lake_OLMMS_(E60287)\ANALYSIS\FISH\2021_OMM\Python\temporal_box_and_scatter_whole_fillet_preyfish.py

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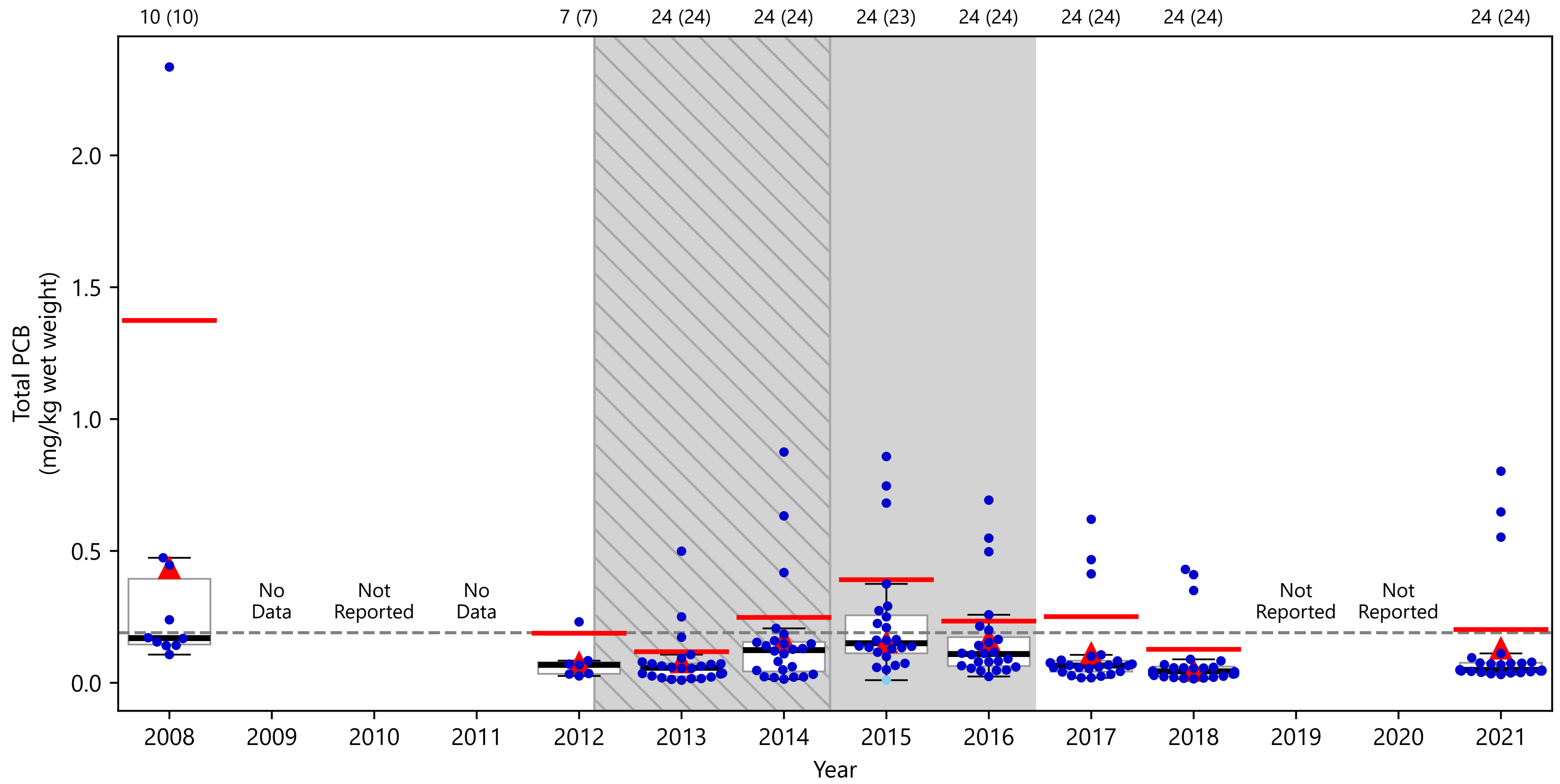
Figure 3.30
Mercury Concentrations in Large Prey Fish (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
TPCB is the sum of detected Aroclors. If all Aroclors are non-detect, the result value is set to 1/2 the maximum RL for all Aroclors.

Ecological Target (0.19 mg/kg)
Dredging
Capping
Non-detect
Detect

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Figure 3.31
Total PCB Concentrations in Small Prey Fish (2008 - 2021)

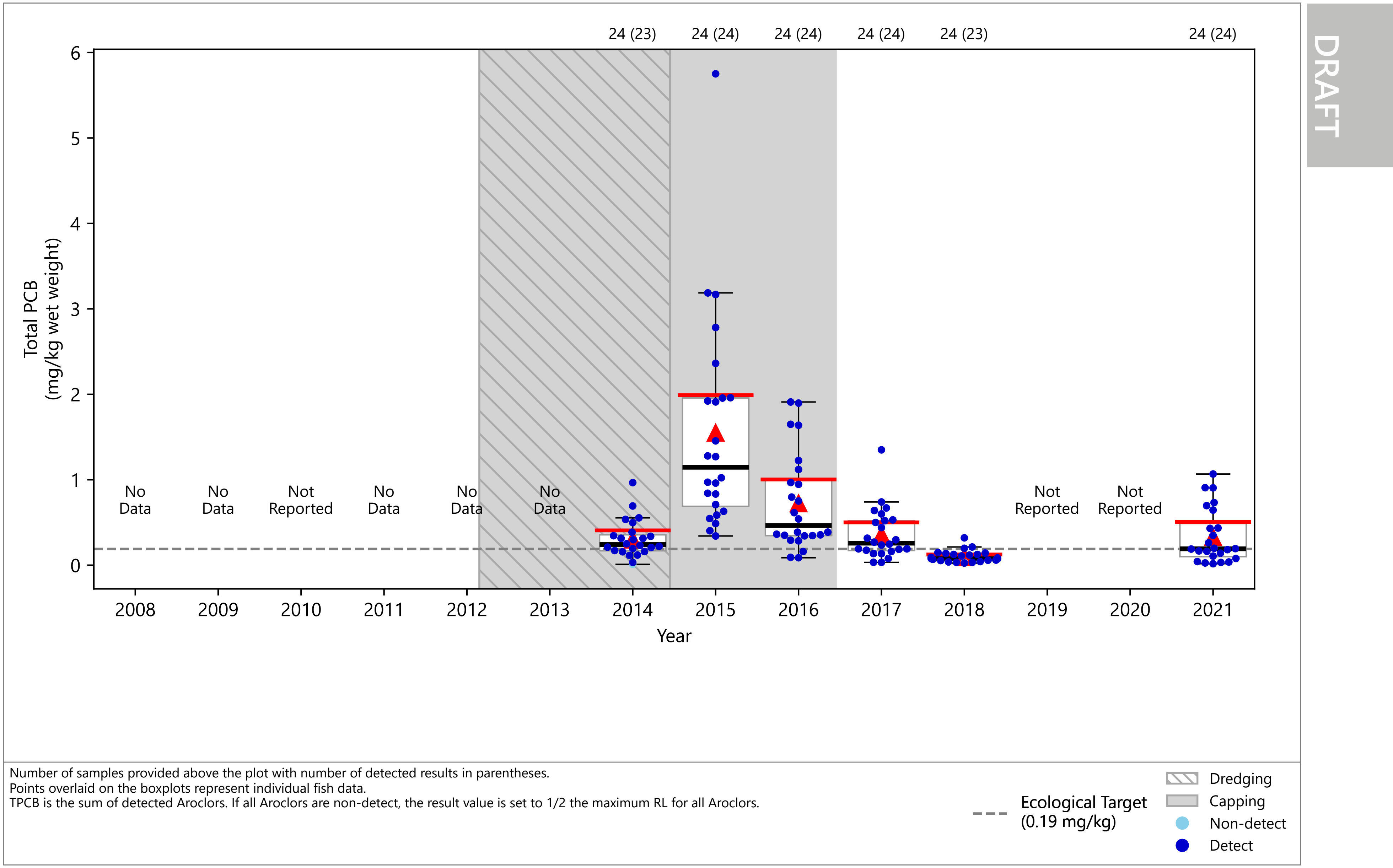

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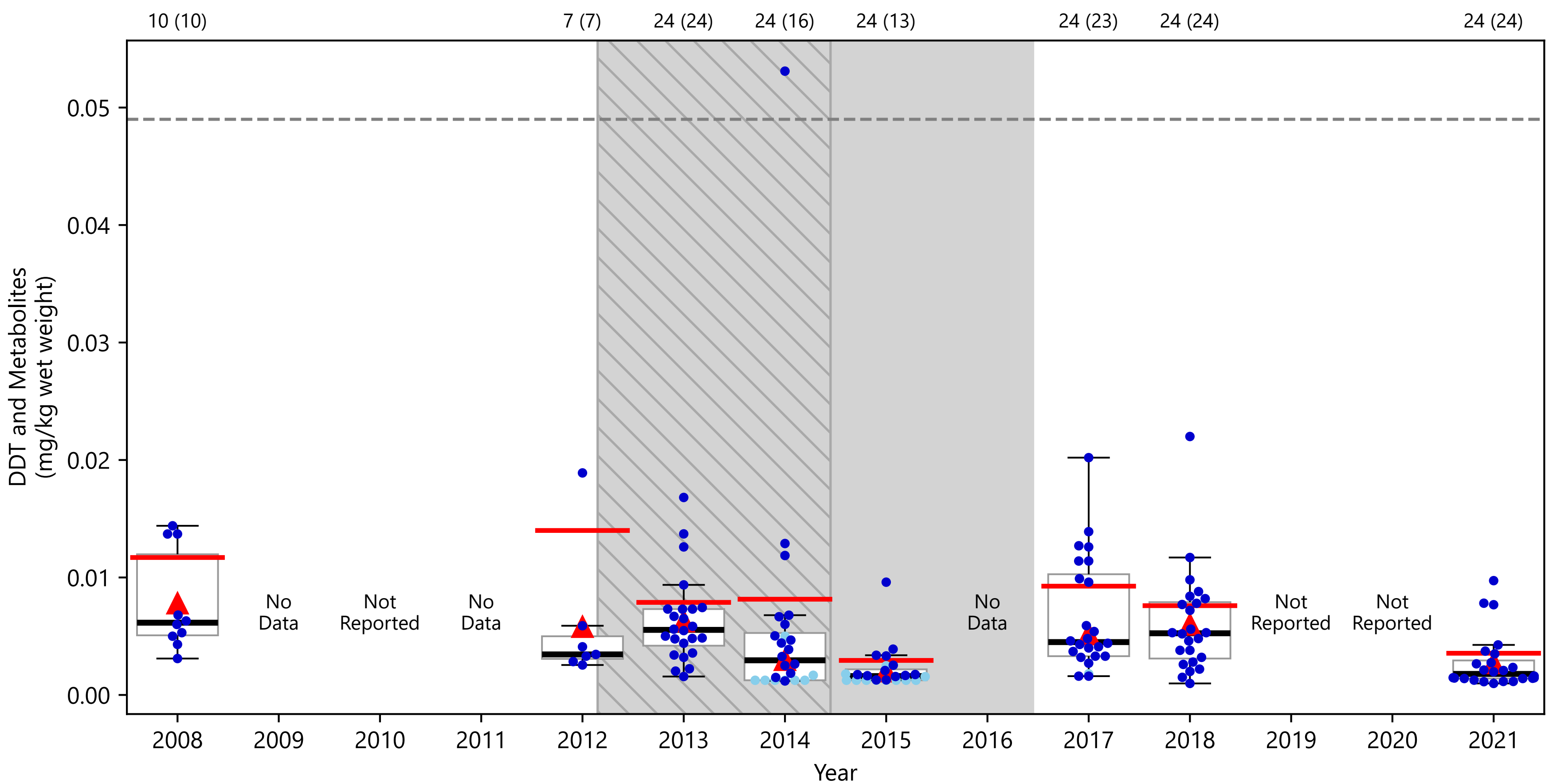
Figure 3.32
Total PCB Concentrations in Large Prey Fish (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are shown at 1/2 RL.

Ecological Target (0.049 mg/kg)
Dredging
Capping
Non-detect
Detect

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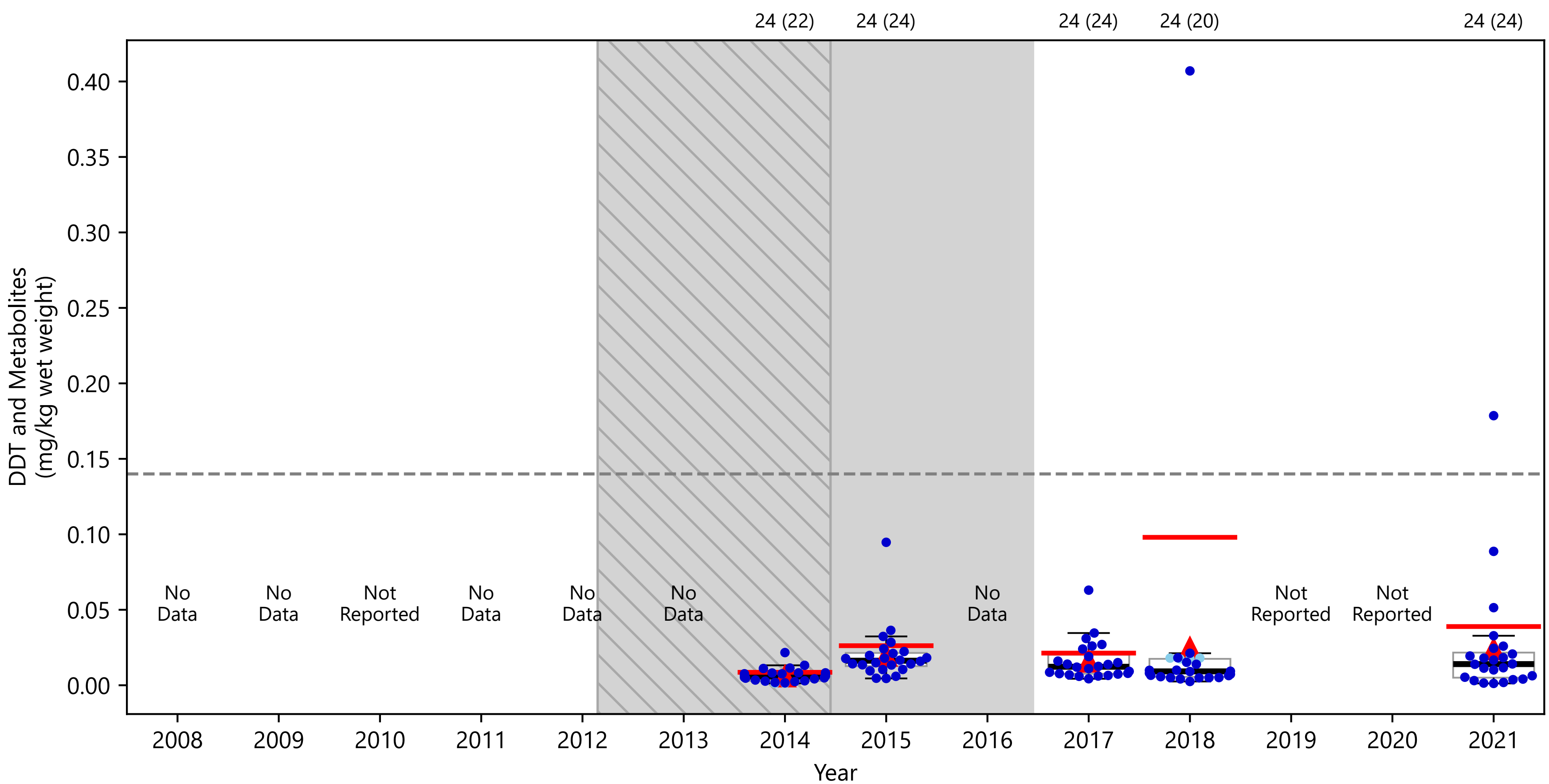
Figure 3.33
DDT and Metabolites Concentrations in Small Prey Fish (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are shown at 1/2 RL.

Ecological Target (0.14 mg/kg)
Dredging
Capping
Non-detect
Detect

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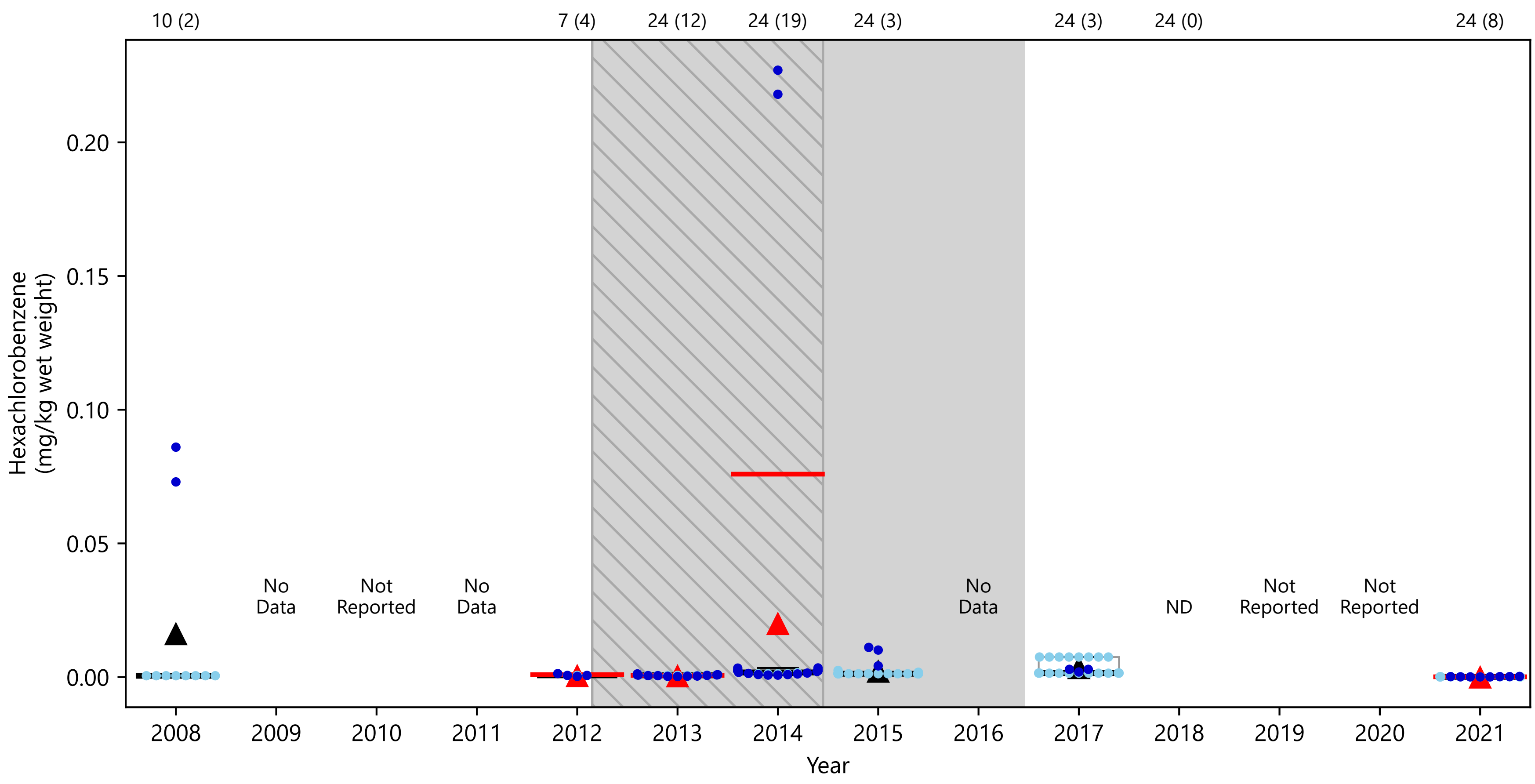
ANCHOR QEA

Figure 3.34
DDT and Metabolites Concentrations in Large Prey Fish (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are shown at 1/2 RL.

No Target

Dredging
Capping
Non-detect
Detect

DRAFT

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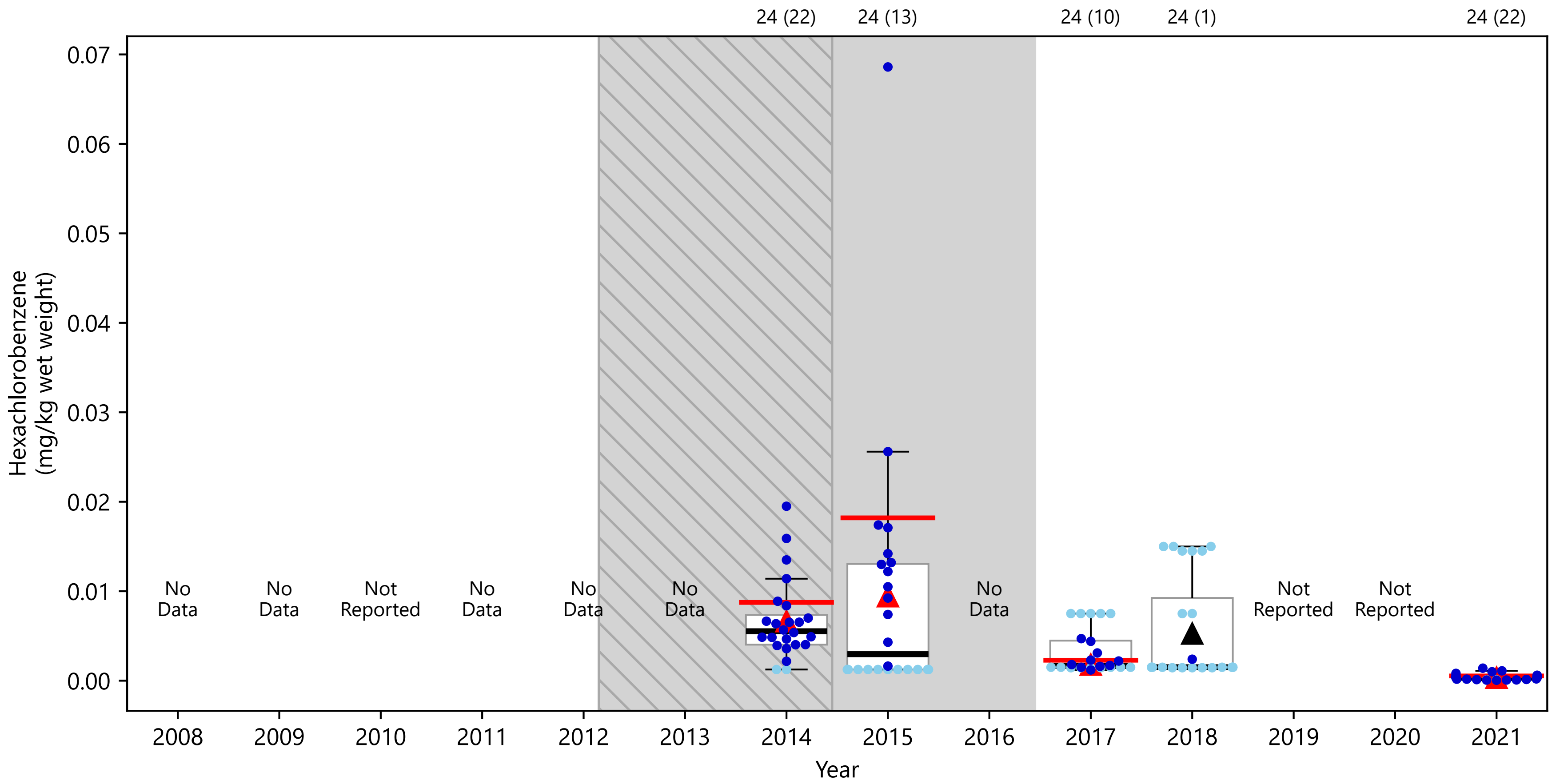
\\wcl-fs1\syracuse\Projects\Honeywell\Onondaga_Lake_OLMMS_(E60287)\ANALYSIS\FISH\2021_OMM\Python\temporal_box_and_scatter_whole_fillet_preyfish.py

ANCHOR QEA

Figure 3.35
Hexachlorobenzene Concentrations in Small Prey Fish (2008 - 2021)



Number of samples provided above the plot with number of detected results in parentheses.
Points overlaid on the boxplots represent individual fish data.
Non-detects are shown at 1/2 RL.

No Target

Dredging
Capping
Non-detect
Detect

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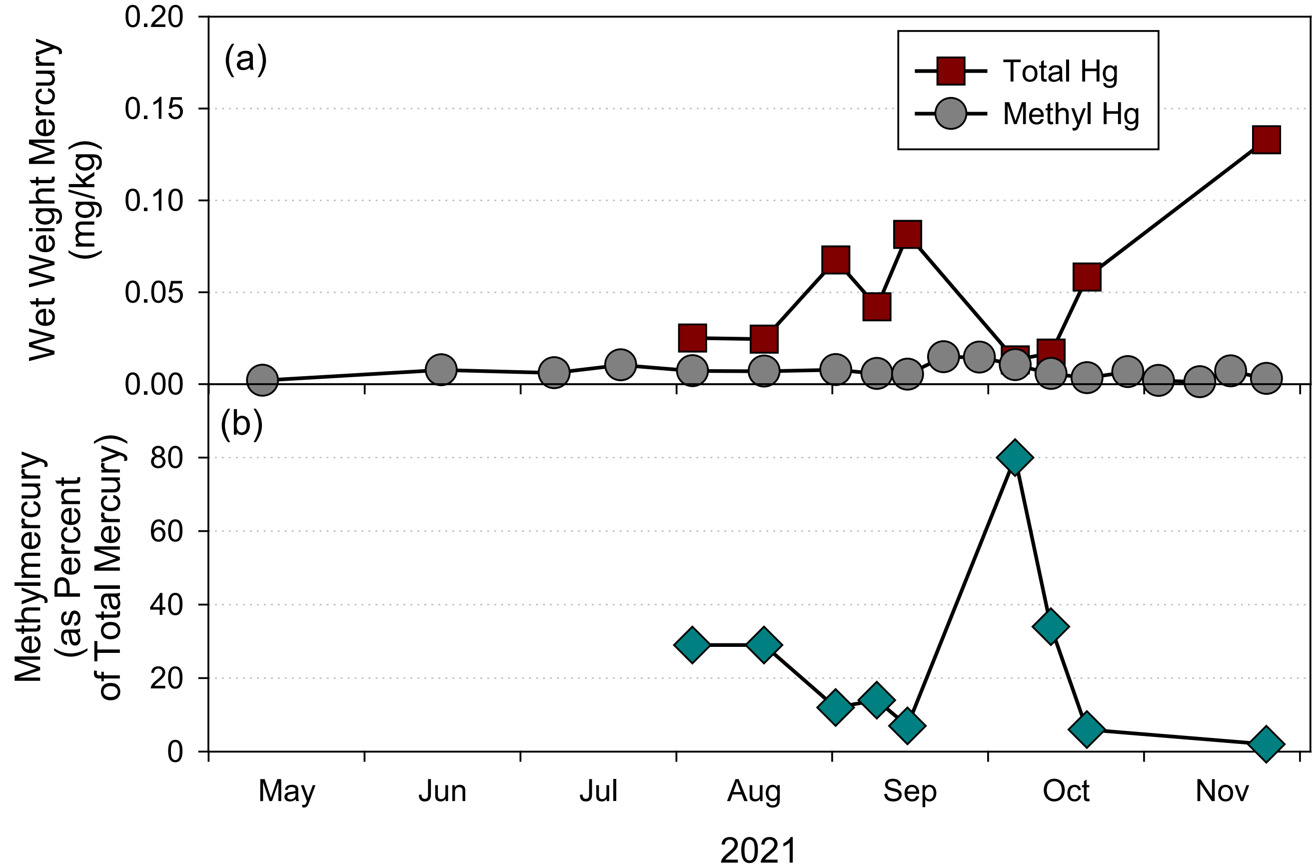
Figure 3.36
Hexachlorobenzene Concentrations in Large Prey Fish (2008 - 2021)



(a) Total Mercury (Hg) and Methylmercury (MeHg)
(b) Percentage Total Mercury Measured as Methylmercury

FIGURE 3.37

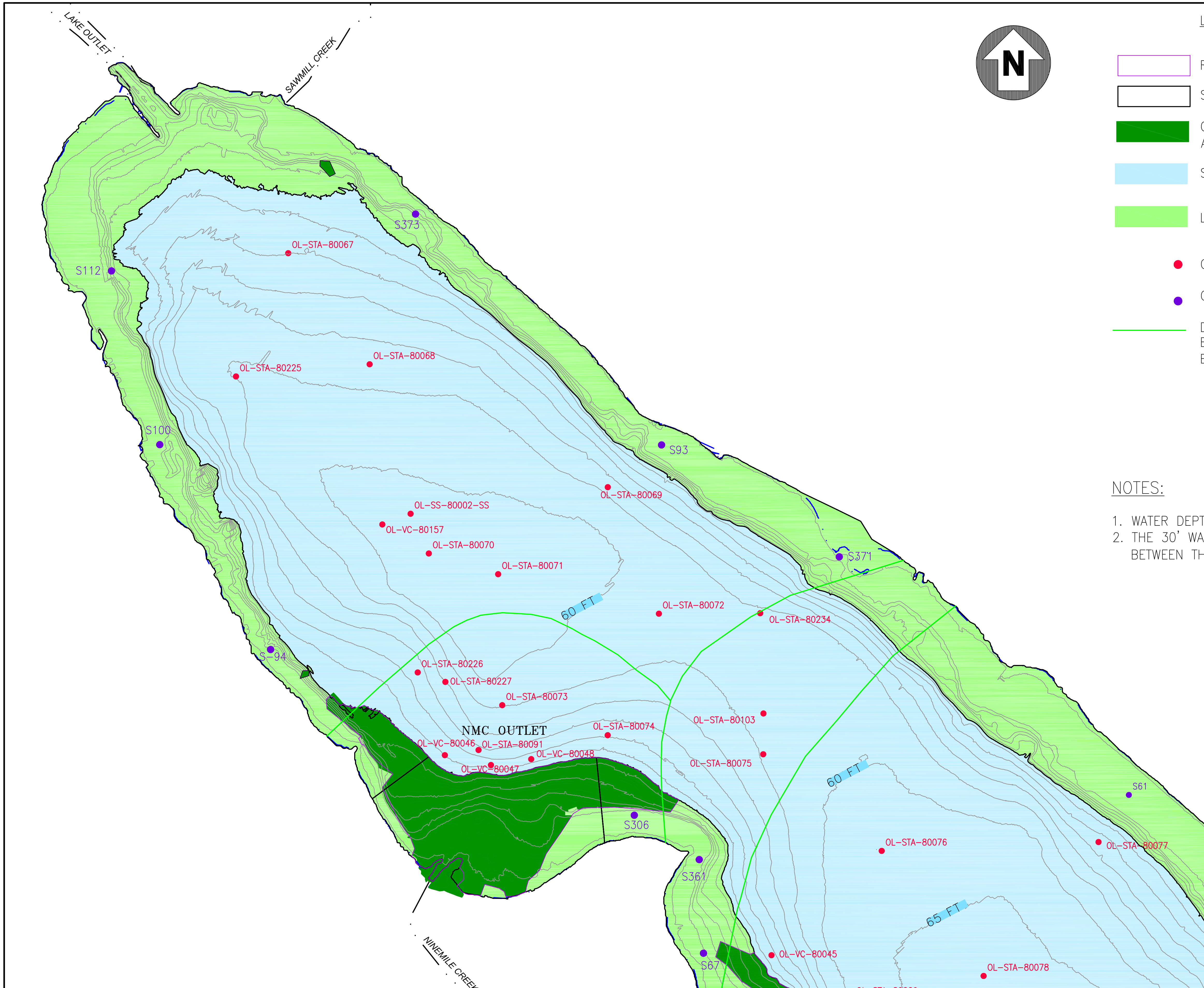
Honeywell

Onondaga Lake
Syracuse, New York

Wet Weight Mercury Concentrations in Zooplankton Collected from South Deep in 2021

PARSONS

301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 PHONE: (315) 451-9560



LEGEND:

- REMEDIATION AREA BOUNDARY
- SMU BOUNDARIES
- CAPPED AREAS (INCLUDES ALL ISOLATION, THIN LAYER, AND MODIFIED PROTECTIVE CAPS)
- SMU 8
- LITTORAL ZONE
- COMPLIANCE VERIFICATION SAMPLE LOCATIONS (SMU 8)
- COMPLAINCE VERIFICATION SAMPLE LOCATIONS (LITTORAL)
- DEMARCATION FOR BSQV SUBAREAS (DELINEATION IS BASED ON FINAL THIESSEN POLYGONS FOR BSQV EVALUATION)

NOTES:

1. WATER DEPTH CONTOUR INTERVAL IS 5 FT.
2. THE 30' WATER DEPTH CONTOUR IS THE BOUNDARY BETWEEN THE LITTORAL ZONE (SMUs 1–7) AND SMU 8.

1200 600 0 1200 2400

SCALE: 1"=1200'

FIGURE 4.1A

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

COMPLIANCE VERIFICATION SEDIMENT SAMPLE LOCATIONS IN NORTH HALF OF ONONDAGA LAKE

PARSONS

301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450102 - 2016 OL REMEDIAL GOAL MONITORING\10 TECHNICAL CATEGORIES\CAD\2021\450102-MNR-004-2021.DWG
PLOT DATE: 1/9/2025 8:39 AM PLOTTED BY: RUSSO, JILL [US-US]

LEGEND:

REMEDIATION AREA BOUNDARY

SMU BOUNDARIES

CAPPED AREAS (INCLUDES ALL ISOLATION, THIN LAYER, AND MODIFIED PROTECTIVE CAPS)

SMU 8

LITTORAL ZONE

COMPLIANCE VERIFICATION SAMPLE LOCATIONS (SMU 8)

COMPLAINCE VERIFICATION SAMPLE LOCATIONS (LITTORAL)

DEMARCATION FOR BSQV SUBAREAS (DELINEATION IS BASED ON FINAL THIESSEN POLYGONS FOR BSQV EVALUATION)

SEDIMENT TRAP SAMPLE LOCATION

NOTES:

1. WATER DEPTH CONTOUR INTERVAL IS 5 FT.
2. THE 30' WATER DEPTH CONTOUR IS THE BOUNDARY BETWEEN THE LITTORAL ZONE (SMUs 1–7) AND SMU 8.
3. SAMPLE LOCATIONS USED IN THE FINAL DESIGN REPORT (PARSONS AND ANCHOR QEA, 2012) THAT ARE NOW WITHIN CAPPED AREAS WILL BE SAMPLED UNDER THE CAP MONITORING PROGRAM. SEE SECTION 6 OF THE OLMMP FOR FURTHER DETAILS.

1200 600 0 1200 2400

SCALE: 1"=1200'

FIGURE 4.1B

Honeywell — ONONDAGA LAKE, SYRACUSE, NEW YORK

COMPLIANCE VERIFICATION SEDIMENT SAMPLE LOCATIONS IN SOUTH HALF OF ONONDAGA LAKE

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450102 - 2016 OL REMEDIAL GOAL MONITORING\10 TECHNICAL CATEGORIES\CAD\2021\450102-MNR-004-2021.DWG
PLOT DATE: 1/9/2025 1:40 PM PLOTTED BY: RUSSO, JILL [US-US]

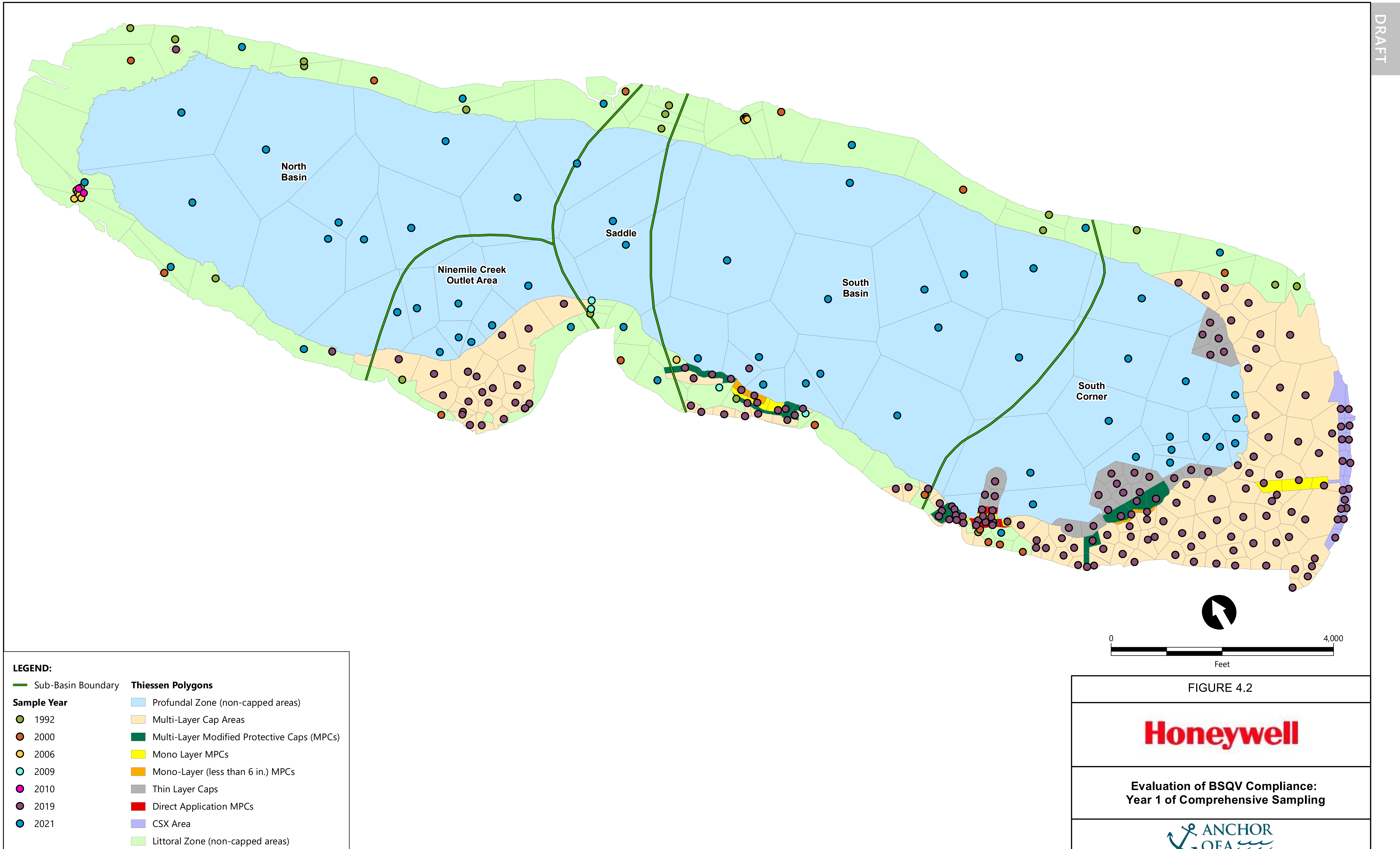


FIGURE 4.2

Honeywell

Evaluation of BSQV Compliance:
Year 1 of Comprehensive Sampling

ANCHOR QEA

Publish Date: 2023/03/14, 8:07 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\Honeywell_Intl_1102\OnondagaLake\Maps\SWAC\OL_Fig4.2_ThiessenAnalysis_SampleYear.mxd

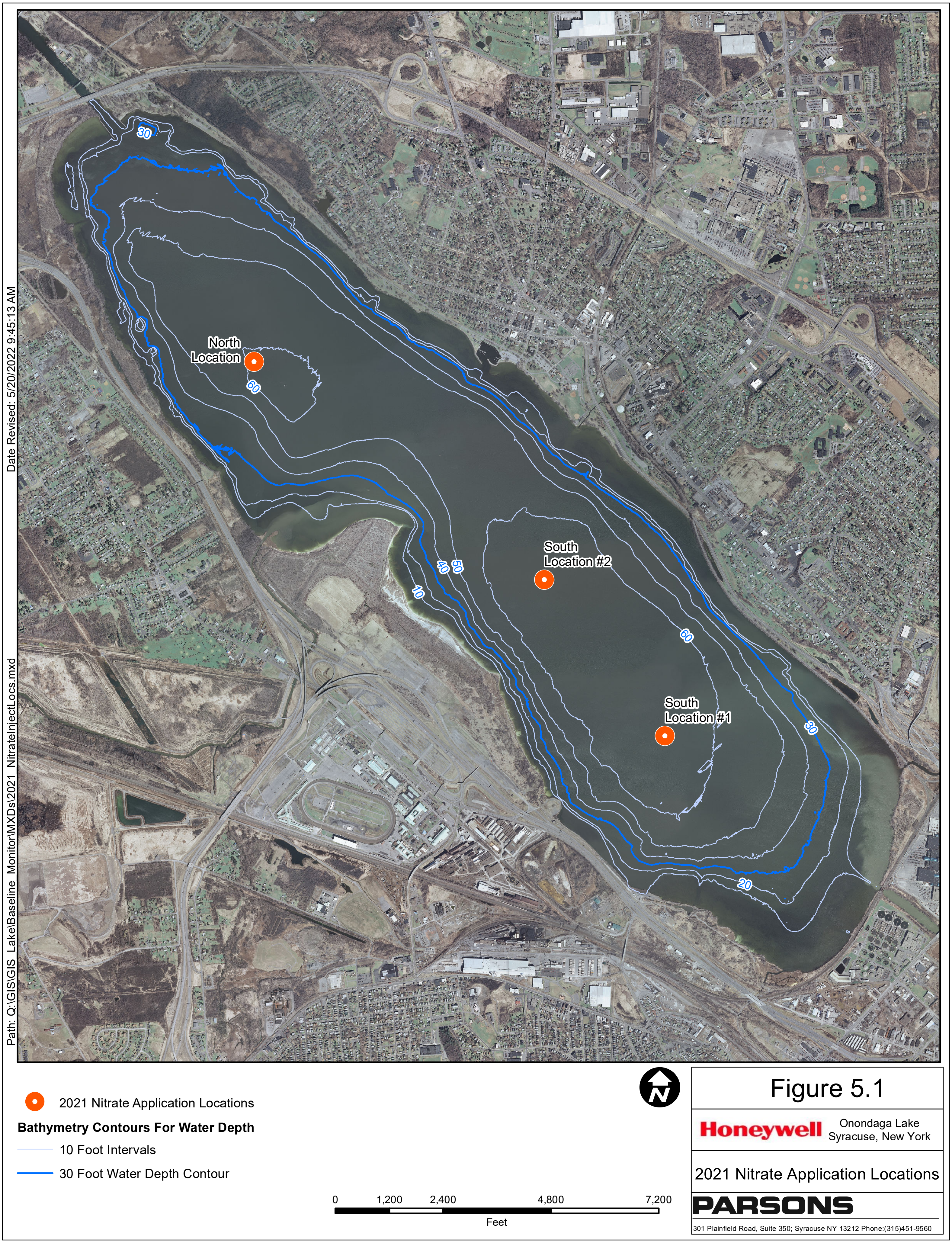


Figure 5.1

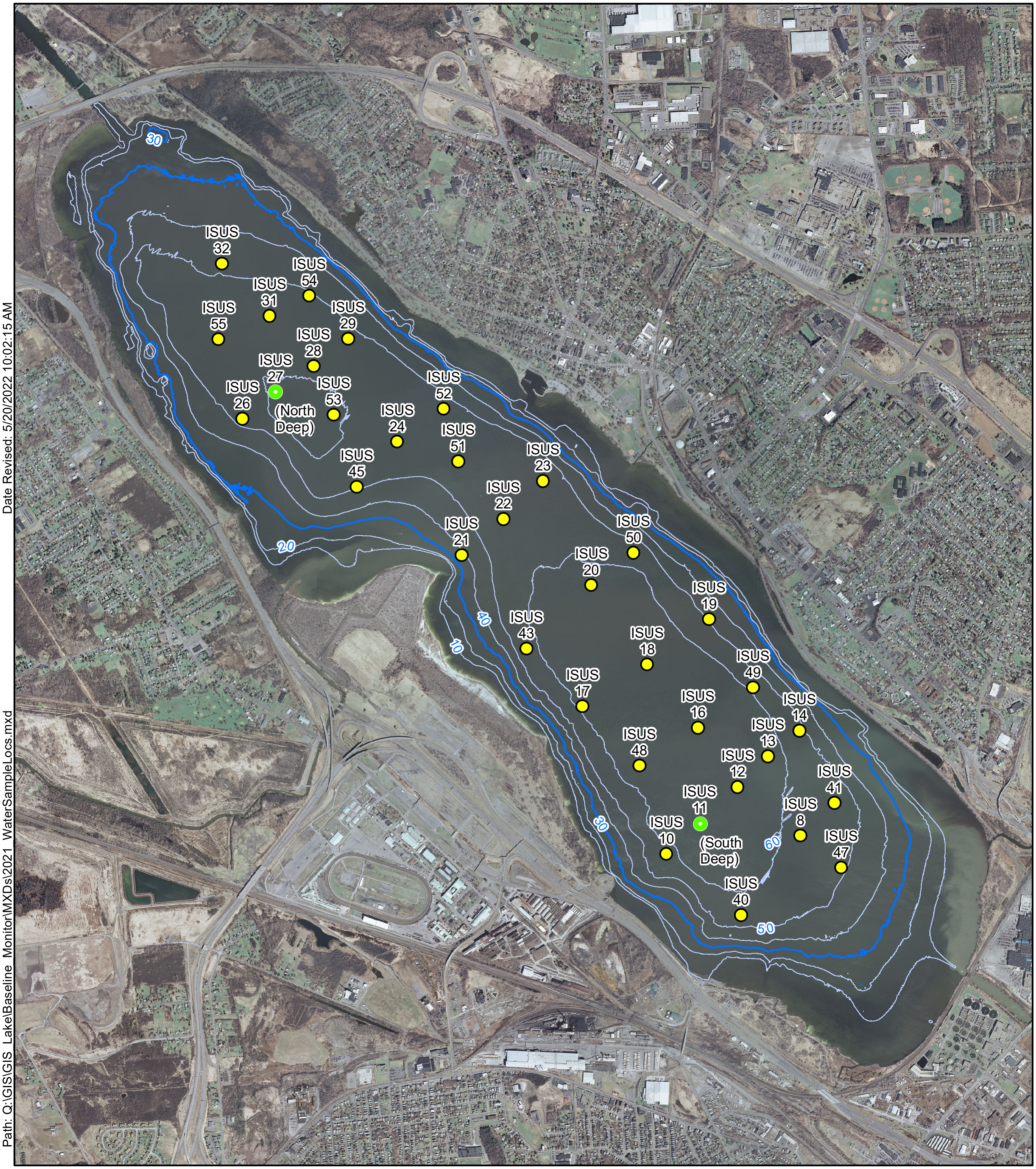
Honeywell

Onondaga Lake
Syracuse, New York

2021 Nitrate Application Locations

PARSONS

301 Plainfield Road, Suite 350; Syracuse NY 13212 Phone:(315)451-9560



North Deep and South Deep

ISUS-SUNA Monitoring Location

Bathymetry Contours For Water Depth

10 Foot Intervals

30 Foot Water Depth Contour

0 1,200 2,400 4,800 7,200

Feet

N

Figure 5.2

Honeywell

Onondaga Lake
Syracuse, New York

2021 ISUS-SUNA
Monitoring Locations

PARSONS

301 Plainfield Road, Suite 350; Syracuse NY 13212 Phone:(315)451-9560

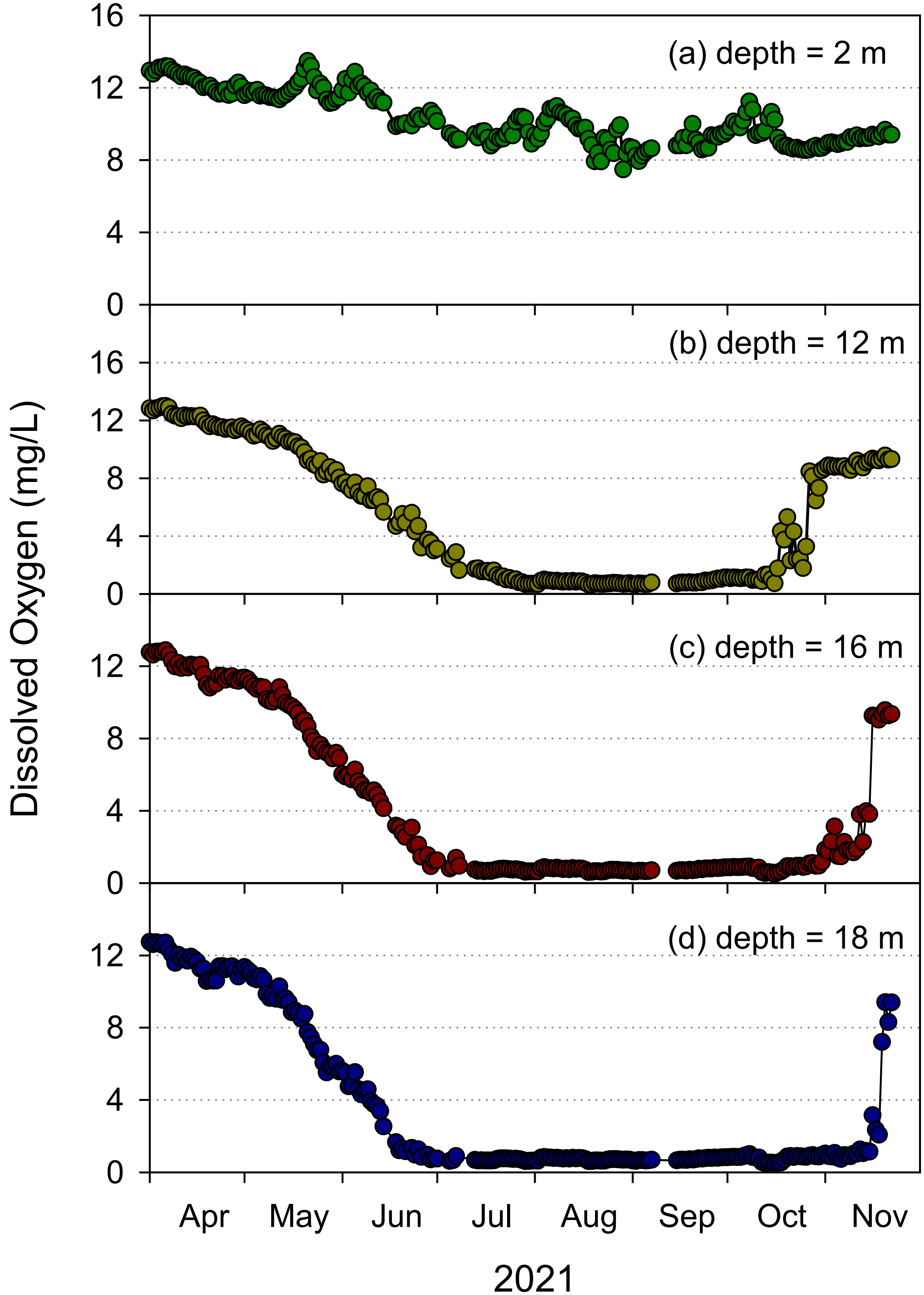


FIGURE 5.3

Honeywell

Onondaga Lake
Syracuse, New York

Measurements of Dissolved Oxygen from the Onondaga Lake South Deep Buoy in 2021:
(a) 2, (b) 12, (c) 16, and (d) 18-Meter Water Depths

PARSONS
301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

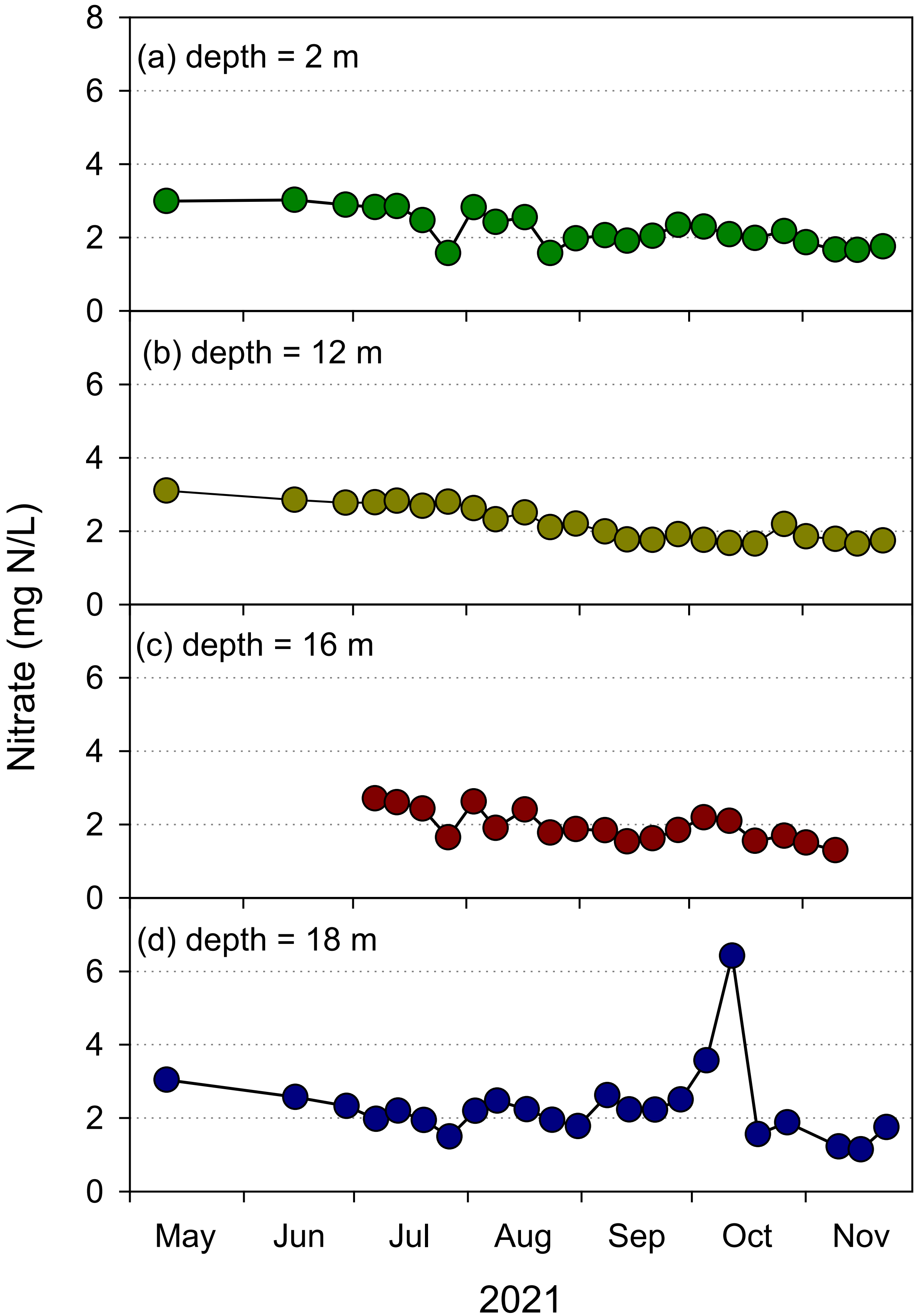


FIGURE 5.4

Honeywell

Onondaga Lake
Syracuse, New York

Laboratory Measurements of Nitrate at Onondaga Lake South Deep in 2021: (a) 2, (b) 12, (c) 16, and (d) 18-meter water depths

PARSONS
301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

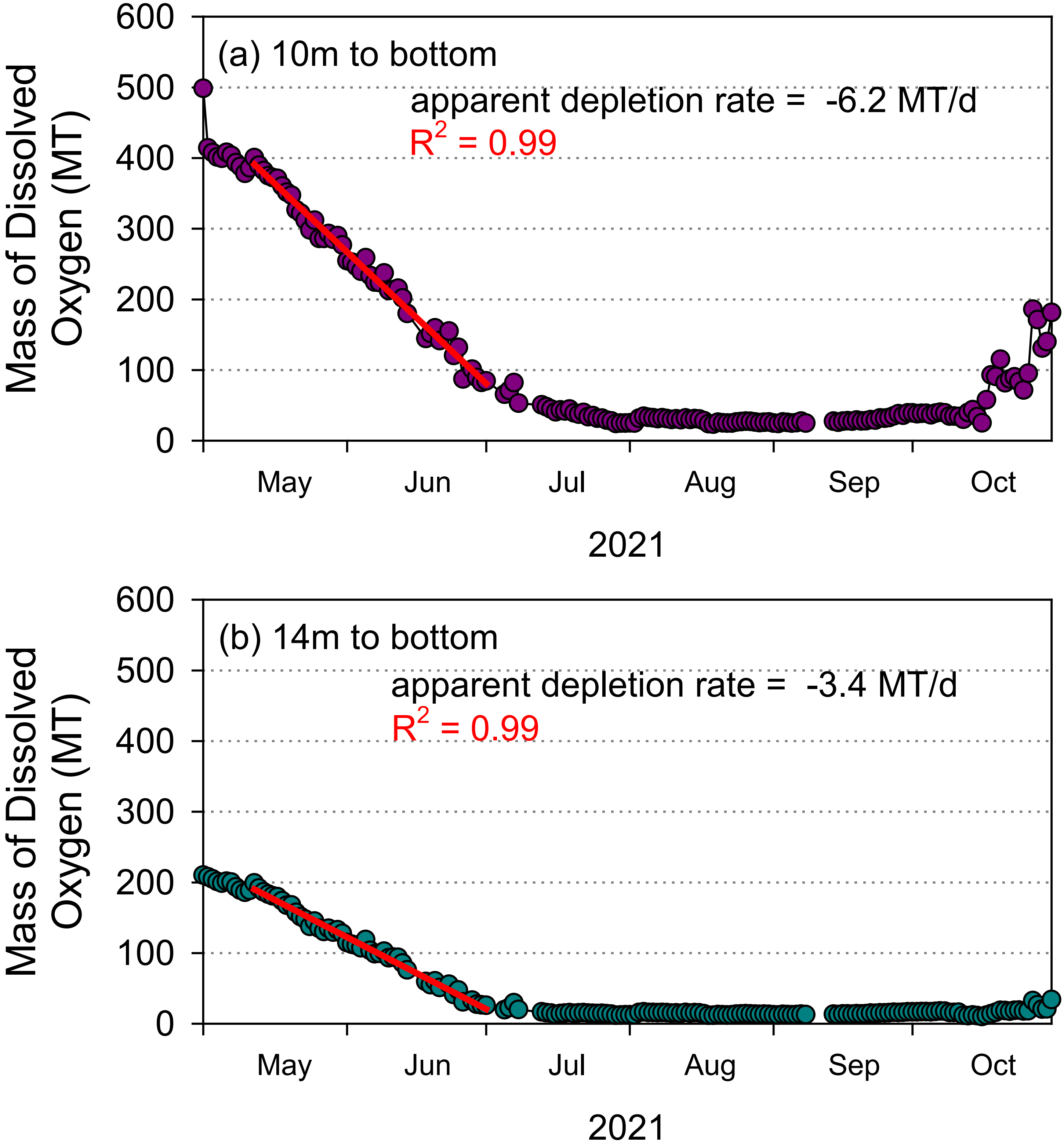


FIGURE 5.5

Honeywell

Onondaga Lake
Syracuse, New York

Dissolved Oxygen Mass in Hypolimnion During 2021 Summer Stratification: (a) 10 meters to the bottom and (b) 14 meters to the bottom

PARSONS

301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

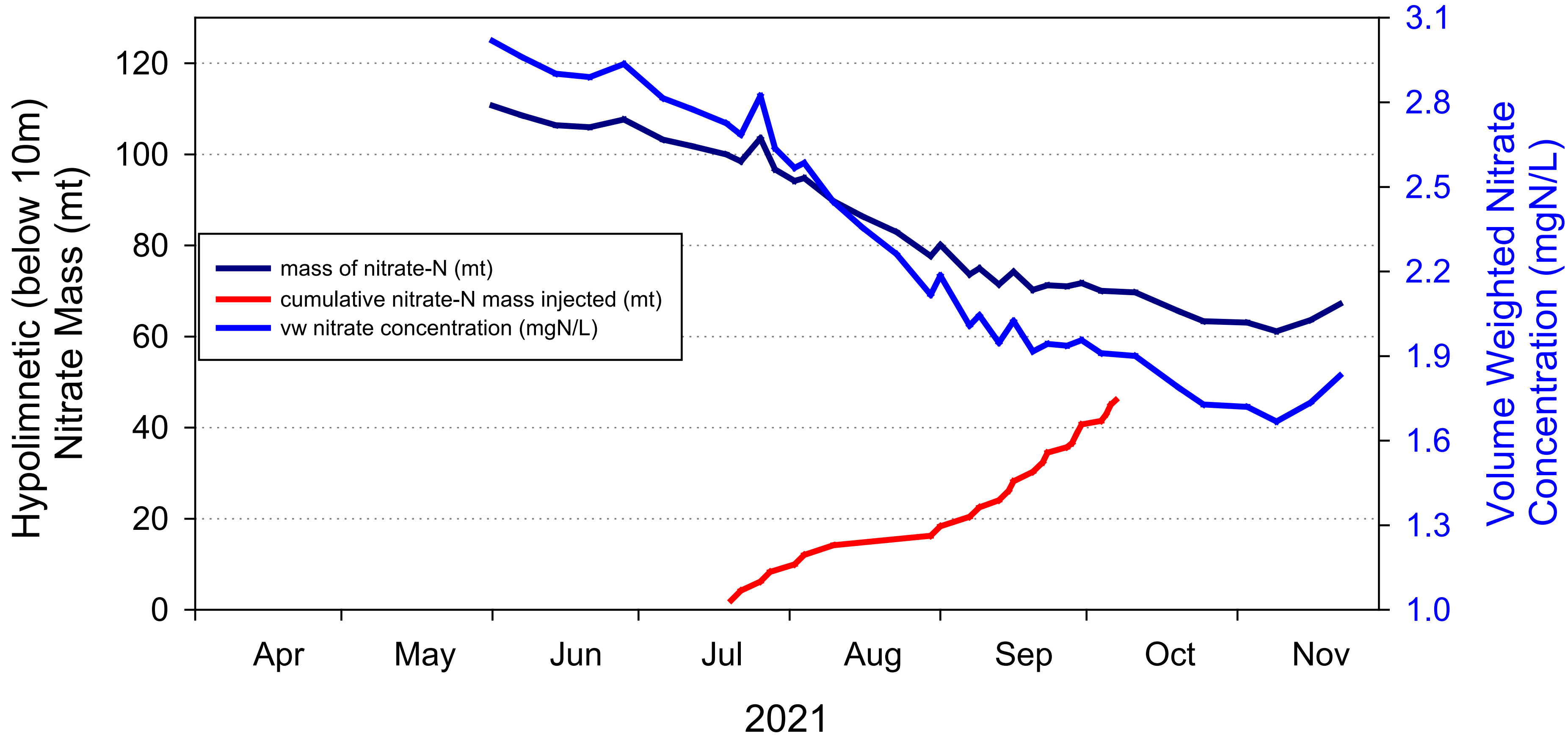


FIGURE 5.6

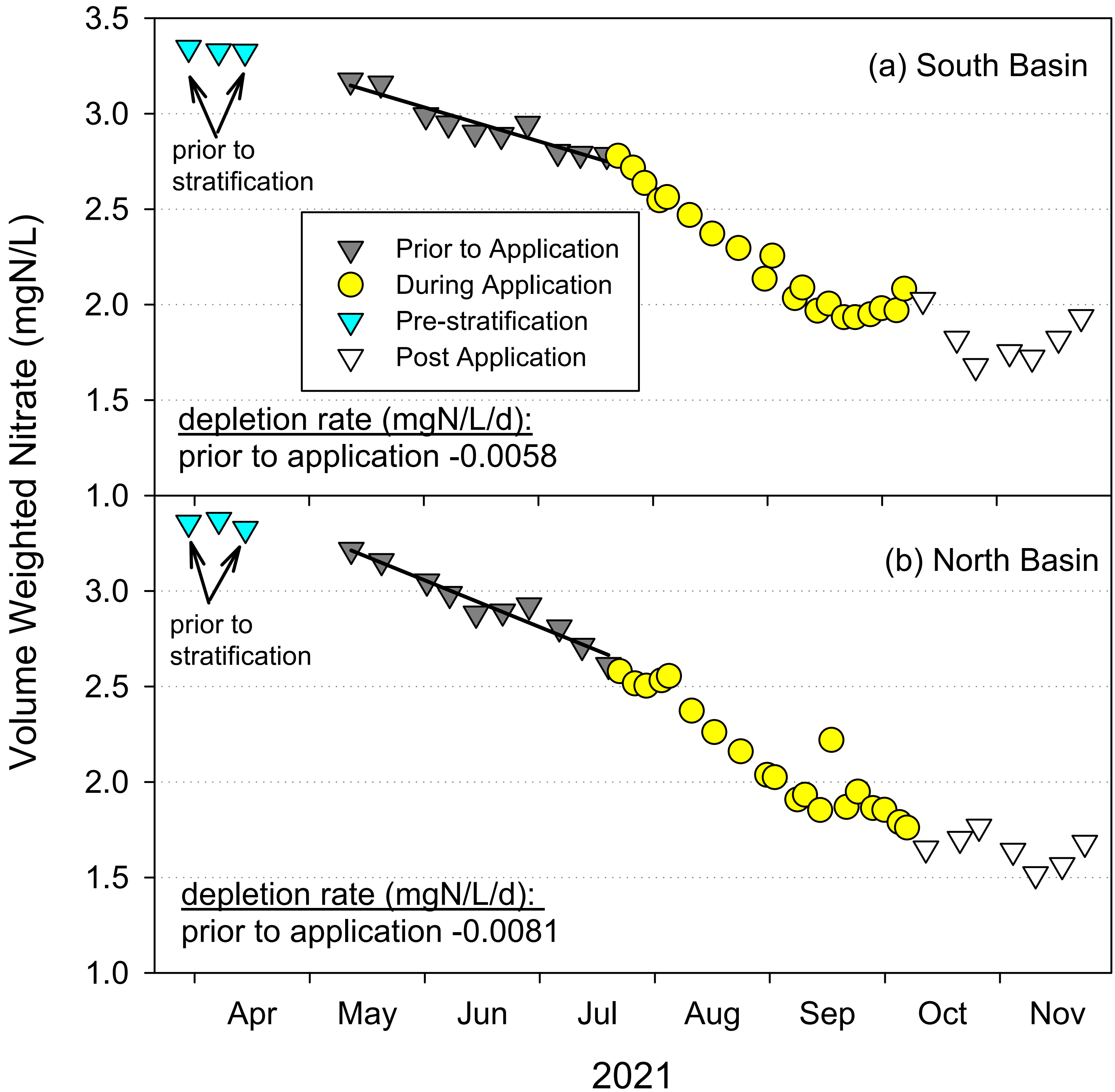
Honeywell

Onondaga Lake
Syracuse, New York

Hypolimnetic Nitrate Mass, Cumulative Mass of Nitrate Added, and Volume-Weighted Hypolimnetic Average Nitrate Concentration 2021

PARSONS

301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560



Note: Volume-weighted concentrations for the north and south basins were determined from field nitrate profiles and the respective water volumes of the basins.

FIGURE 5.7

Honeywell Onondaga Lake, Syracuse, New York

Nitrate Depletion Rates in the Hypolimnion (10 to 19-Meter Water Depths) of Onondaga Lake in 2021: (a) South Basin and (b) North Basin

PARSONS
301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

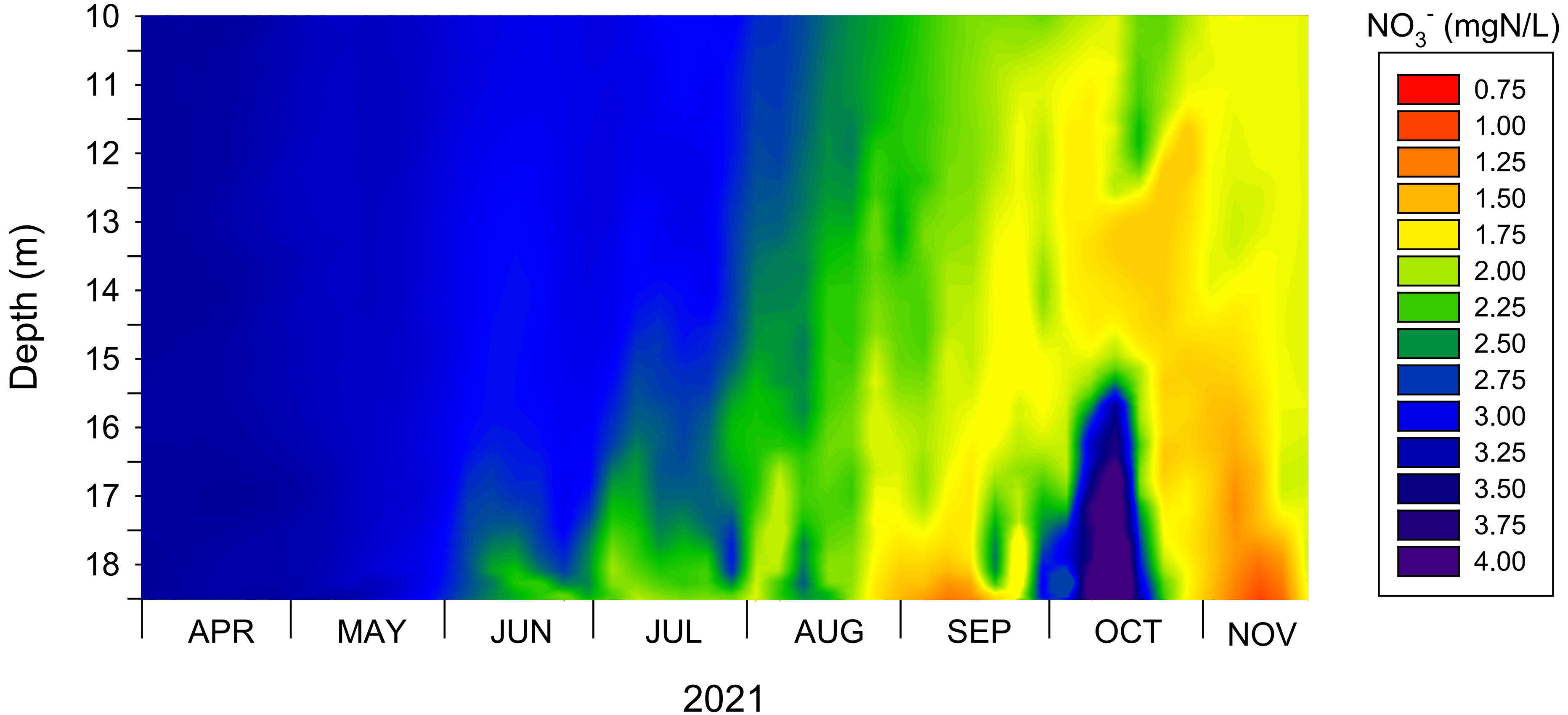


FIGURE 5.8

Honeywell

Onondaga Lake
Syracuse, New York

Nitrate Concentrations in the Hypolimnion (10 meters to bottom) of Onondaga Lake in 2021

PARSONS
301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

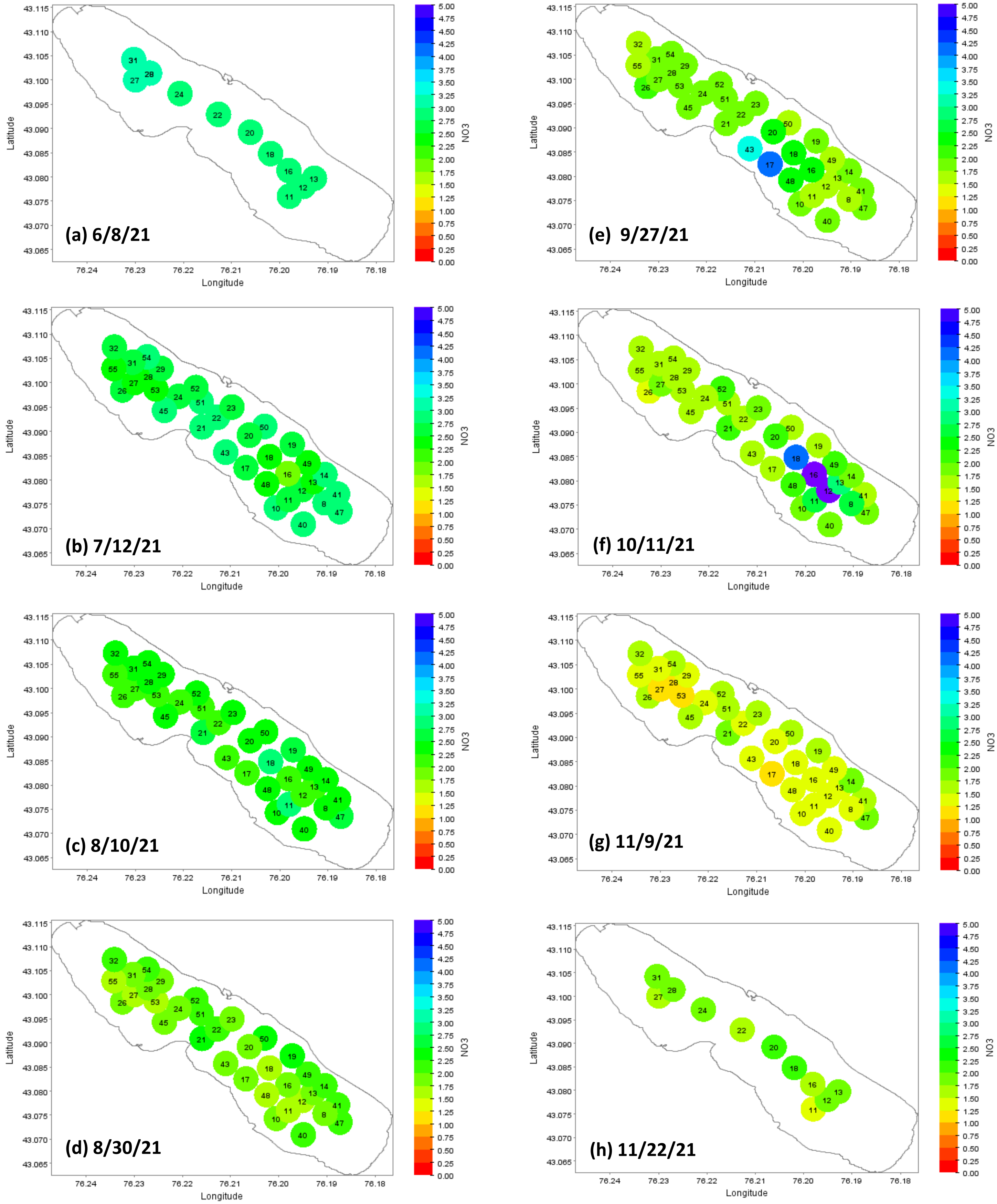


FIGURE 5.9

Honeywell

Onondaga Lake
Syracuse, New York

Representative Plan-view Plots of Nitrate Concentrations (mgN/L) One Meter above the Lake Bottom for Onondaga Lake in 2021

PARSONS

301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

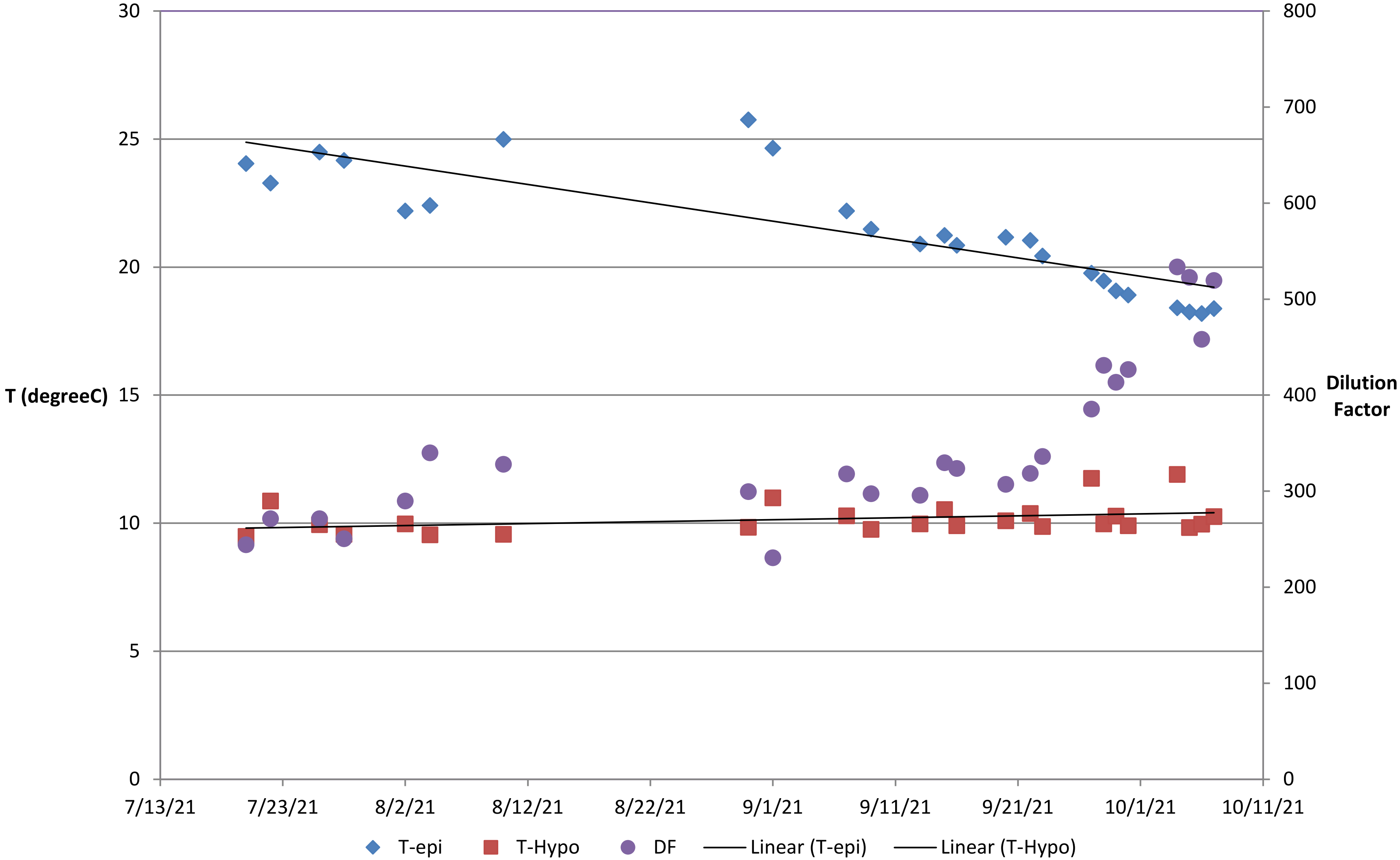


FIGURE 5.10

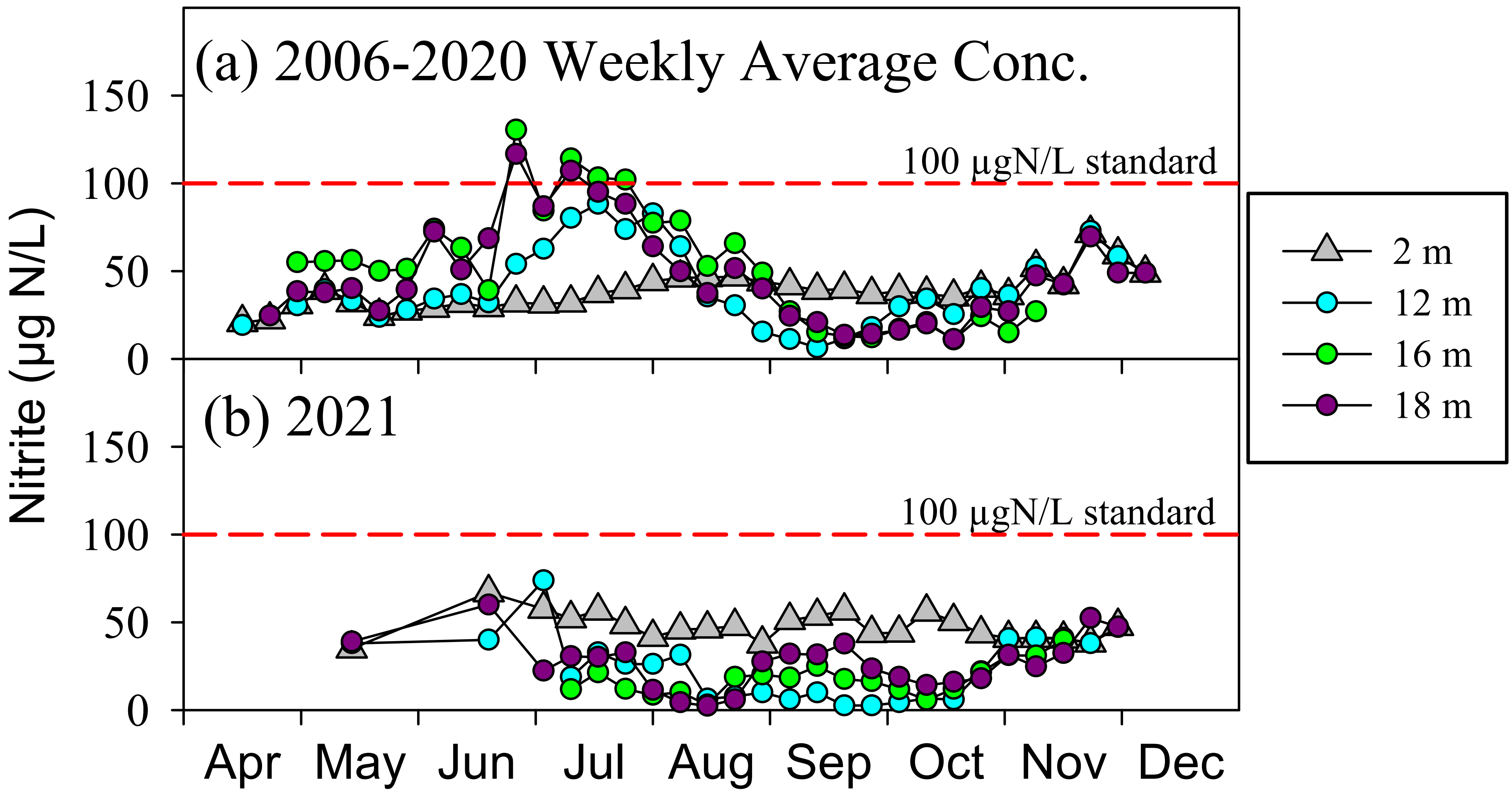
Honeywell

Onondaga Lake
Syracuse, New York

2021 Epilimnion and Hypolimnion Temperatures and Dilution Factors

PARSONS

301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560



a) weekly average concentration for 2006-2020 and (b) 2021 concentrations. Note: The ambient water quality standard for nitrite applicable to warm-water fisheries is 100 micrograms per liter (µgN/L) as nitrogen (red-dashed line)

FIGURE 5.11

Honeywell

Onondaga Lake
Syracuse, New York

Time Series of Nitrite-Nitrogen (NO2-N) for Onondaga Lake at South Deep for Four Water Depths

PARSONS

301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

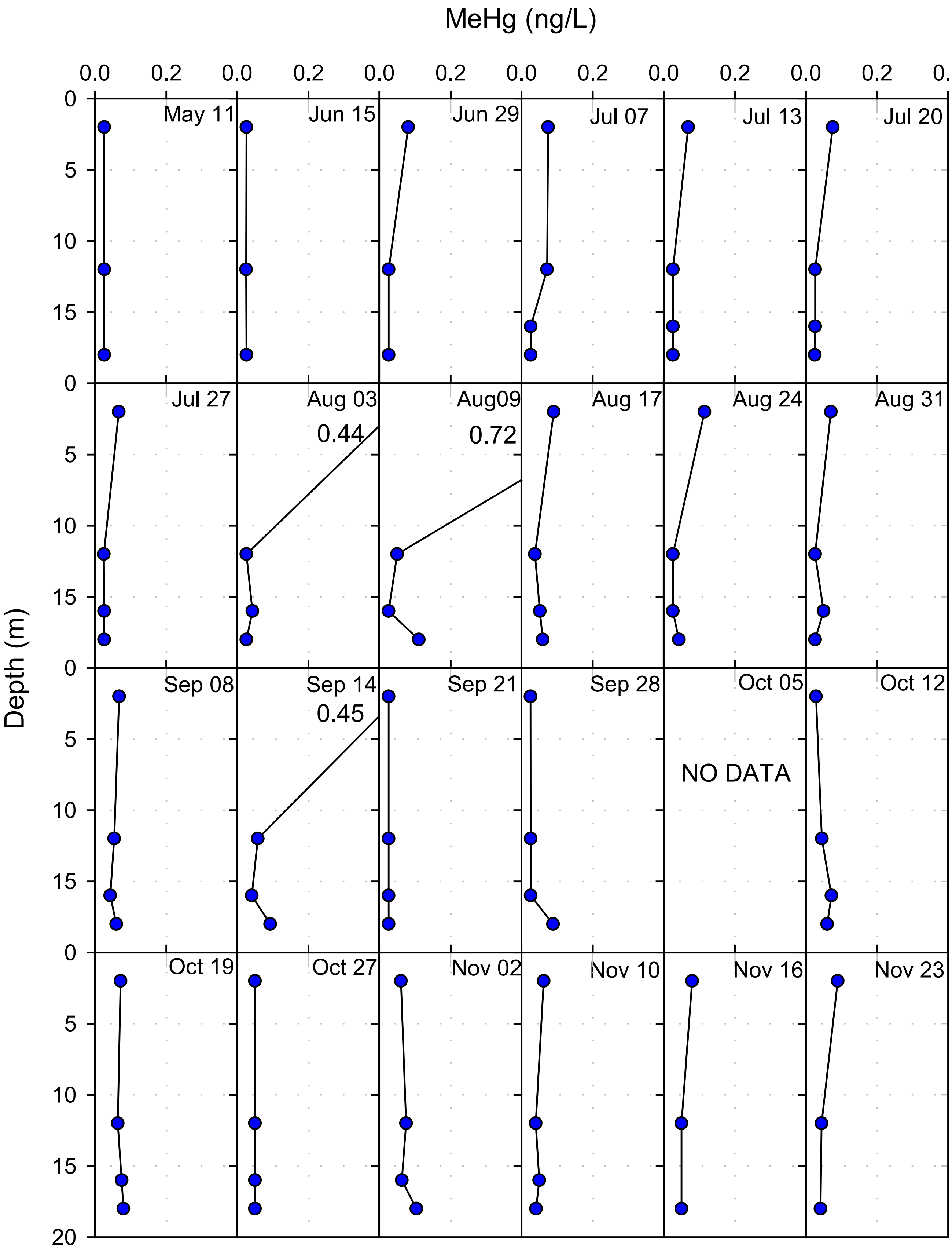


FIGURE 5.12

Honeywell

Onondaga Lake
Syracuse, New York

Vertical Profiles of Methylmercury (MeHg) Concentrations in Onondaga Lake Waters Measured at the South Deep Location: May 11 through November 23, 2021

PARSONS

301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

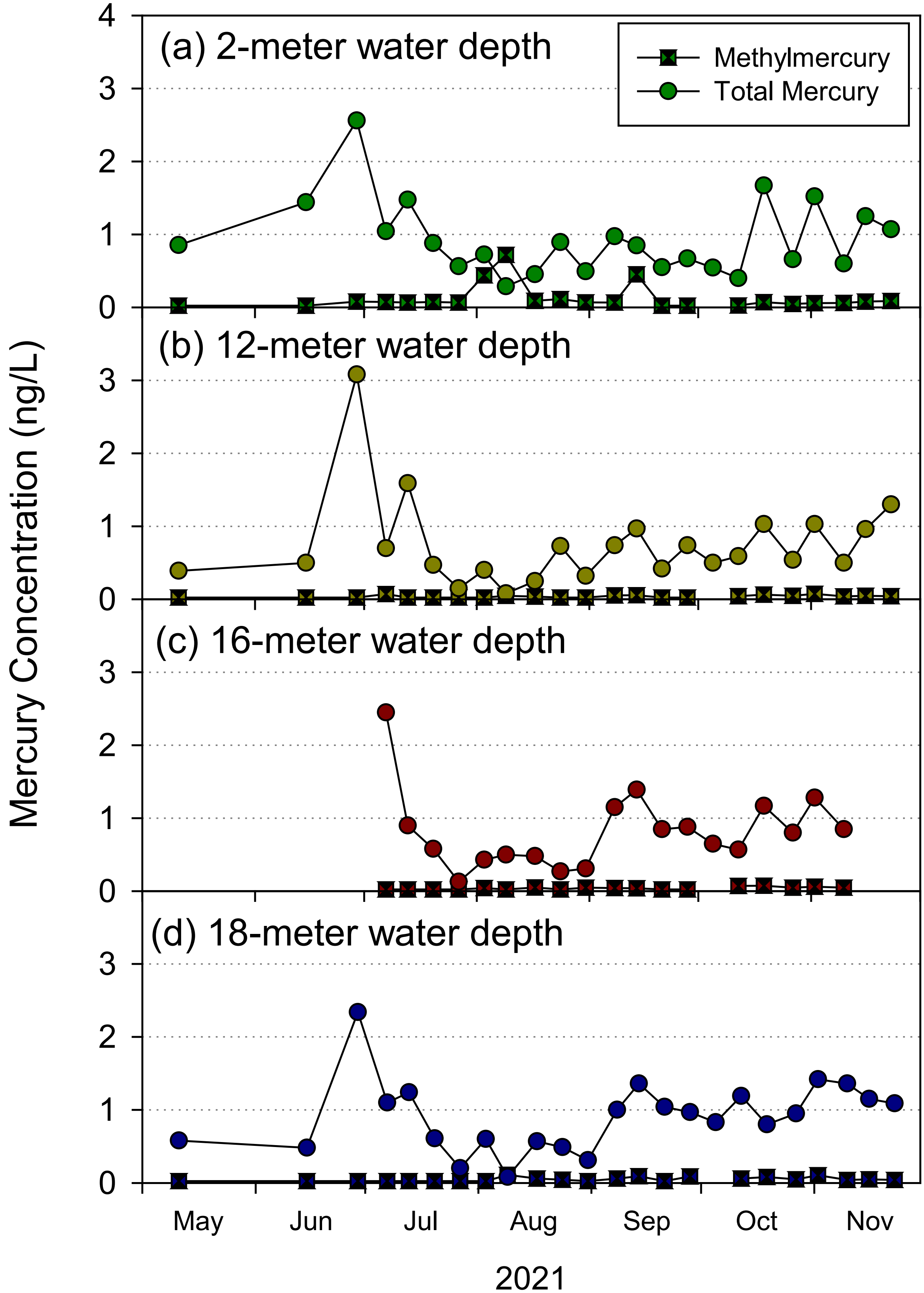


FIGURE 5.13

Honeywell

Onondaga Lake
Syracuse, New York

Total Mercury and Methylmercury Concentrations in Onondaga Lake at the South Deep Location in 2021: (a) 2, (b) 12, (c) 16, and (d) 18-Meter Water Depths

PARSONS
301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

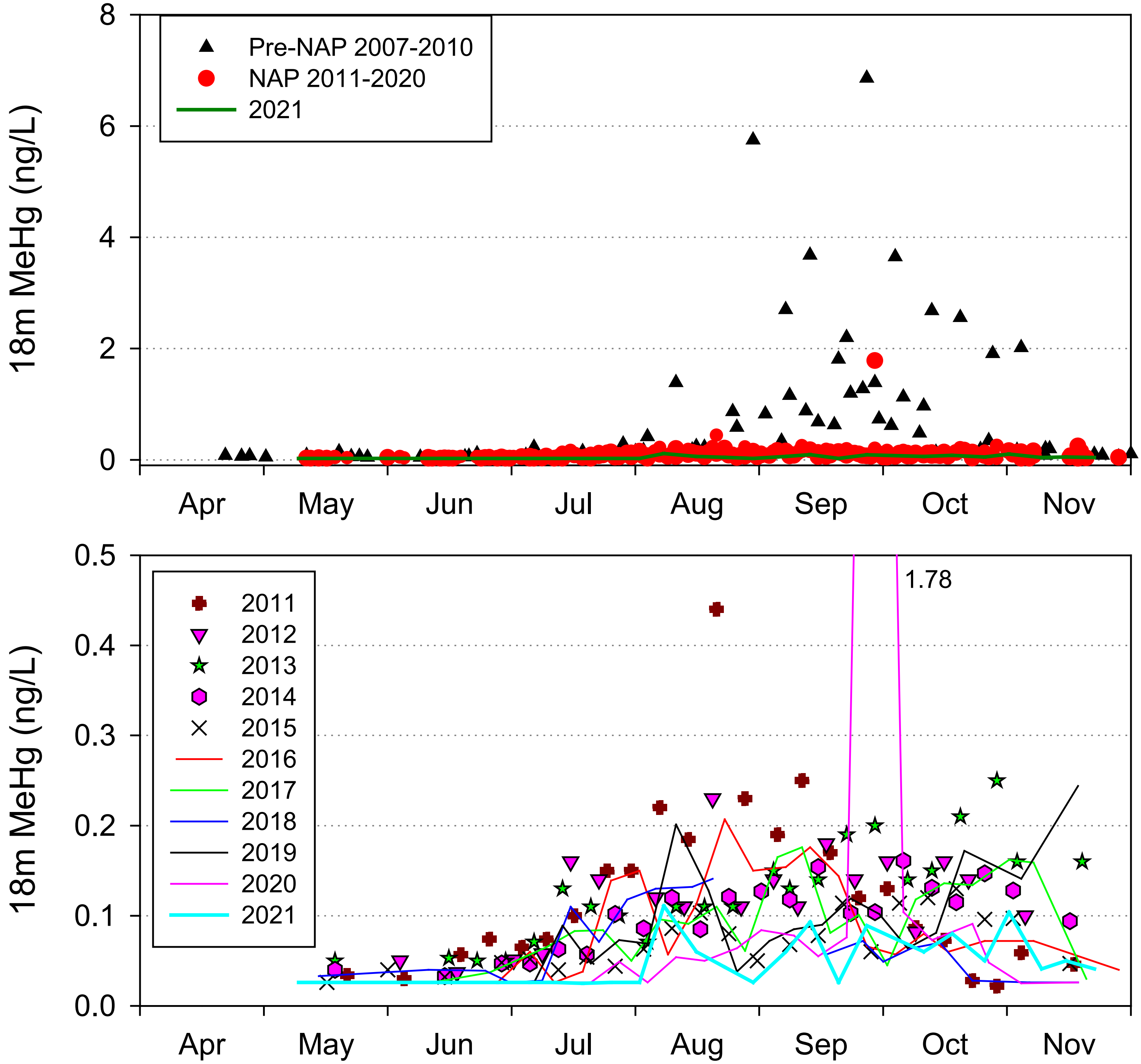


FIGURE 5.14

Honeywell

Onondaga Lake
Syracuse, New York

Time Series of Methylmercury Concentrations Measured at the 18-Meter Water Depth at the South Deep Location, 2007-2021

PARSONS
301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

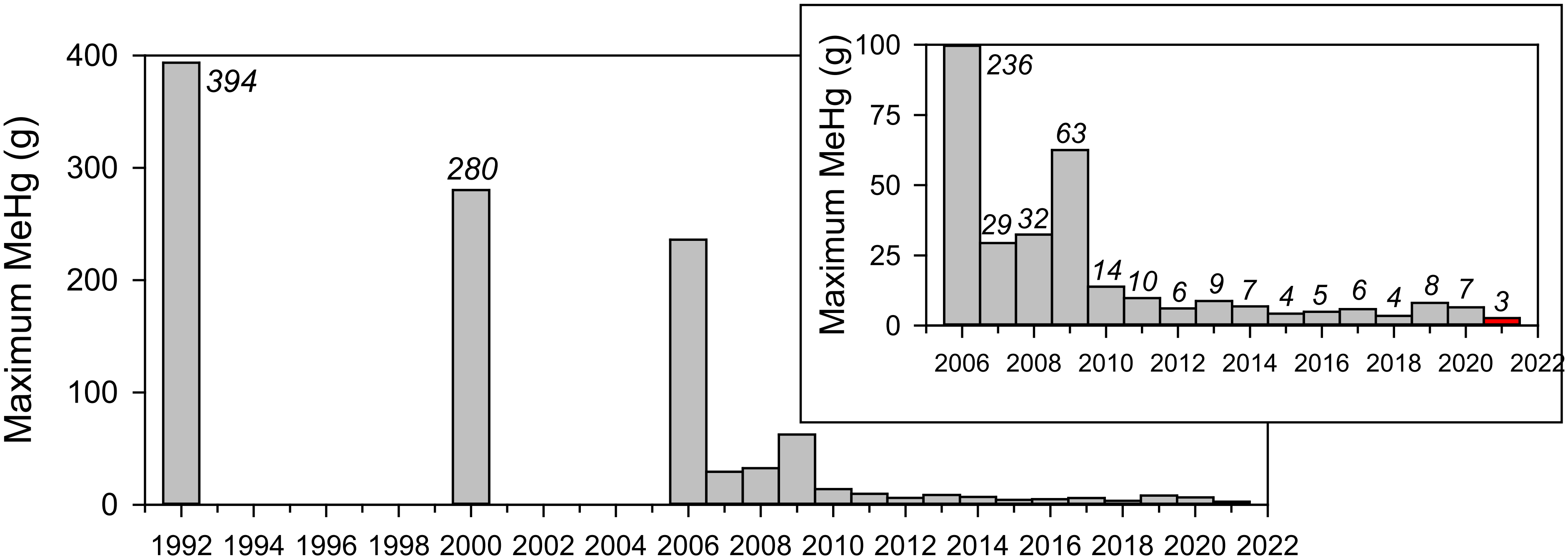


FIGURE 5.15

Honeywell

Onondaga Lake
Syracuse, New York

Annual Maximum Mass of Methylmercury in the Hypolimnion of Onondaga Lake from 1992 through 2021

PARSONS

301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

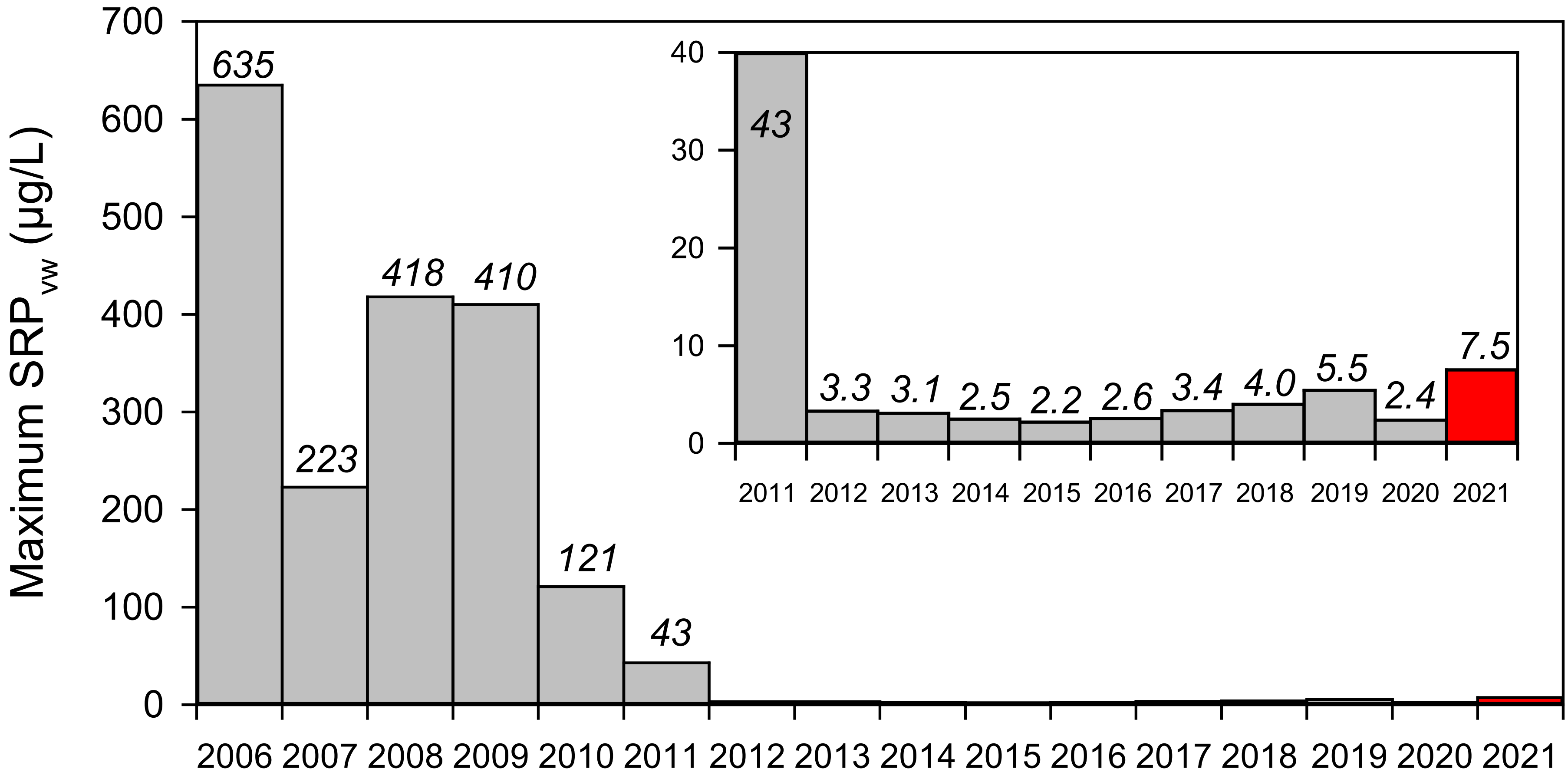


FIGURE 5.16

Honeywell

Onondaga Lake
Syracuse, New York

Annual Maximum Volume Weighted Concentrations of Soluble Reactive Phosphorus (SRP) in the Lower Hypolimnion of Onondaga Lake from 2006 through 2021

PARSONS

301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

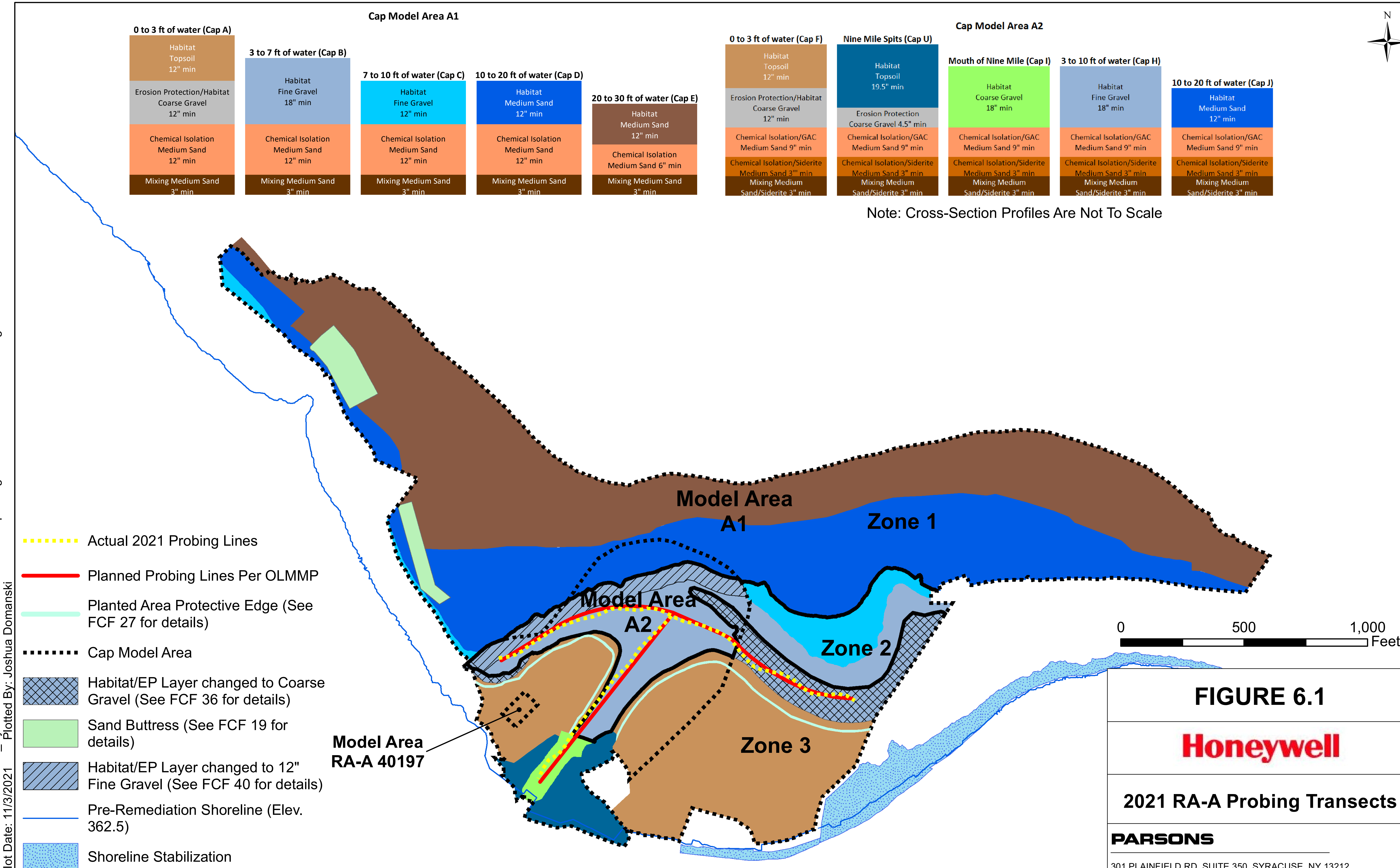


FIGURE 6.1

Honeywell

2021 RA-A Probing Transects

PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\2021 OLMM Report\Figure 6.1 - 2021 RAA Probing.mxd
Plot Date: 11/3/2021 Plotted By: Joshua Domanski

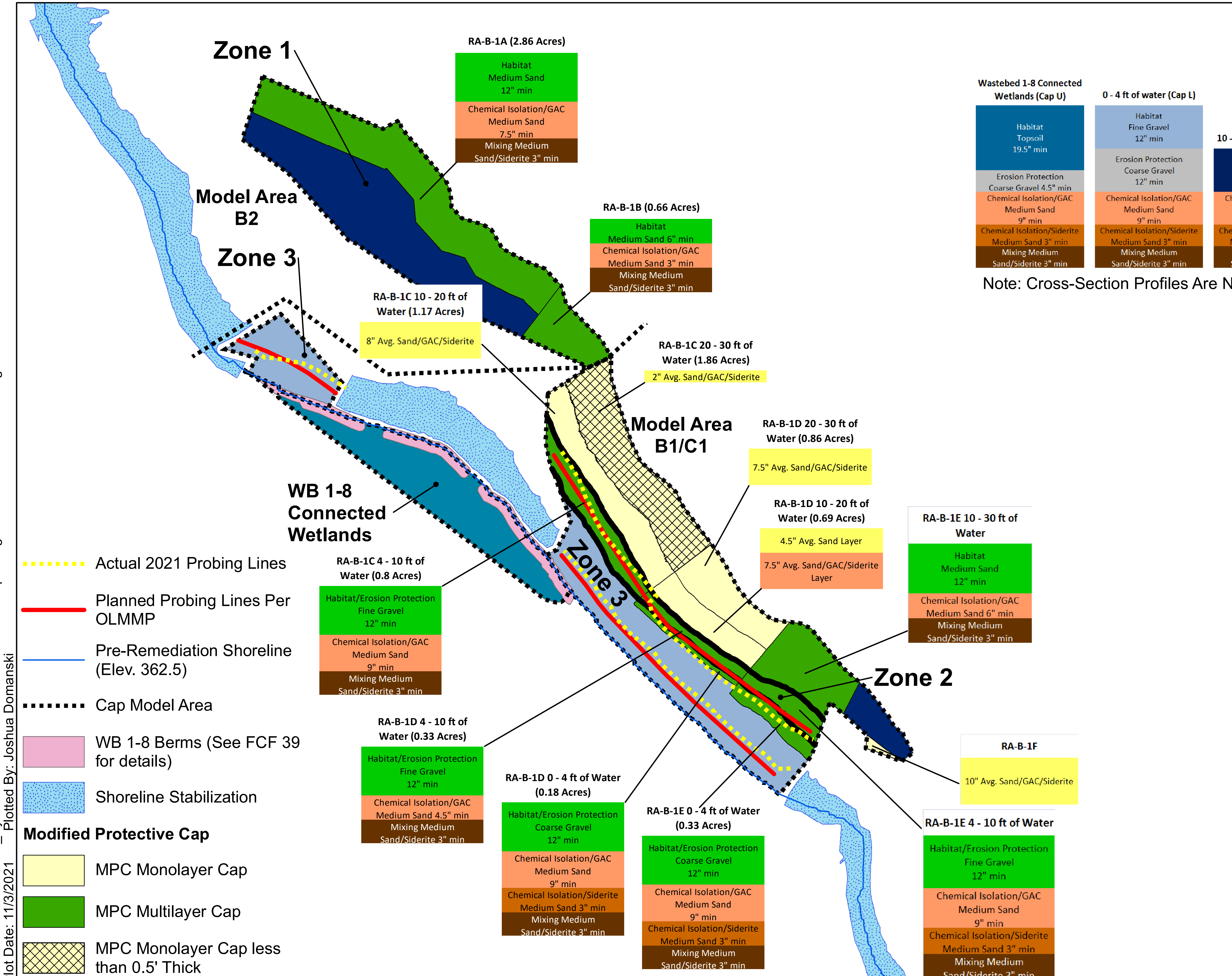


FIGURE 6.2

Honeywell

2021 RA-B Probing Transects

PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\2021 OLMM Report\Figure 6.2 - 2021 RAB Probing.mxd
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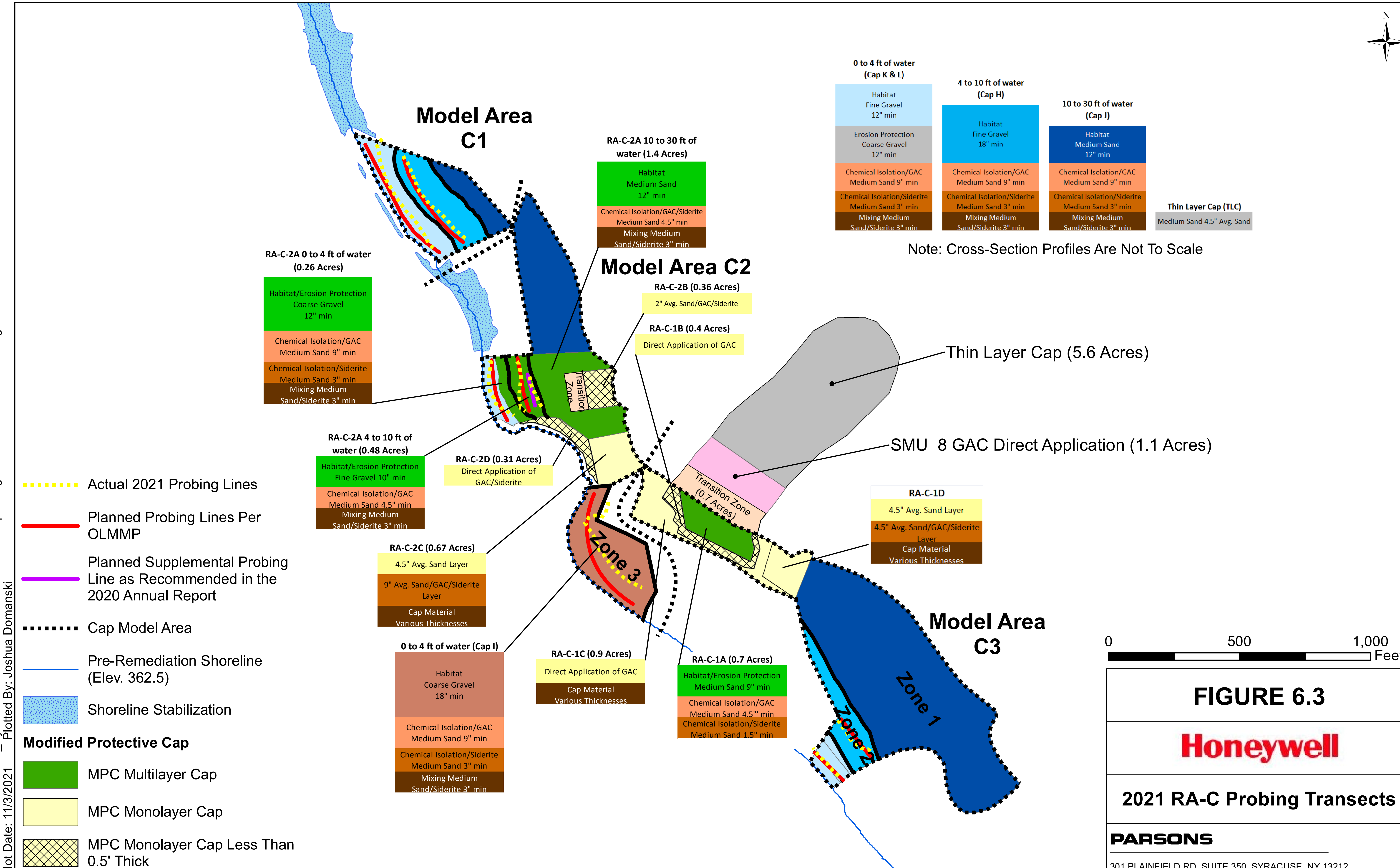

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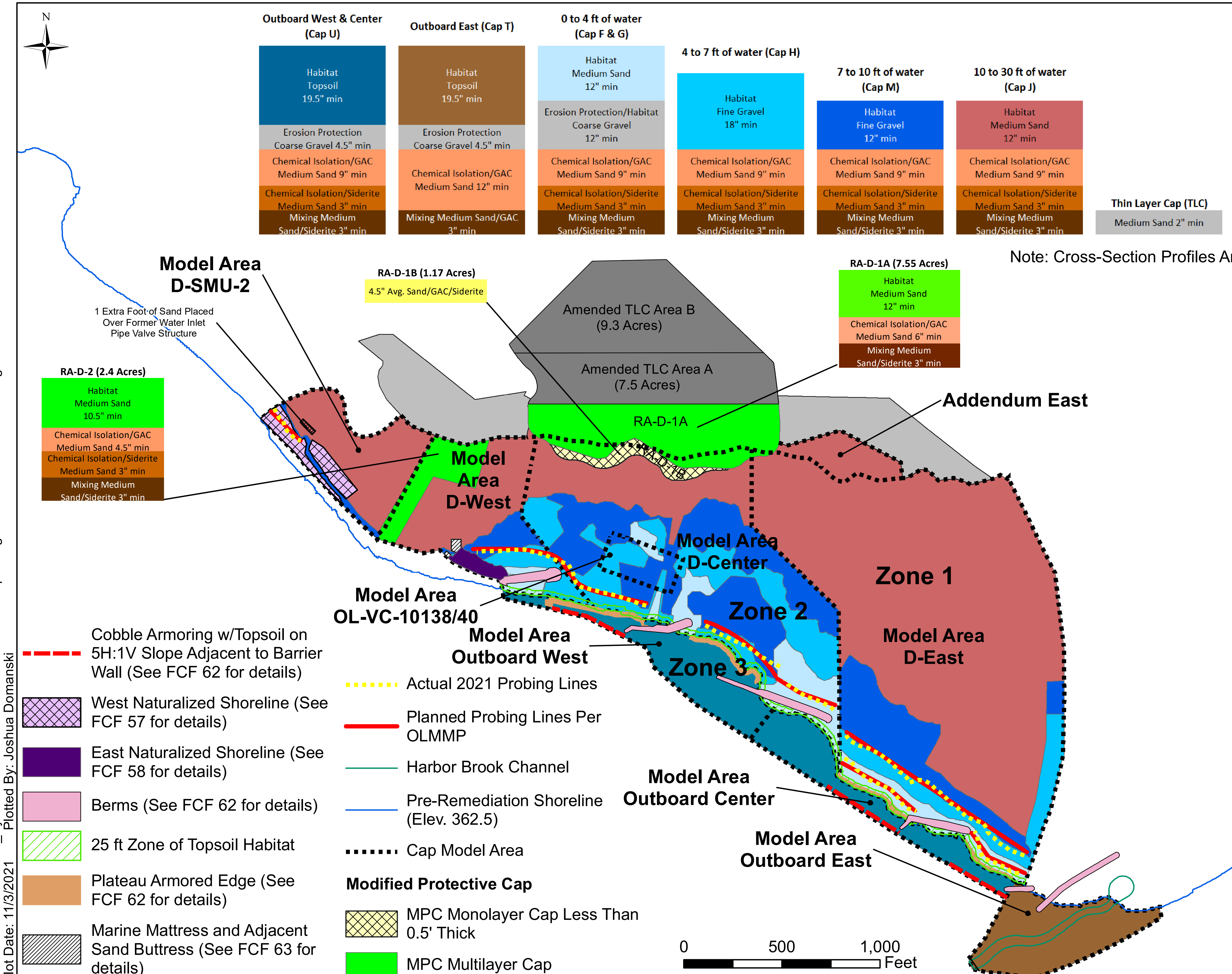

FIGURE 6.4

Honeywell

2021 RA-D Probing Transects

PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\2021 OLMM Report\Figure 6.4 - 2021 RAD Probing.mxd
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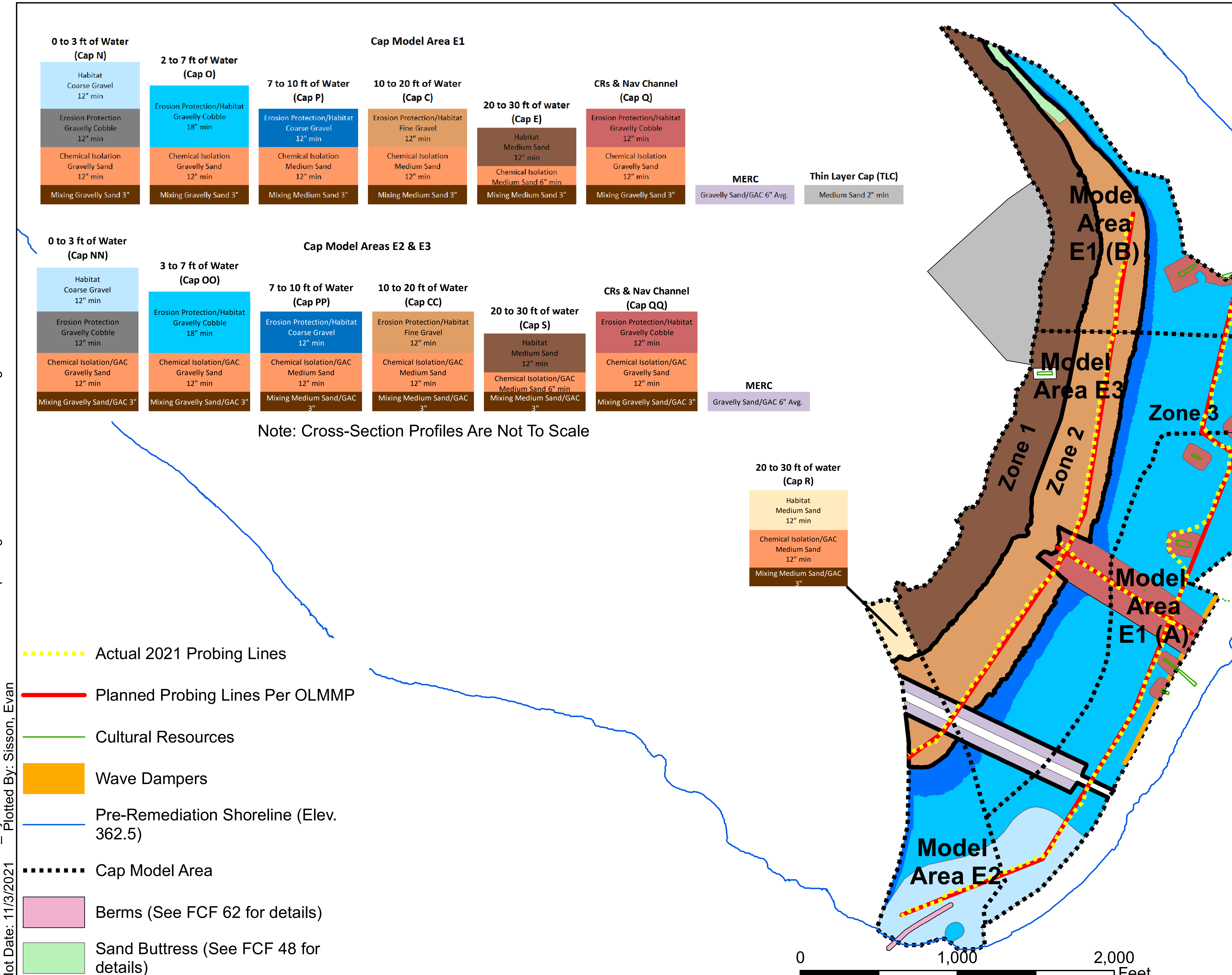


FIGURE 6.5

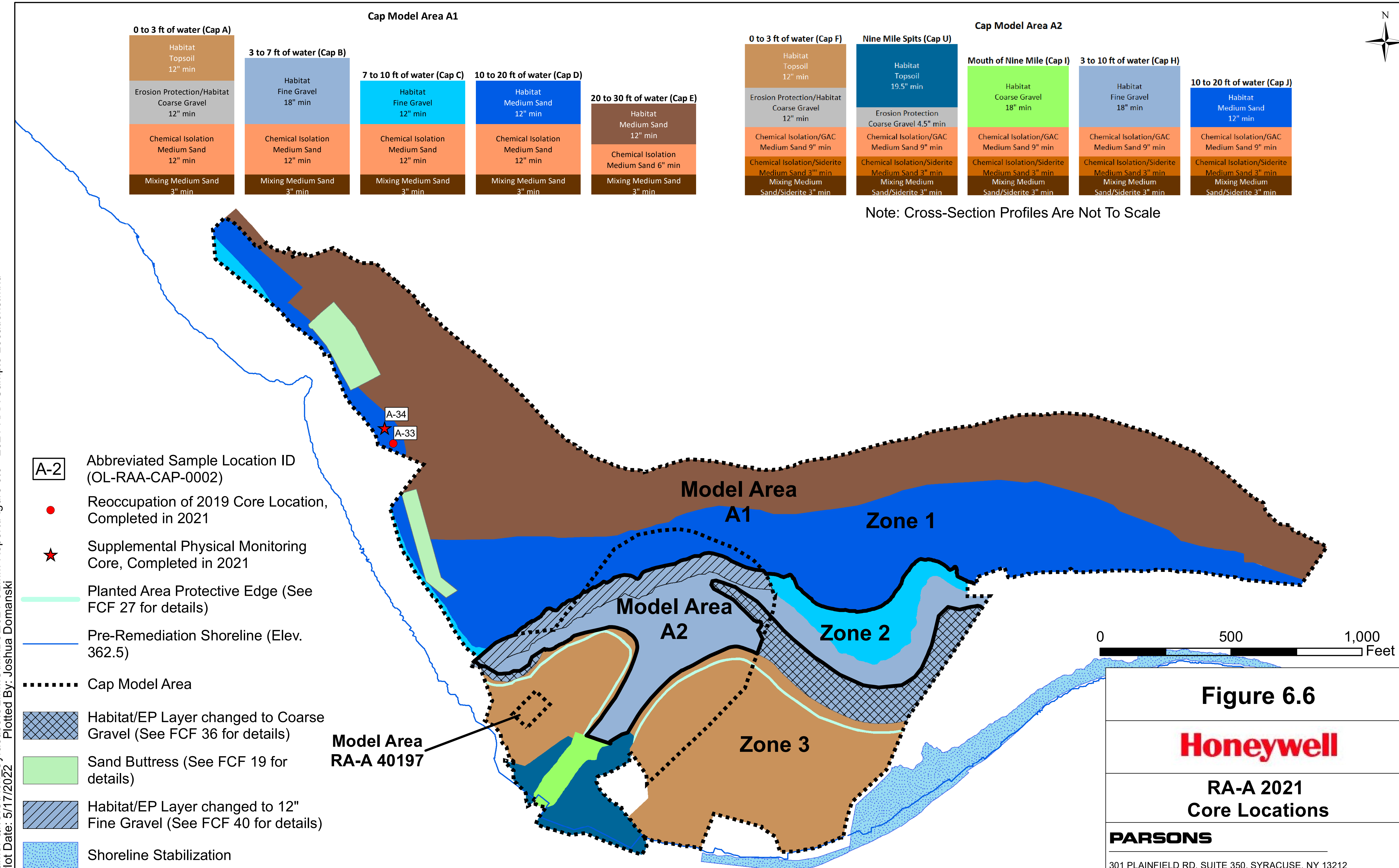
Honeywell

2021 RA-E Probing Transects

PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\2021 OLMM Report\Figure 6.5 - 2021 RAE Probing.mxd
Plot Date: 11/3/2021 Plotted By: Sisson, Evan



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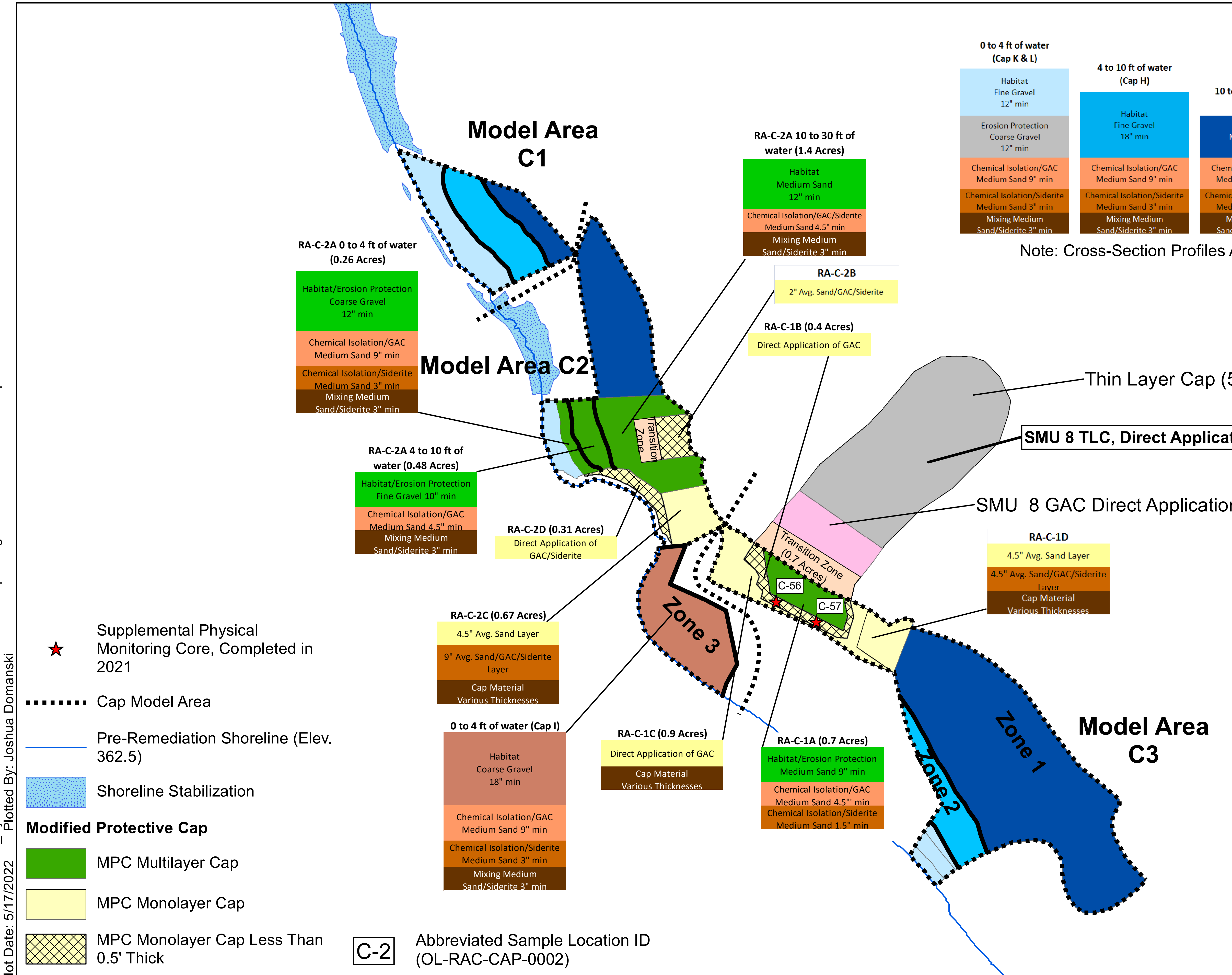


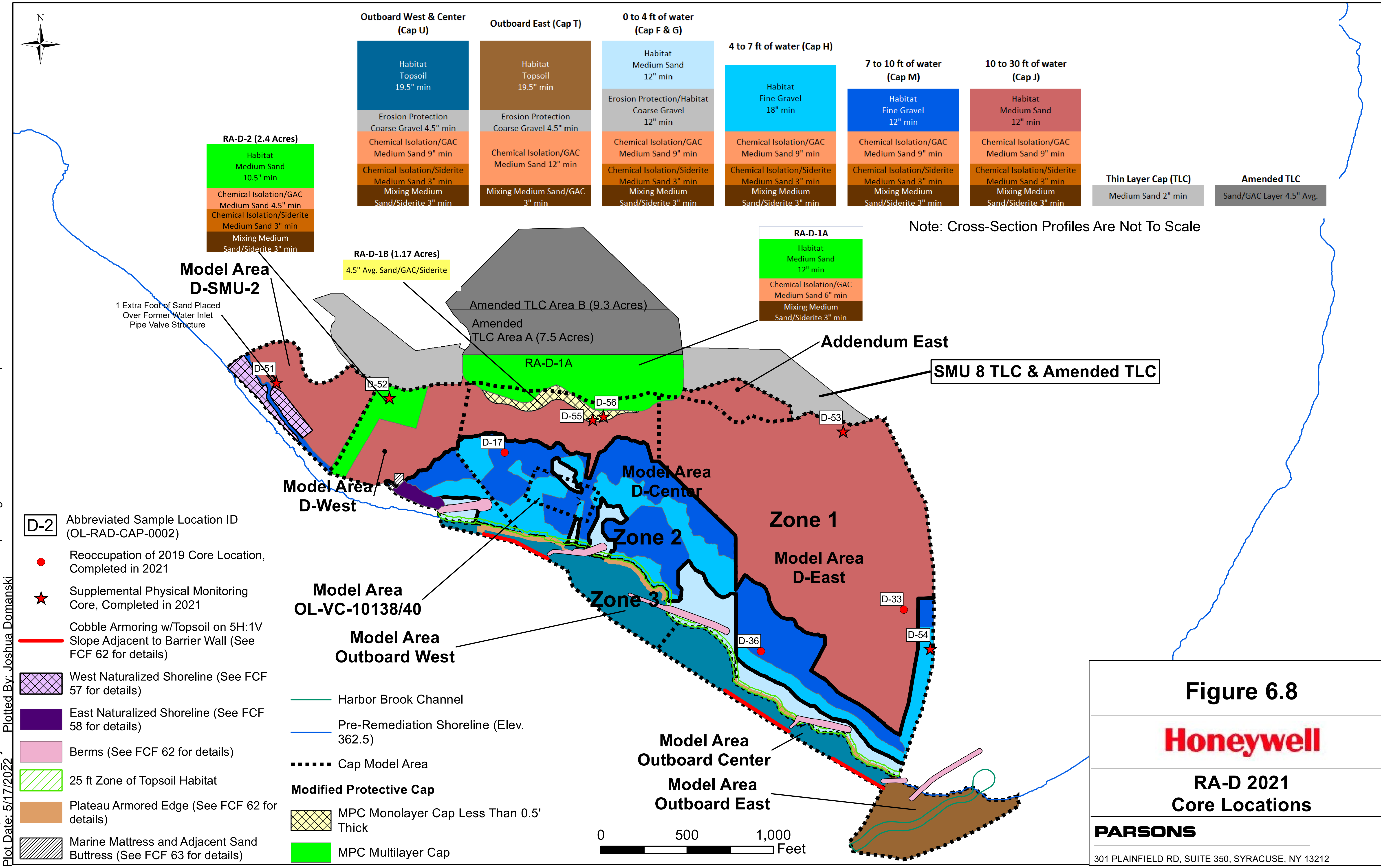
Figure 6.7

Honeywell

RA-C 2021 Core Locations

PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212



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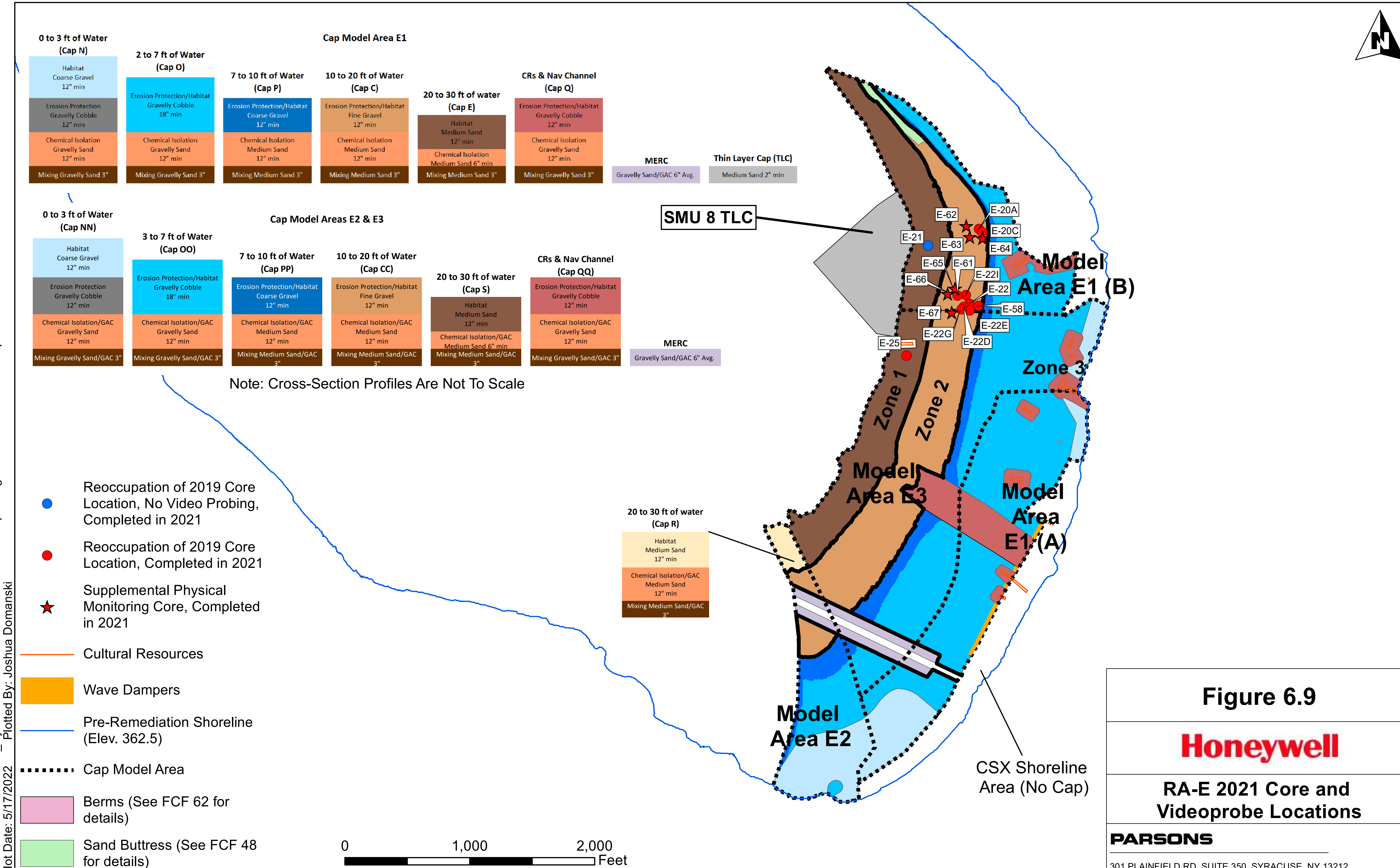

Figure 6.9

RA-E 2021 Core and Videoprobe Locations

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Plot Date: 5/17/2022 Plotted By: Joshua Domanski

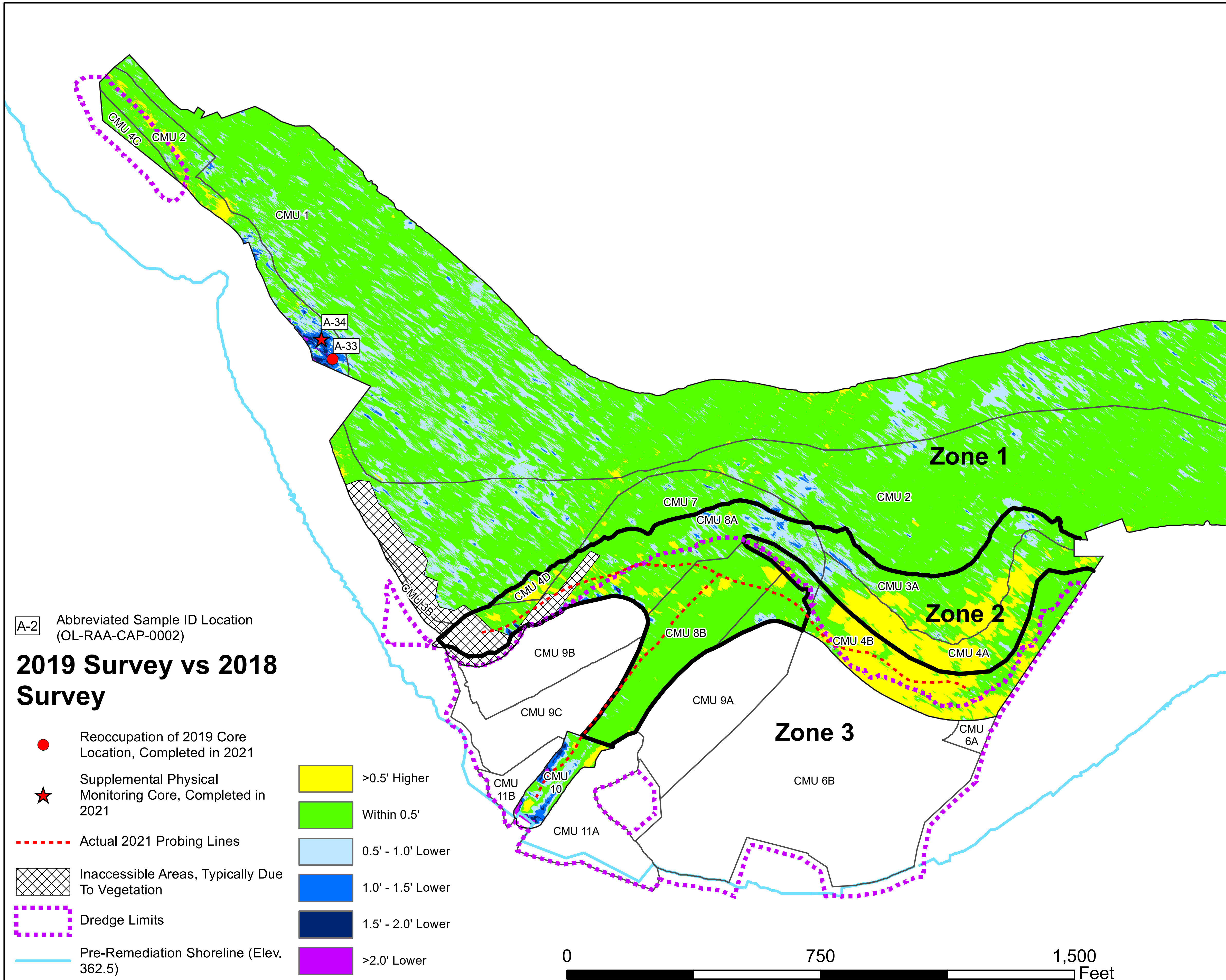


Figure 6.10

Honeywell

RA-A 2021 Core Locations and Historic Bathymetry Comparison

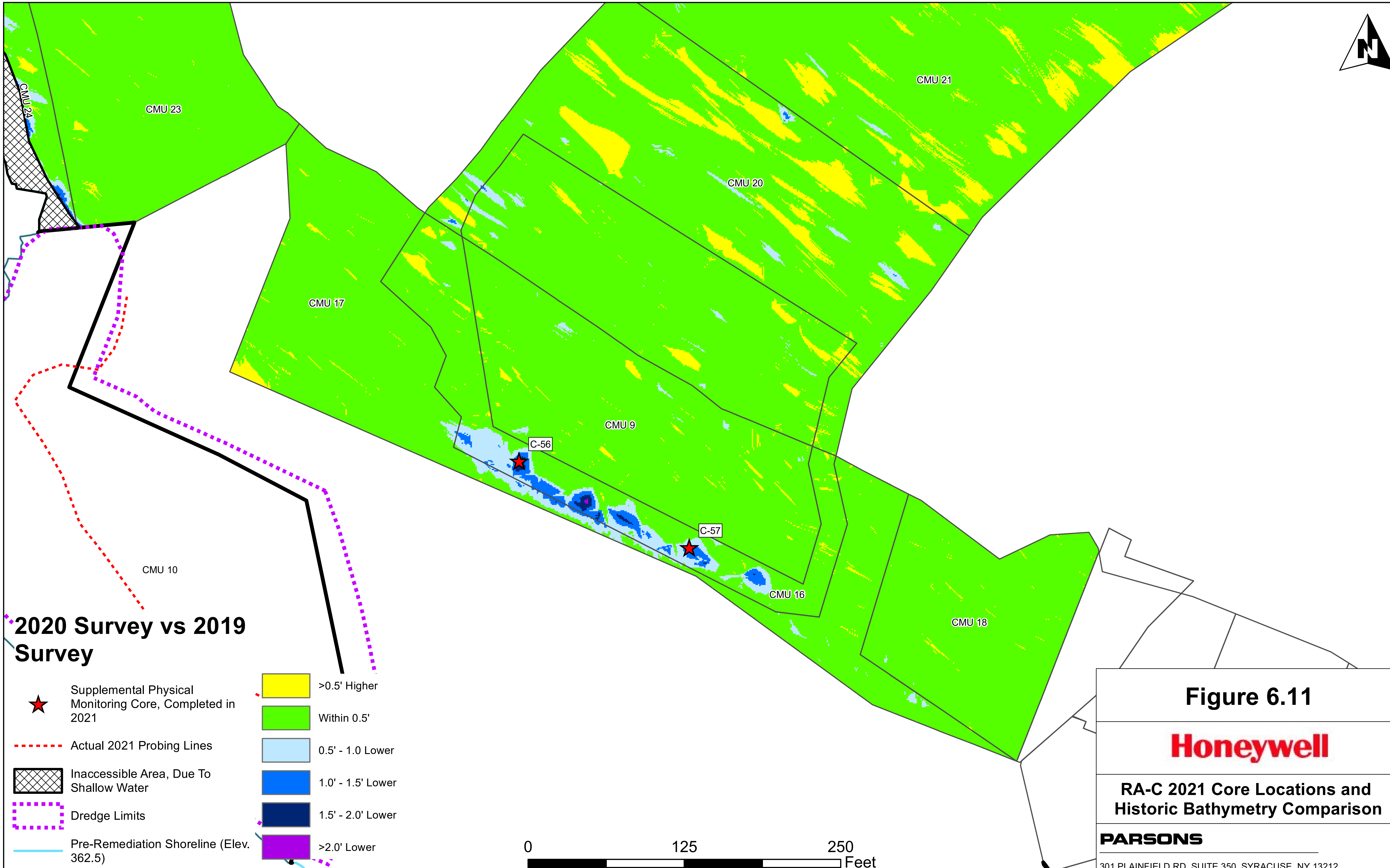
PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

Plotted By: Domanski, Joshua

Plot Date: 5/17/2022

Document Path: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\2021 OLMM Report\Figure 6.10_2021 RAA 2019 vs 2018 Survey.mxd



Plotted By: Domanski, Joshua

Plot Date: 5/17/2022

Figure 6.11

Honeywell

RA-C 2021 Core Locations and Historic Bathymetry Comparison

PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

Document Path: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\2021 OLMM Report\Figure 6.11_2021 RAC 2020 vs 2019 Survey.mxd

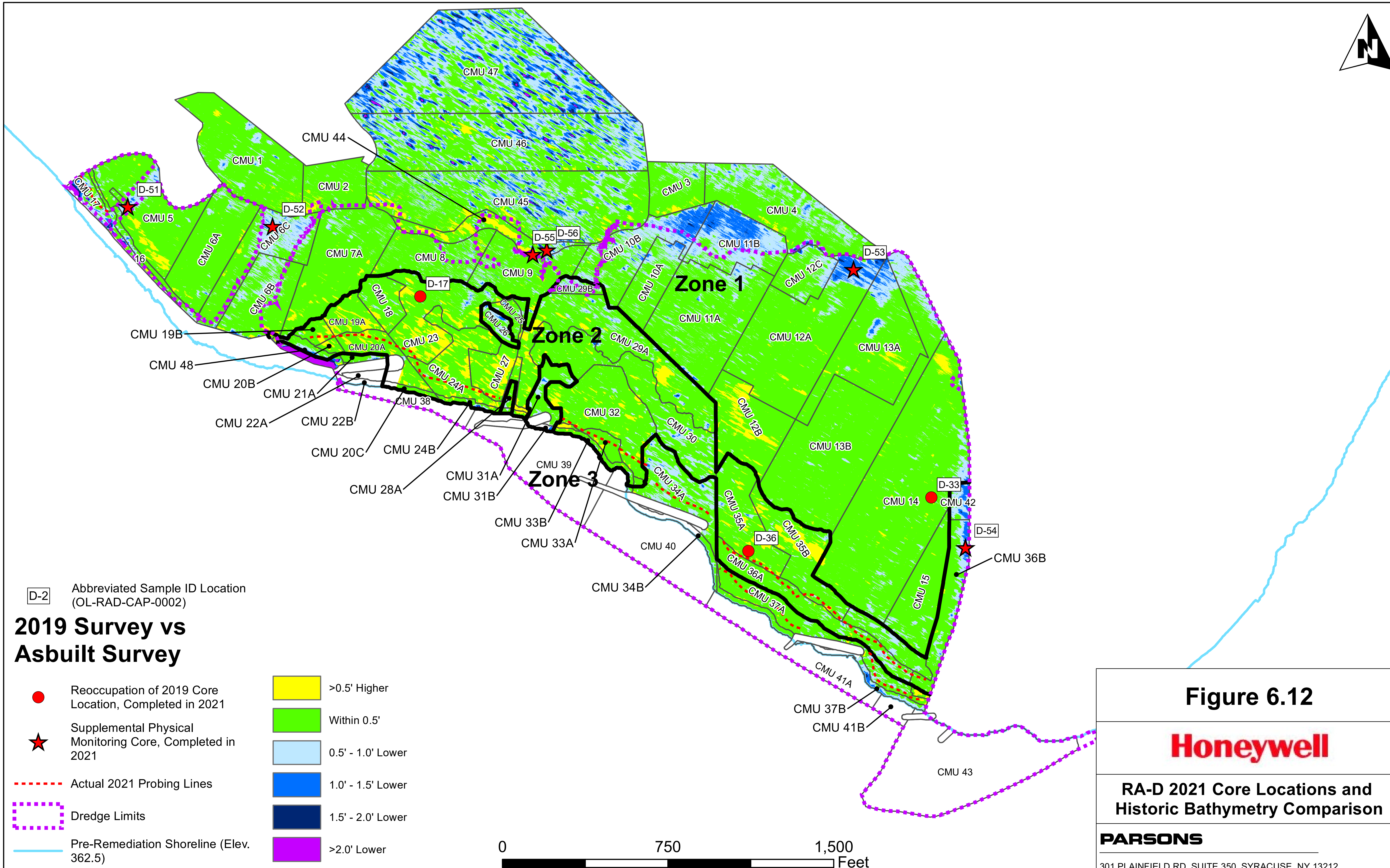


Figure 6.12

RA-D 2021 Core Locations and Historic Bathymetry Comparison

Document Path: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\2021 OLMM Report\Figure 6.12_2021 RAD 2019 vs AB Survey.mxd

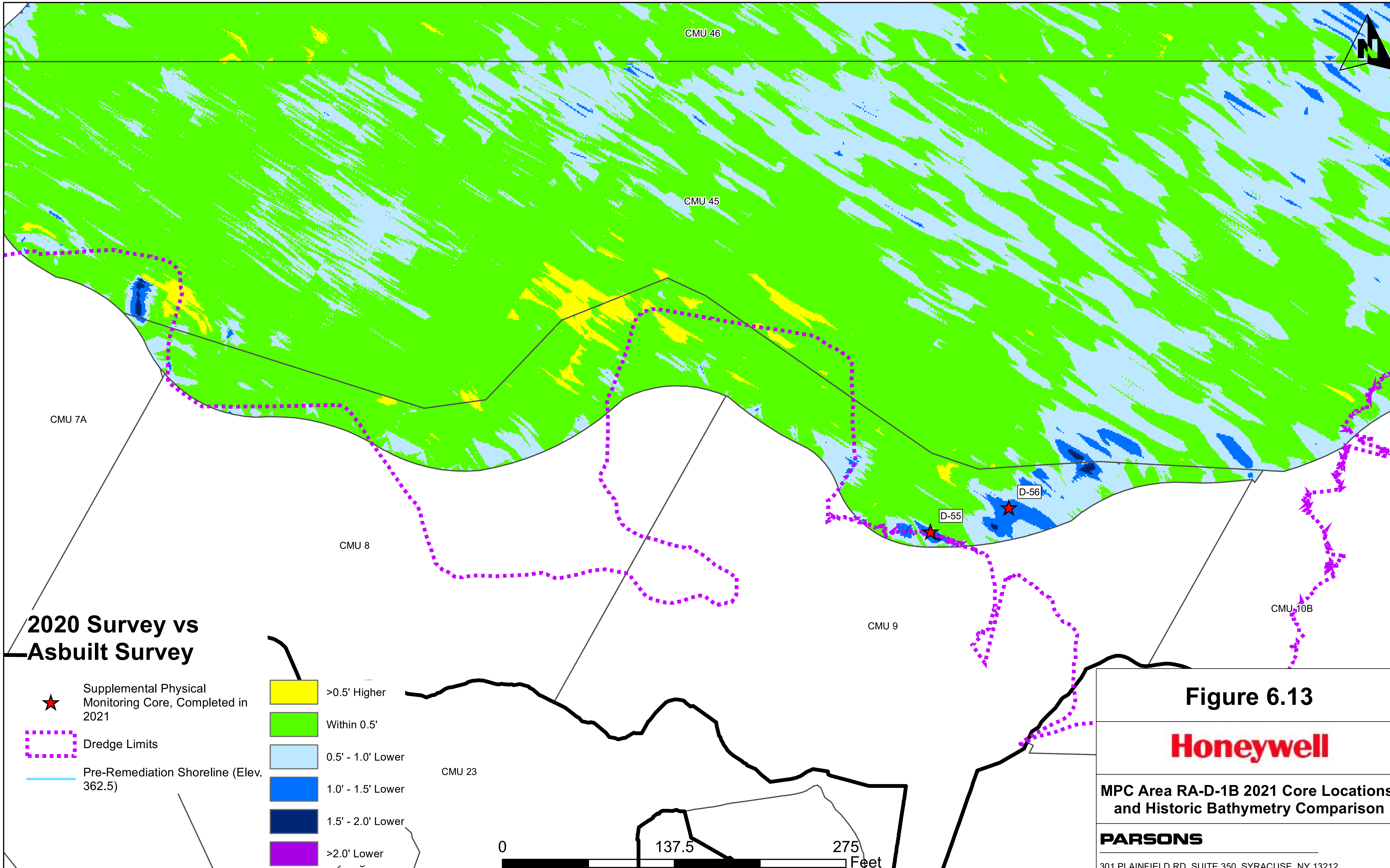


Figure 6.13

Honeywell

MPC Area RA-D-1B 2021 Core Locations and Historic Bathymetry Comparison

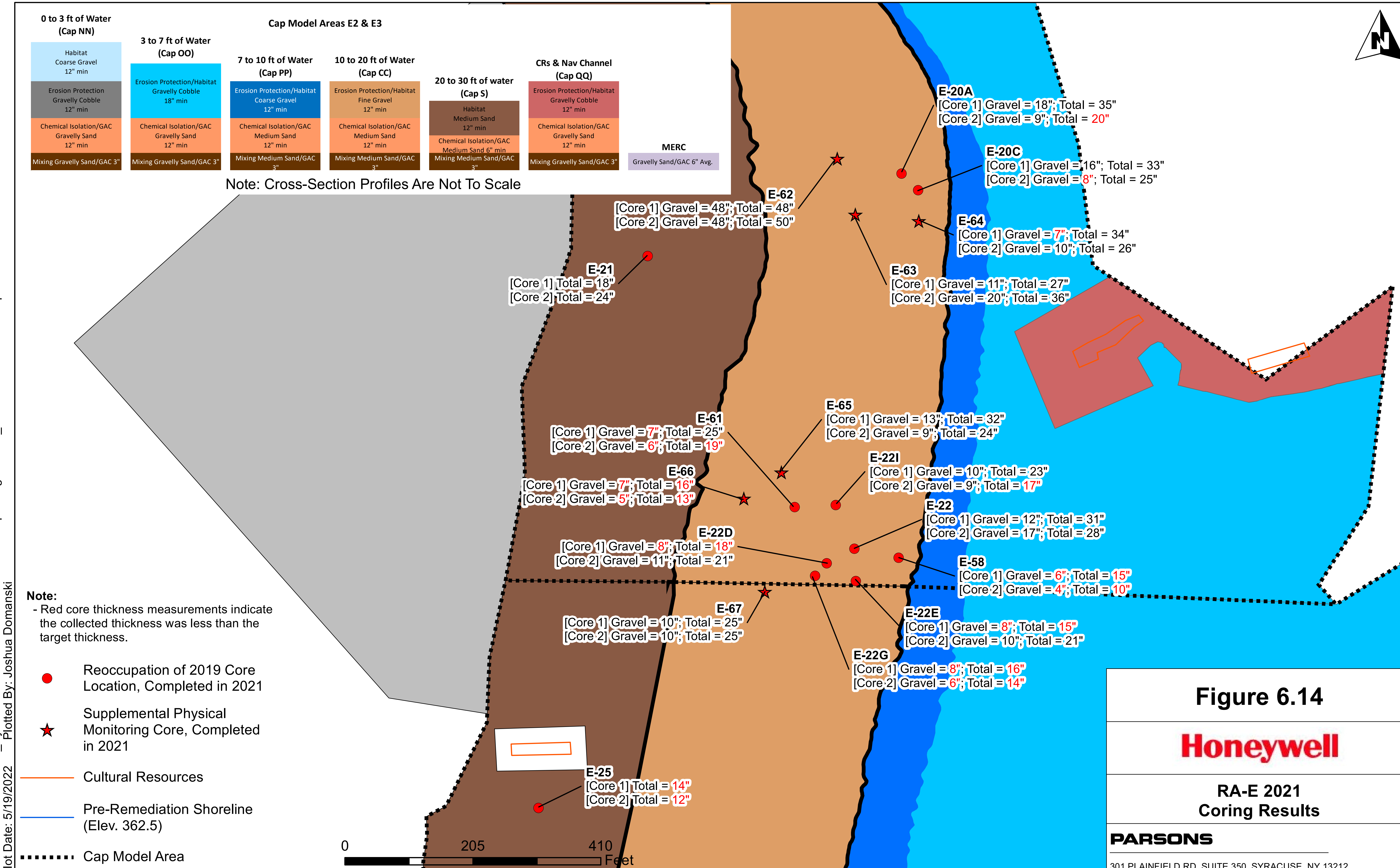
PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

Plotted By: Domanski, Joshua

Plot Date: 5/17/2022

Document Path: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\2021 OLMM Report\Figure 6.13_2021 RAD 2020 vs AB Survey.mxd



File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\2021 OLMM Report\Figure 6.14_RAEZ2 2021 Core Sample Locations.mxd
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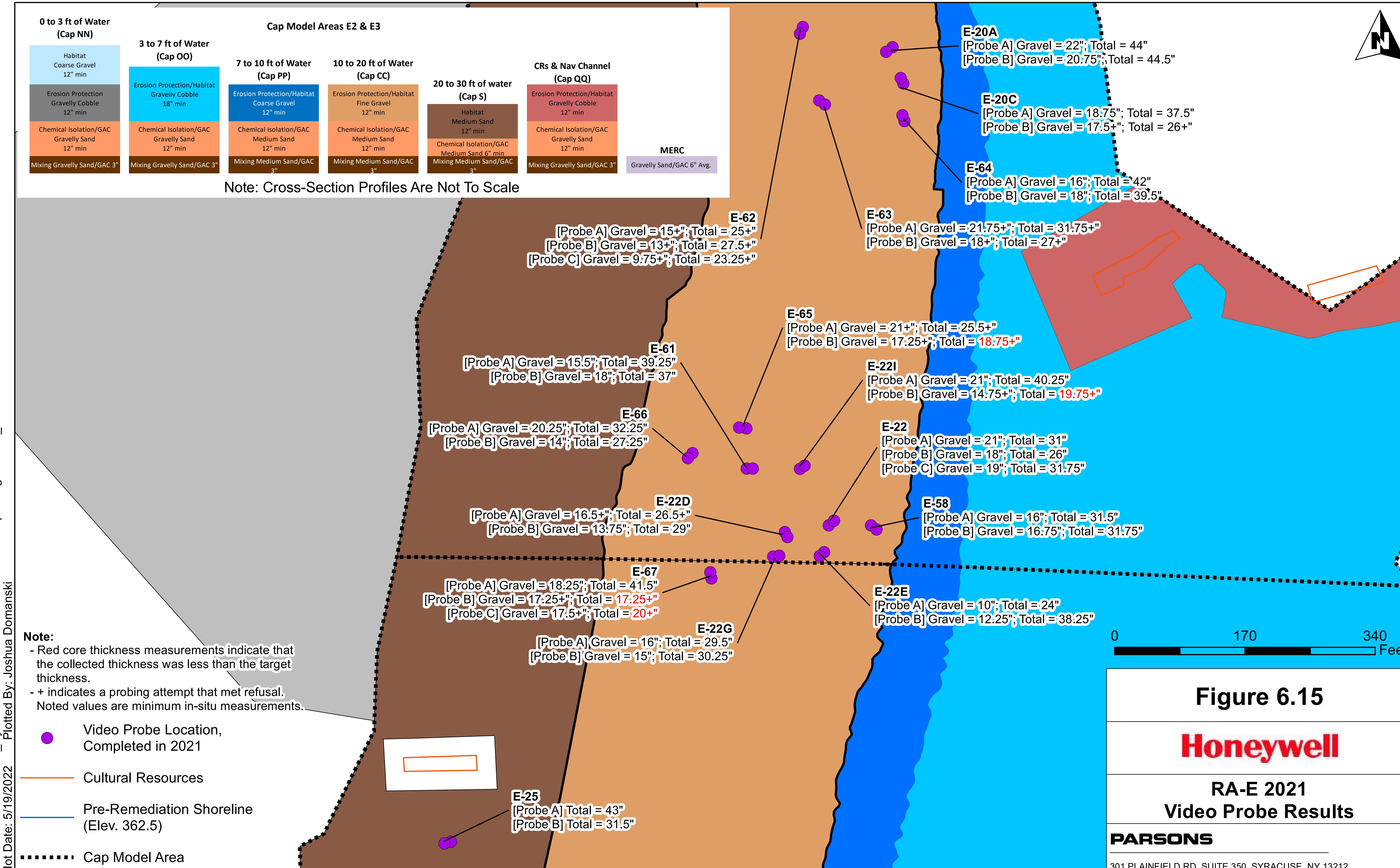
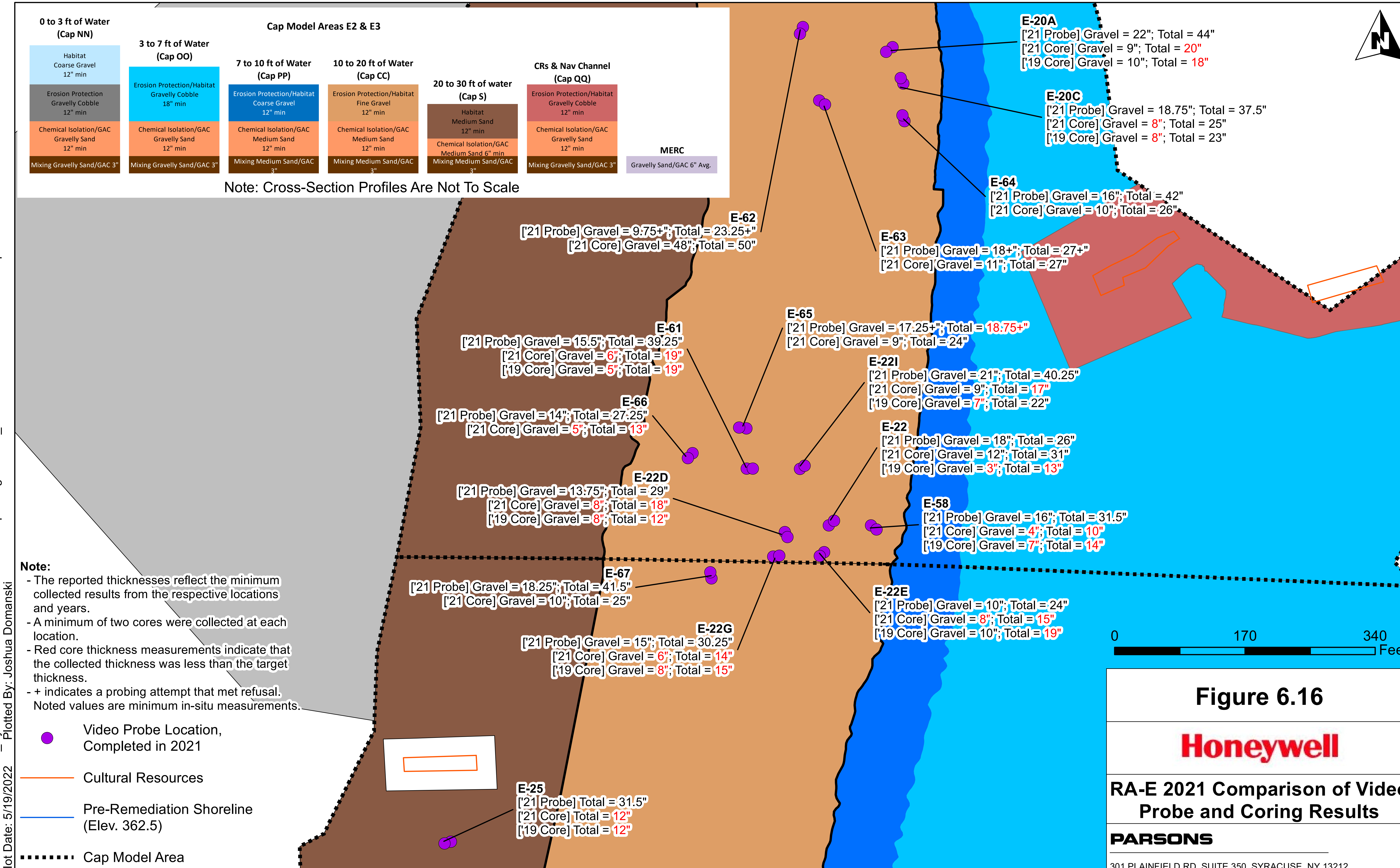
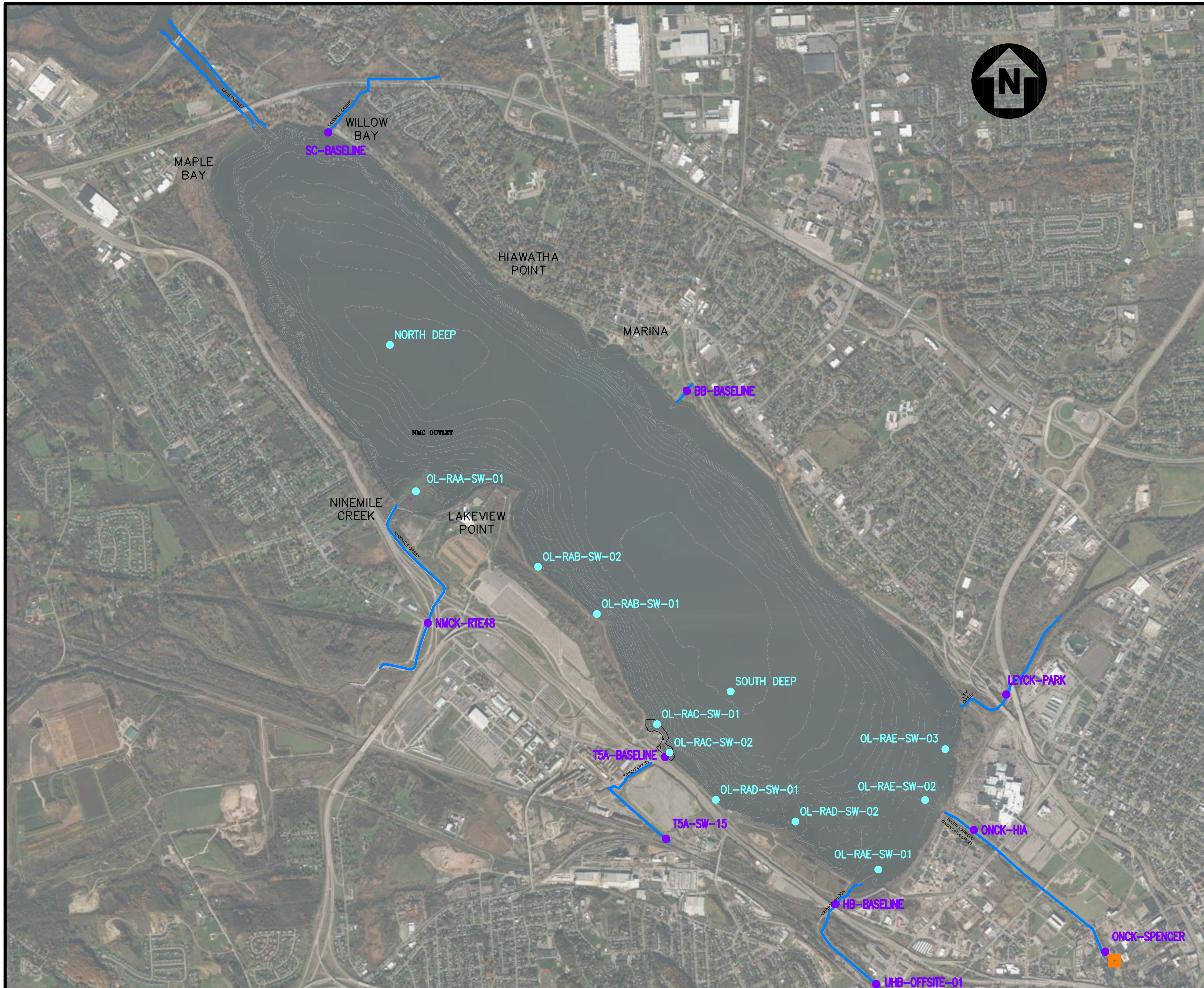


File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\2021 OLMM Report\Figure 6.15_RAEZ2 2021 Video Probe.mxd
Plot Date: 5/19/2022 Plotted By: Joshua Domanski



File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\2021 OLMM Report\Figure 6.16_RAEZ2 2021 Video Probe Comparison.mxd
Plot Date: 5/19/2022 Plotted By: Joshua Domanski



LEGEND:

- TRIBUTARY SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATIONS
- ONONDAGA CREEK USGS GAGE

NOTE:

1. POST-REMEDY CONTOURS SHOWN.
2. LAKE SURFACE WATER SAMPLING LOCATIONS ARE CONSISTENT WITH THOSE UTILIZED FOR COMPLIANCE SAMPLING AS DESCRIBED IN THE ONONDAGA LAKE MONITORING AND MAINTENANCE PLAN (PARSONS ET AL 2018).
3. SAMPLING AND ANALYSES WILL BE CONDUCTED IN ACCORDANCE WITH THE QAPP.

2500 0 2500 5000

SCALE: 1"=2500'

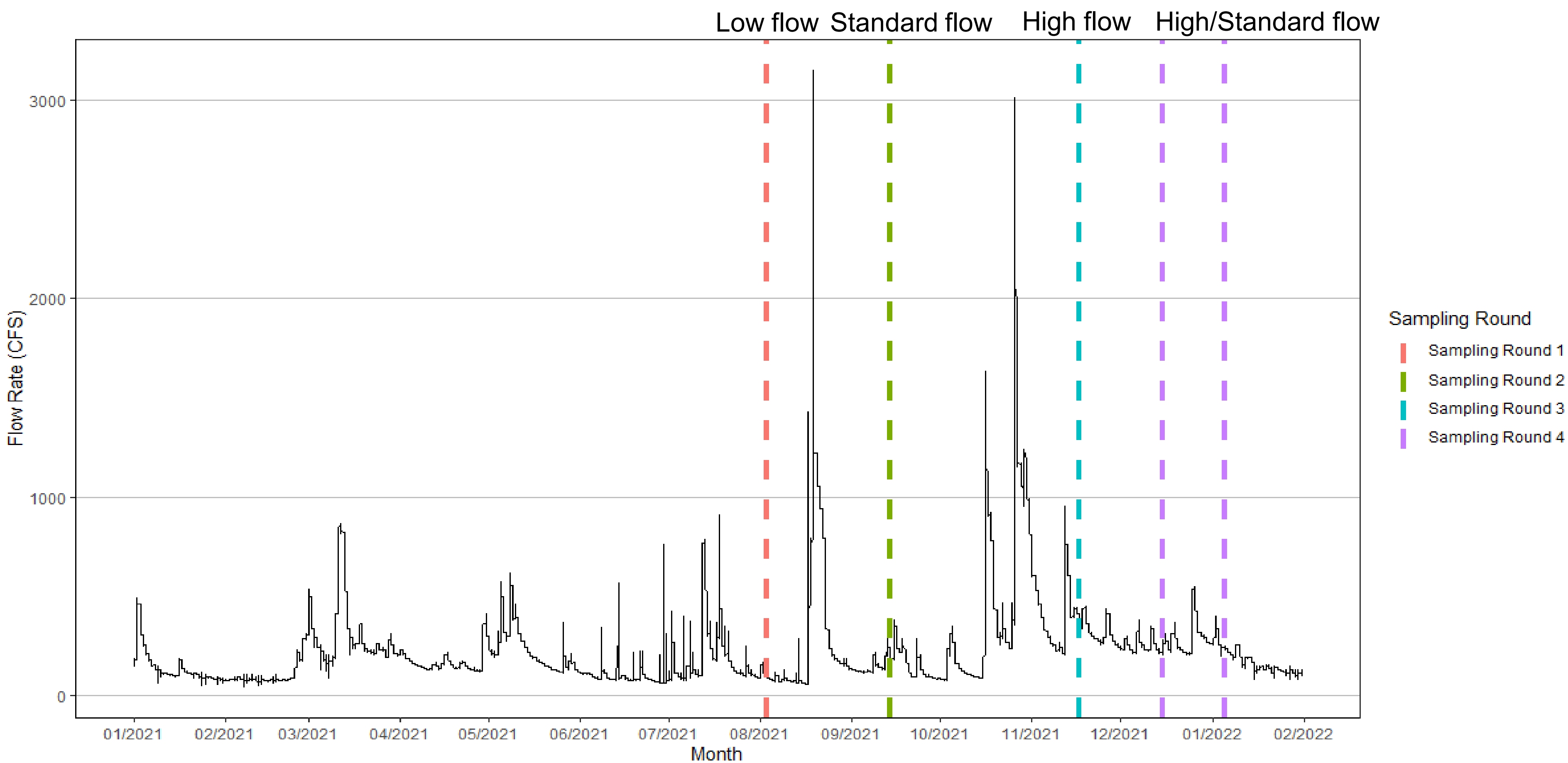
FIGURE 7.1

Honeywell ONONDAGA LAKE SYRACUSE, NEW YORK

SURFACE WATER SAMPLING LOCATIONS

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452284 2020 ONONDAGA LAKE PVM\10 TECHNICAL CATEGORIES\CAD\452284-SK001-PRESENTATION.DWG
PLOT DATE: 6/3/2022 11:30 AM PLOTTED BY: RUSSO, JILL [US-US]



Note:

- Round 4 conducted on two dates due to bottle breakage of Onondaga Creek-Hiawatha, Onondaga Creek-Spencer and Ninemile Creek
- Flow data obtained from USGS gage for Onondaga Creek at Spencer Street

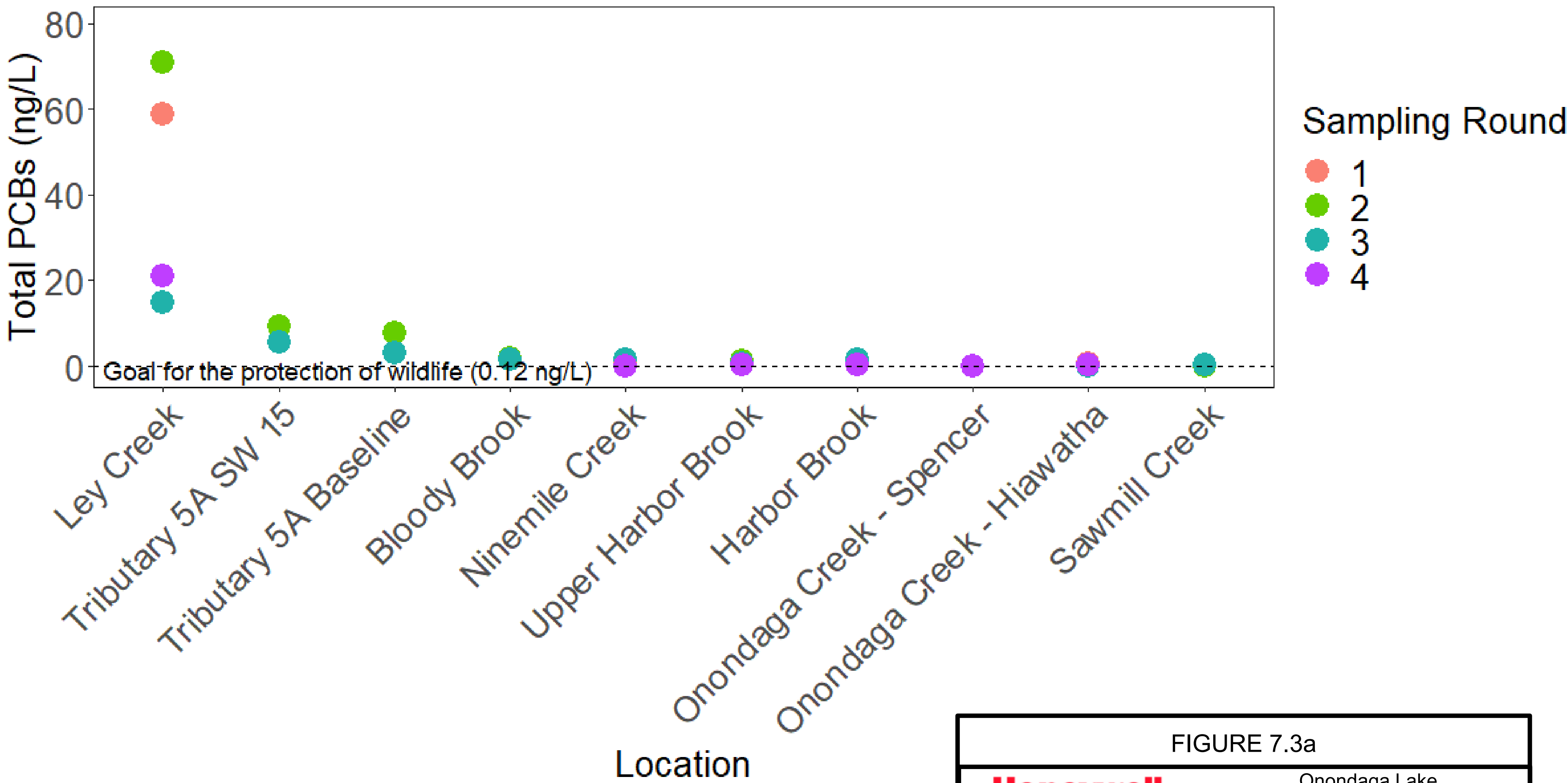
FIGURE 7.2

Honeywell

Onondaga Lake
Syracuse, New York

Onondaga Creek Flows from 2021 through January, 2022

PARSONS
301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560



Note: Goal for Protection of Human Health (0.001 ng/L) not shown

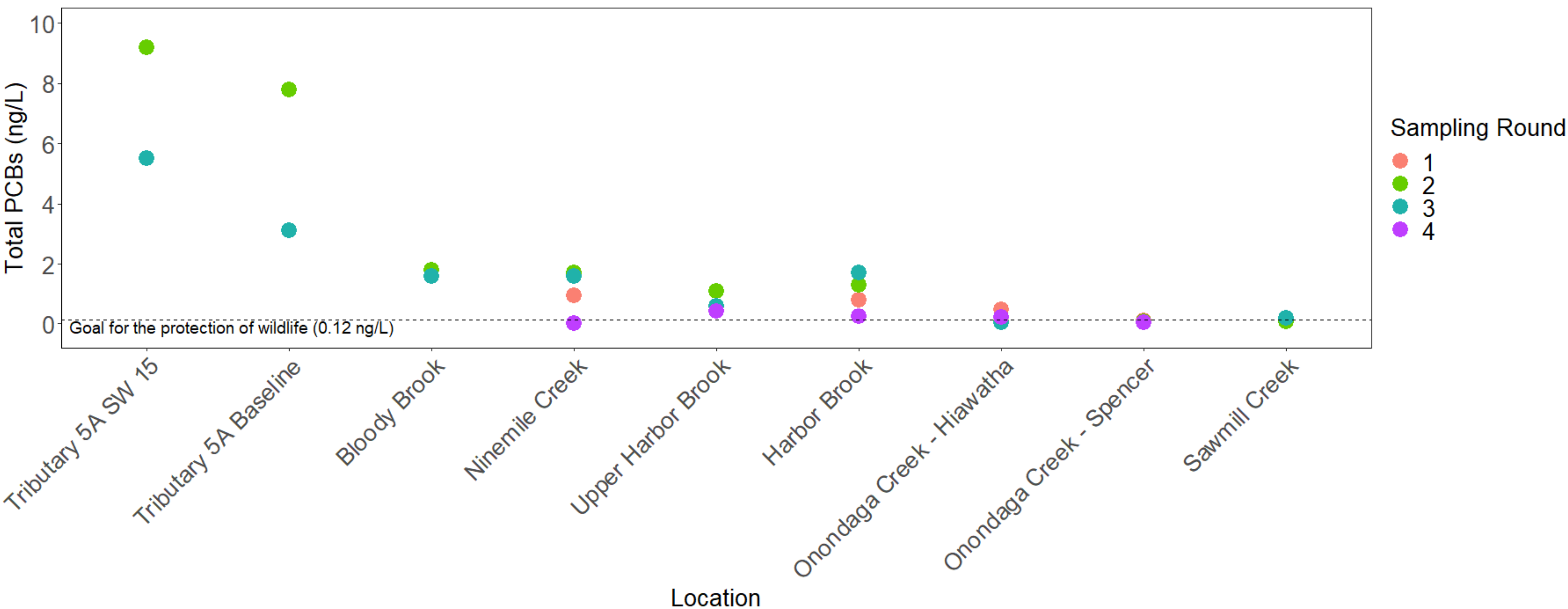
FIGURE 7.3a

Honeywell

Onondaga Lake
Syracuse, New York

2021 Onondaga Lake Tributary Total PCB Concentrations

PARSONS
301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560



Note: Goal for Protection of Human Health (0.001 ng/L) not shown

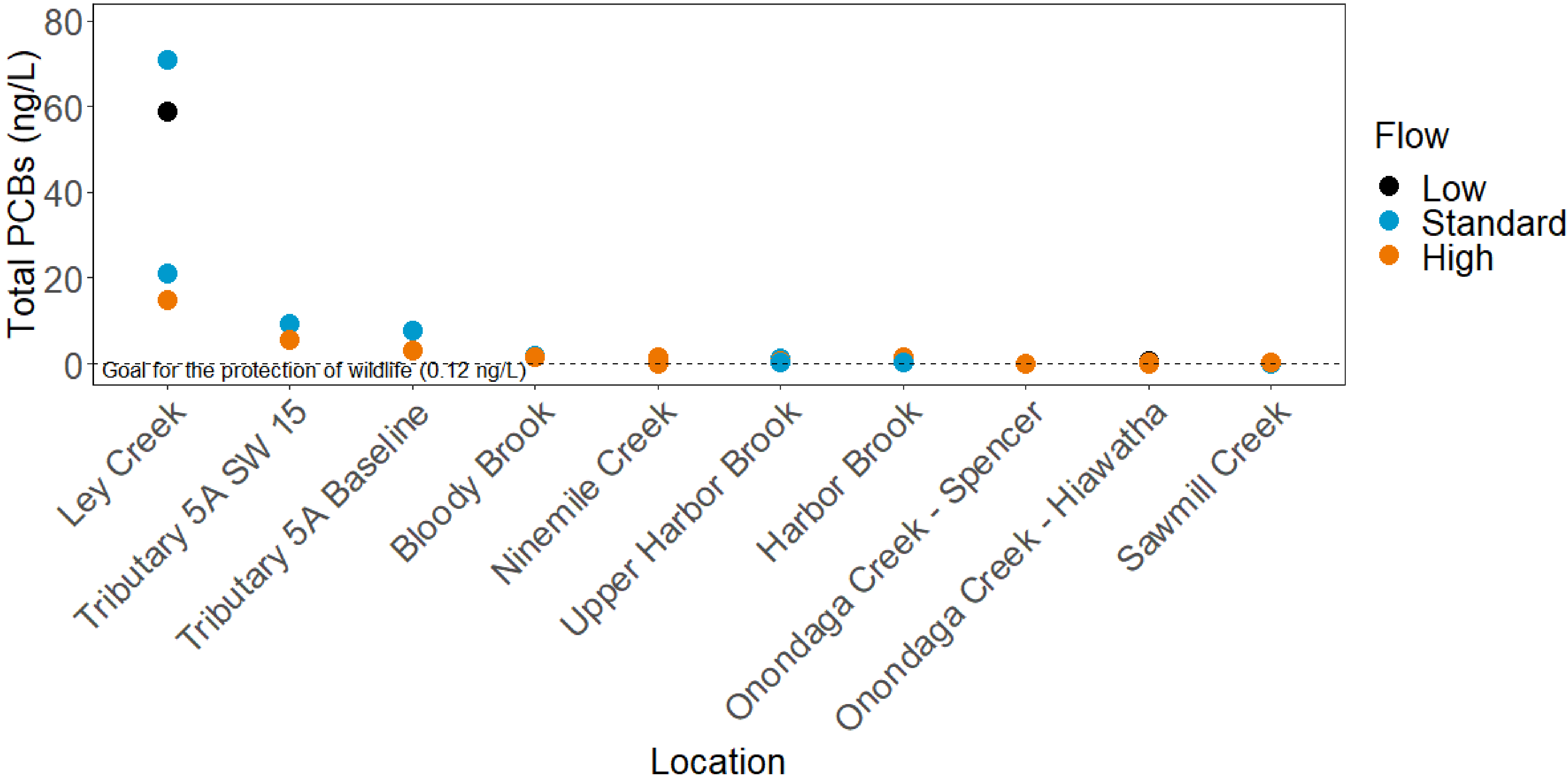
FIGURE 7.3b

Honeywell

Onondaga Lake
Syracuse, New York

2021 Onondaga Lake Tributary Total PCB Concentrations
Excluding Ley Creek

PARSONS
301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560



Note: Goal for Protection of Human Health (0.001 ng/L) not shown

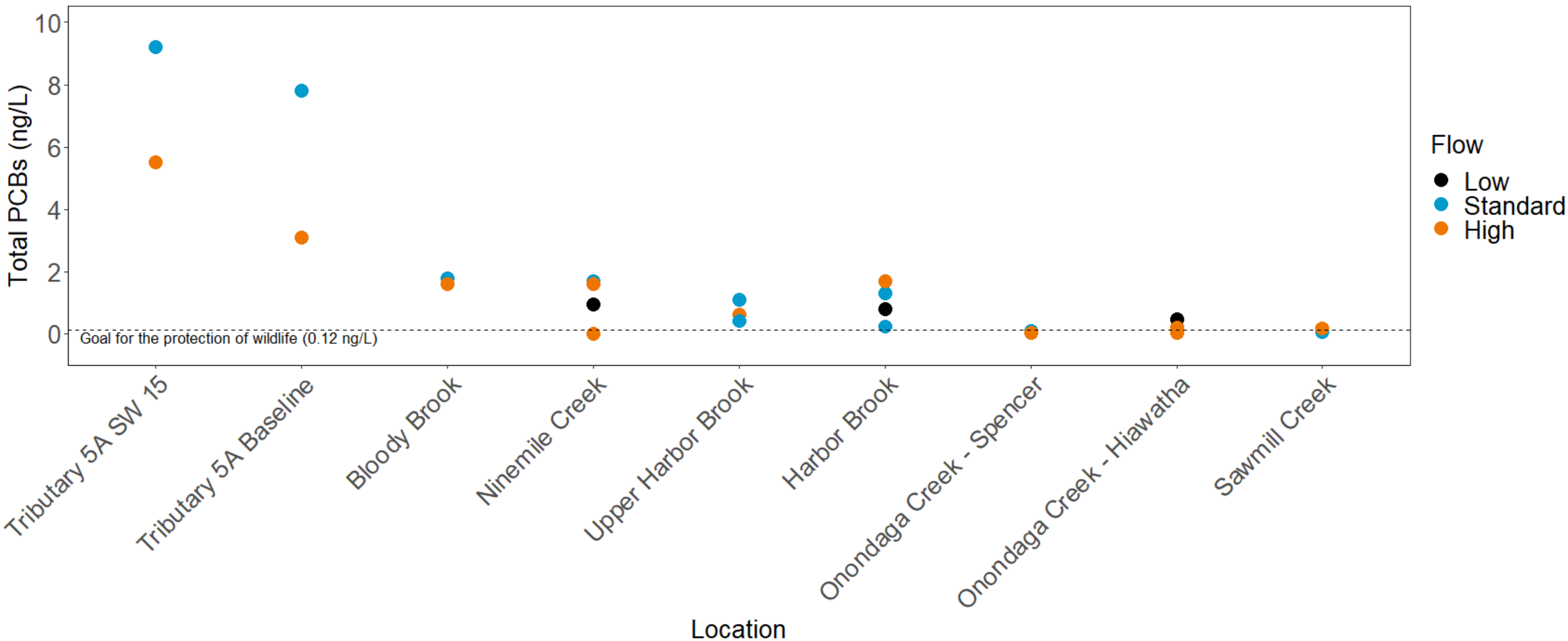
FIGURE 7.3c

Honeywell

Onondaga Lake
Syracuse, New York

2021 Onondaga Lake Tributary Total PCB Concentrations
Results by Flow

PARSONS
301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560



Note: Goal for Protection of Human Health (0.001 ng/L) not shown

FIGURE 7.3d

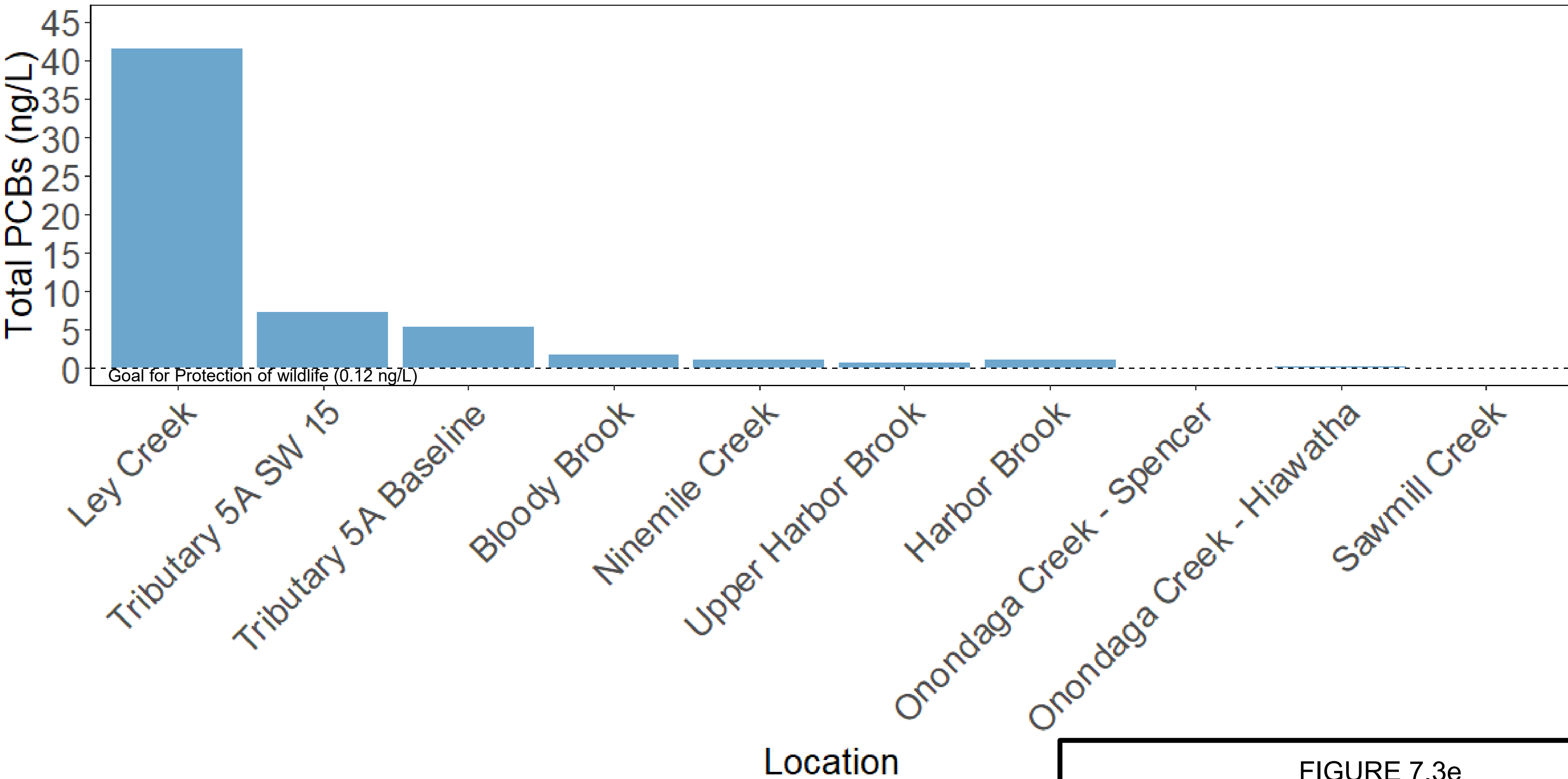
Honeywell

Onondaga Lake
Syracuse, New York

2021 Onondaga Lake Tributary Total PCB Concentration
Results by Flow Excluding Ley Creek

PARSONS

301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560



Note: Goal for Protection of Human Health (0.001 ng/L) not shown

FIGURE 7.3e

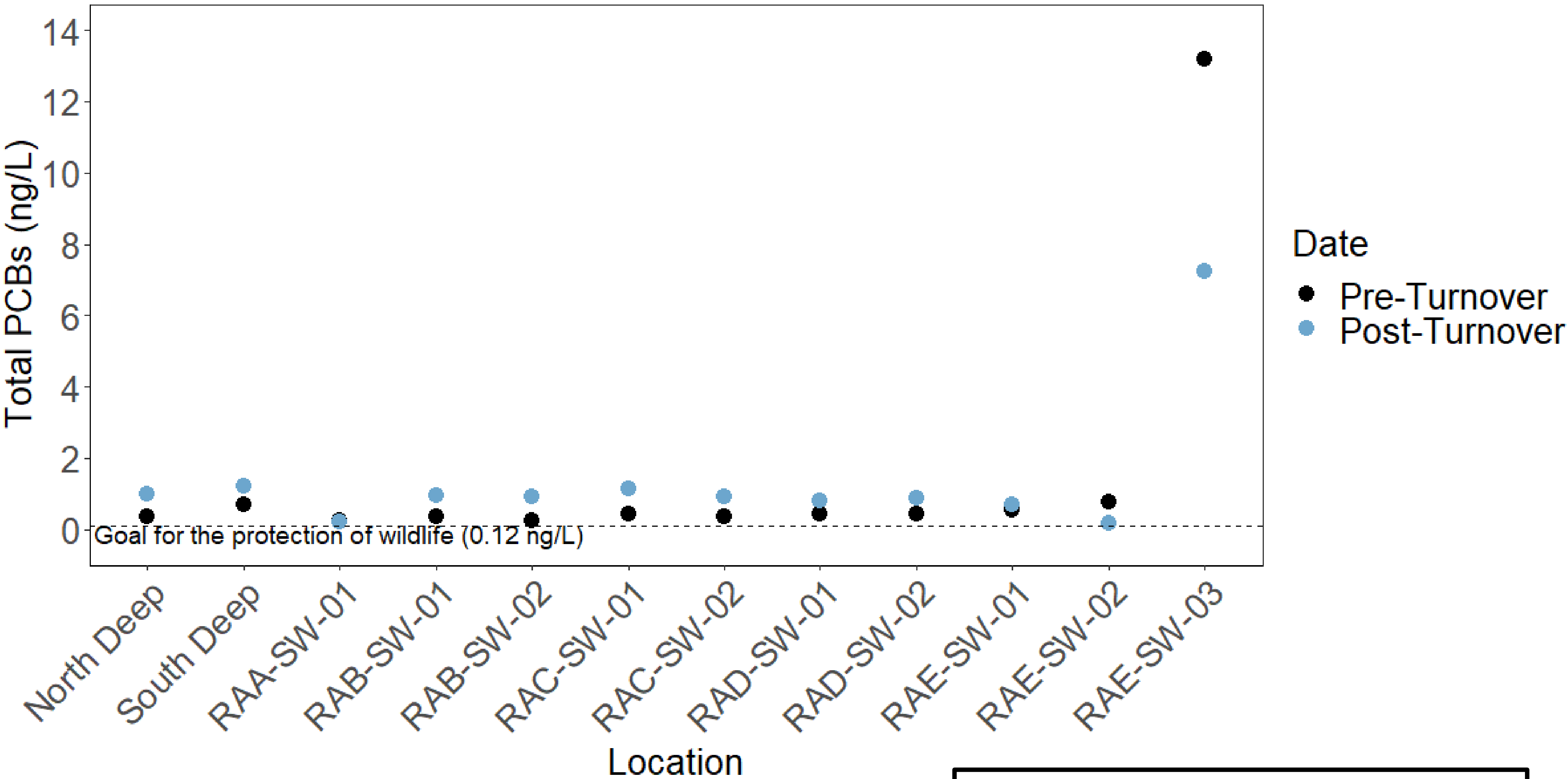
Honeywell

Onondaga Lake
Syracuse, New York

2021 Onondaga Lake Tributary Average Total PCB Concentrations

PARSONS

301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560



Note: Goal for Protection of Human Health (0.001 ng/L) not shown

FIGURE 7.4a

Honeywell

Onondaga Lake
Syracuse, New York

Onondaga Lake 2021 Total PCB Concentrations

PARSONS
301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

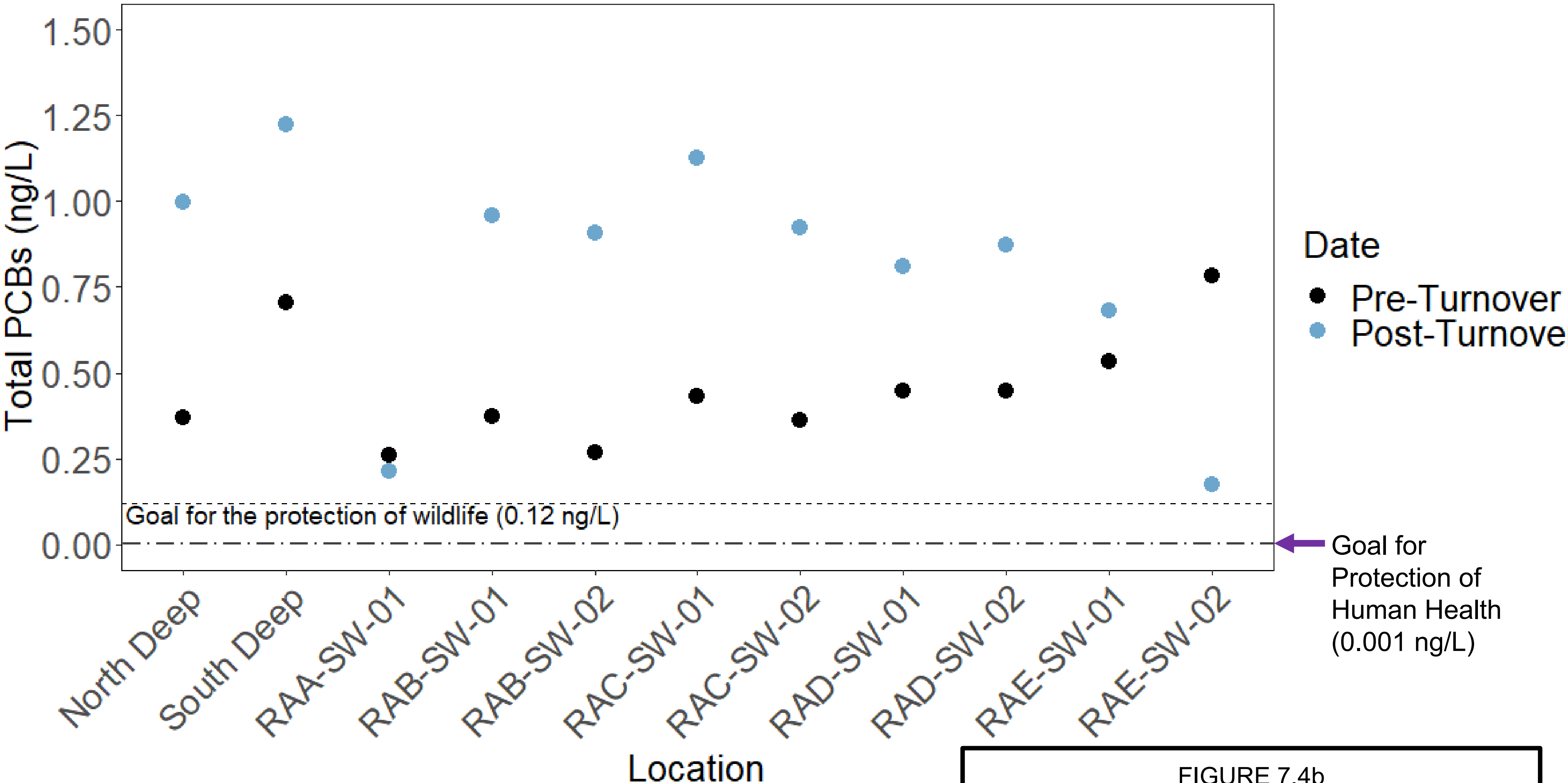


FIGURE 7.4b

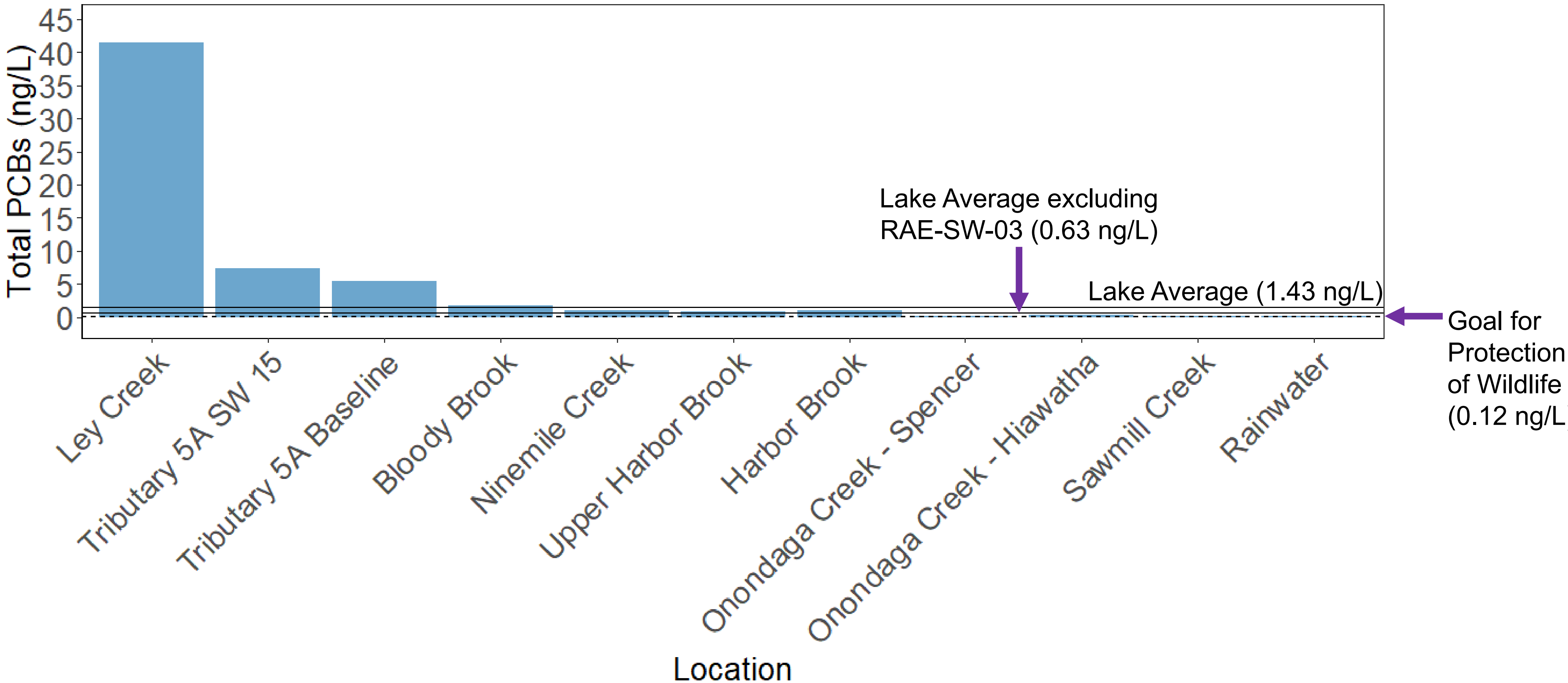
Honeywell

Onondaga Lake
Syracuse, New York

Onondaga Lake 2021 Total PCB Concentrations Excluding RAE-SW-03

PARSONS

301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560



Note: Goal for Protection of Human Health (0.001 ng/L) not shown

FIGURE 7.5a

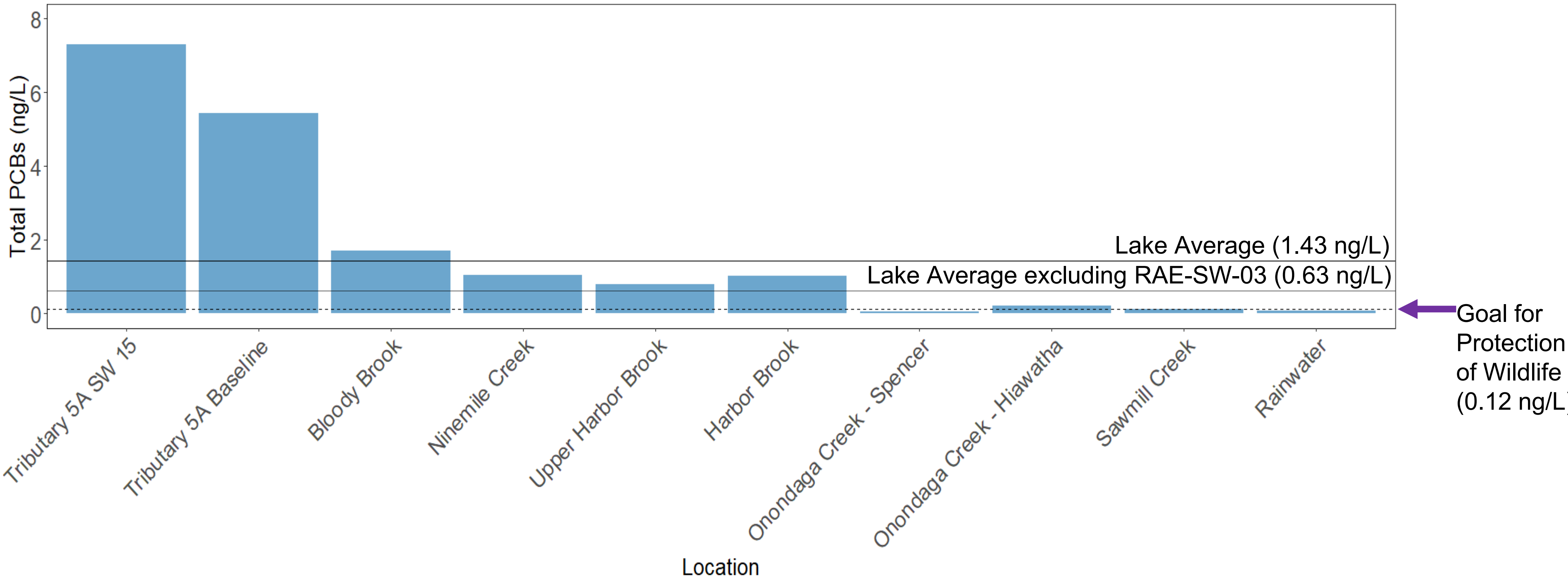
Honeywell

Onondaga Lake
Syracuse, New York

Onondaga Lake and Tributary 2021 Average Total PCB Concentrations

PARSONS

301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560



Note: Goal for Protection of Human Health (0.001 ng/L) not shown

FIGURE 7.5b

Honeywell

Onondaga Lake
Syracuse, New York

Onondaga Lake and Tributary 2021 Average Total PCB Concentrations Excluding Ley Creek

PARSONS
301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

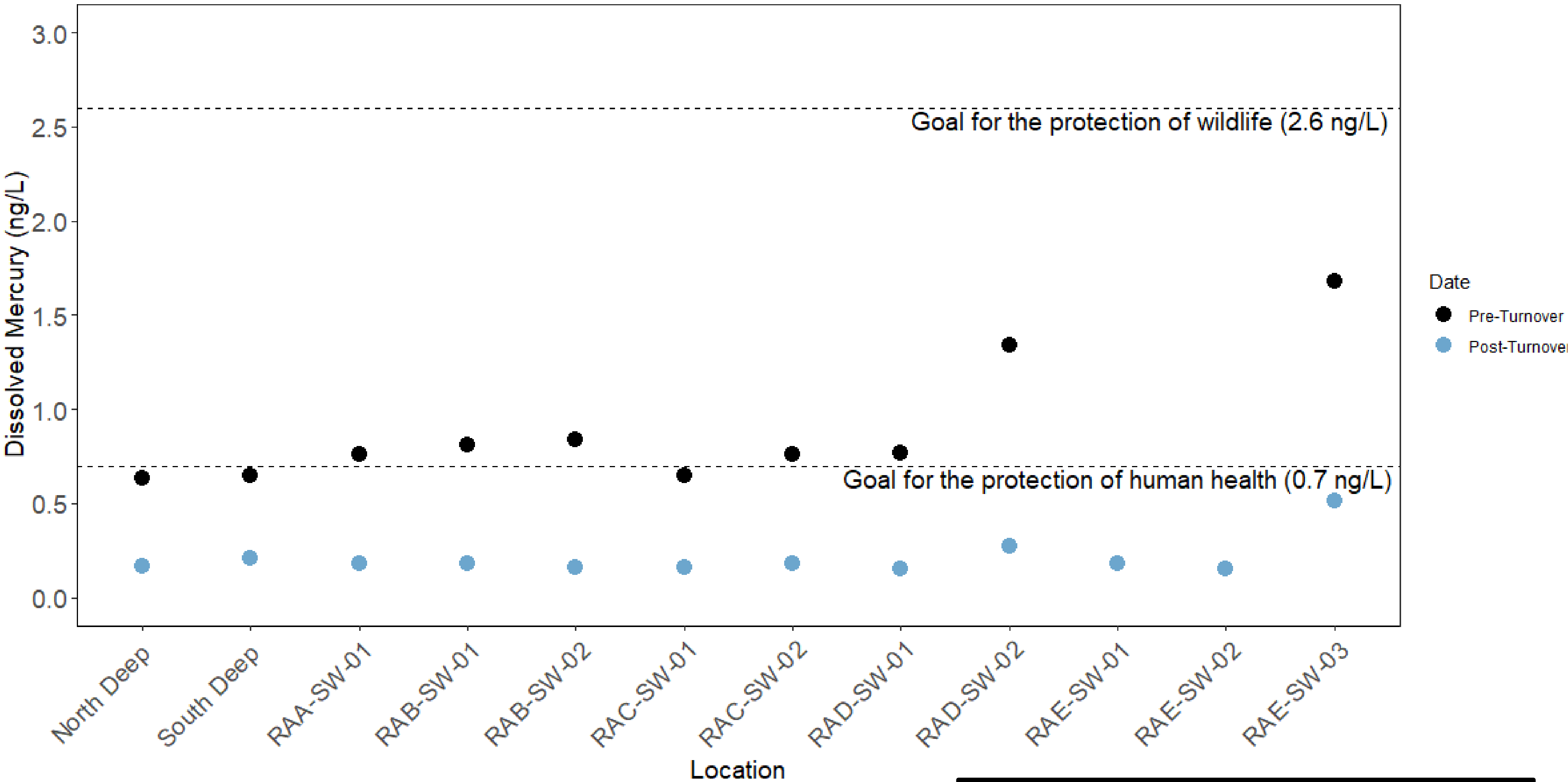


FIGURE 7.6

Honeywell

Onondaga Lake
Syracuse, New York

Onondaga Lake 2021 Dissolved Mercury Concentrations

PARSONS

301 Plainfield Rd, Suite 350, Syracuse, NY, 13212, Phone 315-451-9560

APPENDIX 1A – 2021 SCOPE DOCUMENTATION

From:	Larson, Tim (DEC)
To:	Burnham, Anne
Cc:	Spera, Michael; Glaza, Edward; Arrigo, Mark; McDonald, Michelle; Marleiah O"Neill - AECOM (Marleiah.Oneill@aecom.com)
Subject:	[EXTERNAL] RE: littoral zone locations MNR
Date:	Tuesday, May 18, 2021 7:59:58 AM
Attachments:	image002.jpg image003.png image004.png image005.png image006.png

---

Anne,

Your planned approach sounds good. As per our conversation a short time ago, you have samples from the profundal zone that were collected yesterday and additional samples from the profundal zone will be collected today. Therefore, it sounds like it would be an option to collect some of our split samples today from some of those samples. Marleiah will follow up with you and the field team today on this issue.

Thank you,

Timothy J. Larson, P.E.

Senior Project Manager, Division of Environmental Remediation

New York State Department of Environmental Conservation

625 Broadway, 12th Floor, Albany, NY 12233

P: (518) 402-9789 | C: (518) 257-0665 | Fax: (518) 402-9773 | tim.larson@dec.ny.gov

www.dec.ny.gov [dec.ny.gov] | [facebook.com] | [twitter.com] | [instagram.com]

From: Burnham, Anne <Anne.Burnham@parsons.com>

Sent: Monday, May 17, 2021 7:57 PM

To: Larson, Tim (DEC) <tim.larson@dec.ny.gov>

Cc: Spera, Michael <michael.spera@aecom.com>; Glaza, Edward <Edward.Glaza@parsons.com>; Arrigo, Mark <Mark.Arrigo@parsons.com>; McDonald, Michelle <michelle.mcdonald@honeywell.com>

Subject: littoral zone locations MNR

Tim and Mike,

We made several attempts to gravity core in the littoral zone today with little success (very poor penetration/recovery). We are going to give it another try, but wanted to reach out to let you know that if we continue to be unsuccessful we would like to proceed with vibracoring the littoral zone locations (ATL has the proper equipment with them). All other locations will be gravity cored as planned. Please let us know if you have any questions or concerns with this. We are planning to proceed with deeper gravity core locations for most of tomorrow, with the littoral zone planned for Wednesday (with splits available to be collected by DEC on Thursday).

Thank you,
Anne

Anne L. Burnham
Senior Scientist
301 Plainfield Road, Suite 350
Syracuse, NY
anne.burnham@parsons.com - Mobile +1 315.546.5318
PARSONS - Envision More
www.parsons.com [protect2.fireeye.com] | LinkedIn | Twitter | Facebook

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau D
625 Broadway, 12th Floor, Albany, NY 12233-7013
P: (518) 402-9676 I F: (518) 402-9773
www.dec.ny.gov

June 25, 2021

Mr. Shane Blauvelt, P.E.
Syracuse Remediation Program Manager
Honeywell
301 Plainfield Road, Suite 330
Syracuse, NY 13212

Re: 2021 Onondaga Lake Scope – Date June 24, 2021

Dear Mr. Blauvelt:

We have received and reviewed the above-referenced subject document, that was submitted by Anne Burnham to my attention on June 25, 2021, and the revised document has appropriately addressed our previous comments. Therefore, the 2021 Onondaga Lake Scope, dated June 24, 2021, is hereby approved. Please see that this document, along with this approval letter, is sent to the document repositories selected for this site.

Sincerely,

Timothy J. Larson, P.E.
Project Manager

ec: E. Glaza - Parsons
A. Burnham - Parsons
M. McDonald - Honeywell
R. Nunes - USEPA

Prepared by:

PARSONS

301 Plainfield Road, Suite 350
Syracuse, New York 13212
315.451.9560

Honeywell

2021 ONONDAGA LAKE SCOPE
JUNE 2021

Below is a summary of the Onondaga Lake monitoring anticipated to be performed in 2021. As in 2020, we continue to work through the challenges associated with Covid-19 and will notify NYSDEC if anticipated 2021 field work detailed below is impacted.

SMU-8 Monitored Natural Recovery (MNR)

Monitoring in 2021 related to MNR will include collection and analysis settling sediments at South Deep as specified in the Onondaga Lake Monitoring and Maintenance Plan (OLMMP) (Parsons 2018).

As documented in the Onondaga Lake 2018 Annual and Comprehensive Monitoring and Maintenance report, MNR is progressing faster than anticipated based on projections completed as part of the Final Design. As documented in the 2018 Annual and Comprehensive report as well as in USEPA's Second Five-Year Review report (September 2020), mercury concentrations in surface sediment samples (0 to 4 cm) collected in SMU-8 during the last two MNR routine sampling events in 2014 and 2017 have been less than the mercury PEC of 2.2 mg/kg at all sample locations and, based on data from 2017, the area-weighted average surface sediment mercury concentrations have declined to values less than or equal to the mercury bioaccumulation-based sediment quality value (BSQV) of 0.8 mg/kg in all five sub-basins of Onondaga Lake. Therefore, in accordance with the OLMMP, it was recommended that the 2021 sampling consist of the expanded sampling associated with the first compliance verification sampling event. This will entail sampling from a higher number of sampling locations than was completed during prior routine sampling events, including 49 locations in SMU 8 (sampled from 0 to 4 cm and 4 to 10 cm) and 14 in the unremediated portion of the littoral zone (sampled from 0 to 15 cm), as detailed in the Monitored Natural Recovery Work Plan in the OLMMP. The 2021 sampling would be the first year of two compliance sampling events. Collection of and visual assessment of cores from microbead plots will also be performed in 2021 in accordance with the OLMMP.

Biota Tissue

Fish tissue sample collection conducted in 2021 will continue consistent with the OLMMP and the 2020 Onondaga Lake Monitoring Scope Memo[1] as approved on July 3, 2021. Tissue monitoring of zooplankton will be conducted in 2021 in accordance with the OLMMP.

It is recommended that analysis of mercury and polychlorinated biphenyls (PCBs), as the primary contaminants of concern, be continued for all species in 2021. For hexachlorobenzene, dichlorodiphenyltrichloroethane (DDT) and metabolites, and dioxins/furans, analyses were performed on the 2019 samples but not the 2020 samples.

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1 The target species for large prey fish will consist of both White Sucker (*Catostomus commersonii*) and Shorthead Redhorse (*Moxostoma macrolepidotum*) as approved in 2020. Efforts will be made to have an even distribution of 12 White Suckers and 12 Shorthead Redhorse, but may vary based on availability at the time of collection.

These chemicals will be evaluated for inclusion in the 2021 monitoring program following receipt and evaluation of the 2019 data. As discussed in the 2020 Onondaga Lake Monitoring Scope Memo, hexachlorobenzene, which has no target concentration, has been consistently undetected or detected at low concentrations in all species. Concentrations of DDT and metabolites have been consistently low with 95% UCL values below targets in small and large prey fish. Regarding dioxins/furans, concentrations are not consistently below the noncancer and cancer targets, with the exception of Pumpkinseed. It is recommended that a determination on analytes for 2021 fish tissues be delayed until 2019 data are validated and discussed with New York State Department of Environmental Conservation (NYSDEC).

Surface Water

Additional surface water monitoring is planned to occur in 2021 as documented in Section 4 of the 2018 Annual and Comprehensive Report. The proposed scope, including analytes, of this monitoring has been submitted to NYSDEC for review and approval under separate cover in advance of the 2021 field season. In lake-samples conducted as a part of this work will be collected with a submersible pump as per UFI SOP 304. Tributary samples will be collected via grab sampling, the SOP for which will be included in the upcoming submittal of the revised work plan.

Surface water monitoring will be completed as part of the Nitrate Addition program, as documented in the Operations and Monitoring (OM) Plan for Nitrate Addition (Parsons and UFI 2014). Samples will be collected as per UFI SOP 303 utilizing a Kemmerer sampler. Monitoring of surface water will be conducted in 2021 as specified in this plan, except for the elimination of monitoring for manganese, total dissolved gas, and ferrous iron. The elimination of these three parameters from the monitoring program was documented in the 2017 Annual Report for Nitrate Addition, which has been approved by the NYSDEC.

Cap Maintenance and Monitoring

Physical Monitoring

Cap physical monitoring will be completed in 2021 consistent with the OLMMP. This will consist of comprehensive probing (i.e., all probing transects in Remediation Areas (RA) A through E as shown in Figures D.7 through D.11 in the Cap Monitoring Work Plan in the OLMMP will be completed) and physical inspection, including shoreline inspections and drone aerial photography. Any signs of potential erosion along the Wastebeds 1-8 stabilized shoreline will be photographed and noted during the shoreline inspection.

Additional physical monitoring will be completed based on the results from the 2019 and 2020 monitoring programs. Additional monitoring based on the 2019 results is consistent with the Honeywell responses to NYSDEC comments on the 2019 Annual Report pertaining to physical monitoring, included as Attachment 1. Additional physical monitoring to be completed in 2021 will consist of:

- Completion of supplemental coring in RA-A as shown in Figure 1, as per Honeywell's responses to NYSDEC comments 37 and 98 to the 2019 Annual Report;
- Completion of supplemental coring in RA-C as shown in Figure 2, based on the results from the 2019 and 2020 bathymetry surveys and discussions with NYSDEC;
- Completion of a supplemental probing transect in RA-C as shown in Figure 3, as per Honeywell's responses to NYSDEC comment 44 to the 2019 Annual Report;

- Completion of elevation measurements of the area of additional placement in RA-D in 2019 for comparison to the elevations measured shortly after additional material placement, as per Honeywell's response to NYSDEC comment 44 to the 2019 Annual Report;
- Completion of supplemental coring in RA-D and RA-E as shown in Figures 4, 6 and 7, as per Honeywell's responses to NYSDEC comments 44, 76, 99, 101, and 102 to the 2019 Annual Report;
- Completion of videoprobing as shown in Figure 7 and as detailed in Attachment 2, as per Honeywell's response to NYSDEC comment 44 to the 2019 Annual Report; and
- Completion of supplemental coring in RA-D as shown in Figure 5, based on the results from the 2019 and 2020 bathymetry surveys and discussions with NYSDEC.

For all of these core locations, a minimum of two cores will be collected at each location. If habitat layer or total thicknesses are less that the target, additional cores as well as step-out cores and/or videoprobing may be conducted, to be determined in consultation with NYSDEC.

Monitoring of groundwater upwelling velocities in RA-A will also be completed in 2021 consistent with the NYSDEC-approved Work Plan dated March 2, 2021.

Chemical Monitoring

Consistent with the OLMMP, no cap chemical monitoring is scheduled for 2021.

Habitat Reestablishment and Biological Response

Habitat monitoring and maintenance will be completed in 2021 as specified in the OLMMP, including a year-five wetland delineation for the mouth of Ninemile Creek. There are no other formal wetland surveys/delineations to be performed this year. Additional maintenance plantings will be performed in accordance with the correspondence made by Mark Arrigo to Tim Larson on 3/11/2021. Additionally, benthic macroinvertebrate sampling, which was originally scheduled to be completed in 2020 but was postponed due to COVID 19, will be carried out in 2021 in accordance with the OLMMP. This is the second of the two events in both remediated (capped) and unremediated areas (CSX shoreline and reference areas), with the first event completed in 2018. No changes in methodologies or locations are proposed for the 2021 event.

References

Parsons and UFI. 2014. Operations and Monitoring Plan for Adding Nitrate to the Hypolimnion of Onondaga Lake. Prepared for Honeywell, August 2014.

Parsons. 2018. Onondaga Lake Monitoring and Maintenance Plan. Prepared for Honeywell, June 2018.

Parsons, 2020. Onondaga Lake 2018 Annual and Comprehensive Monitoring and Maintenance Report. Prepared for Honeywell, October 2020.

FIGURES

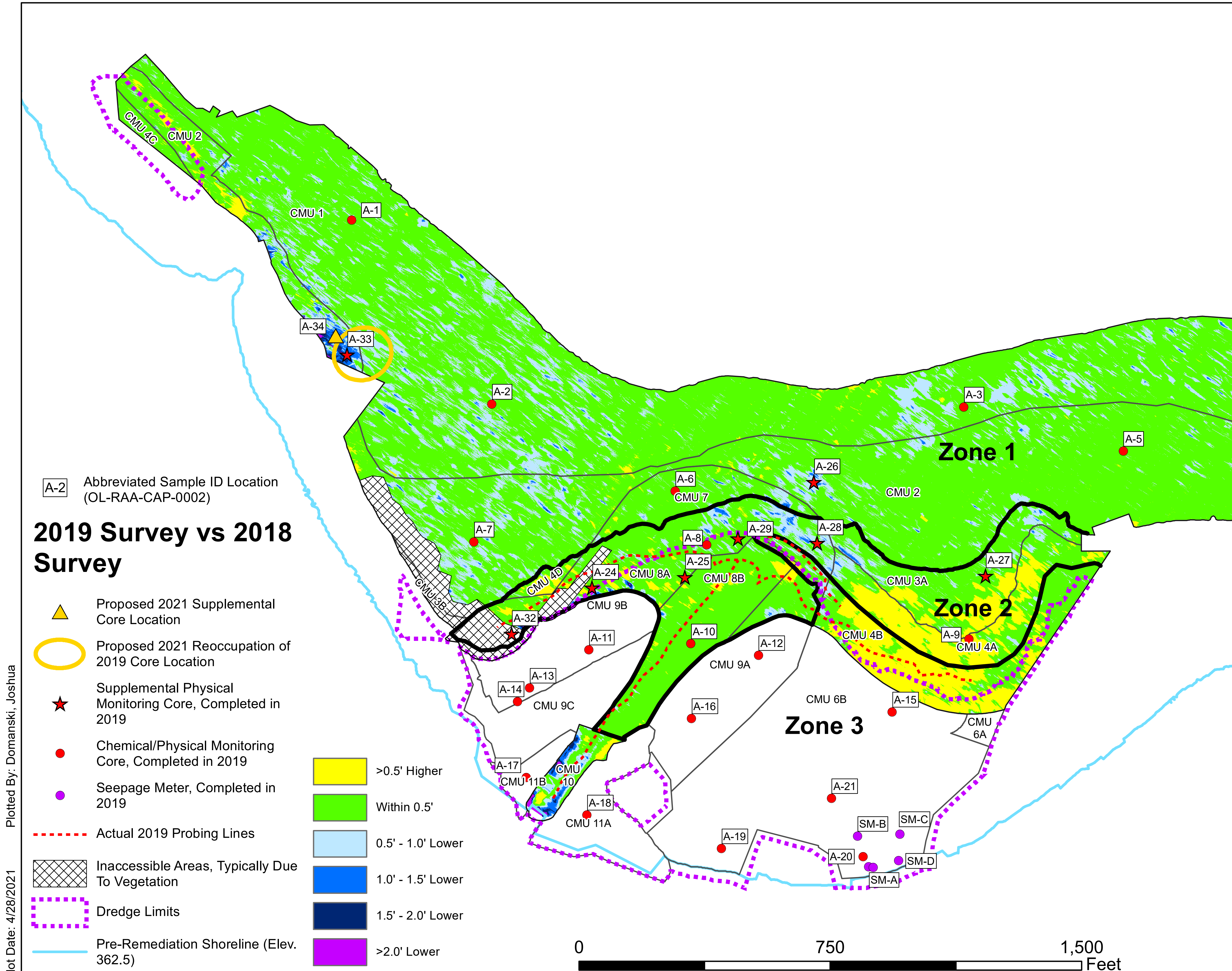


Figure 1

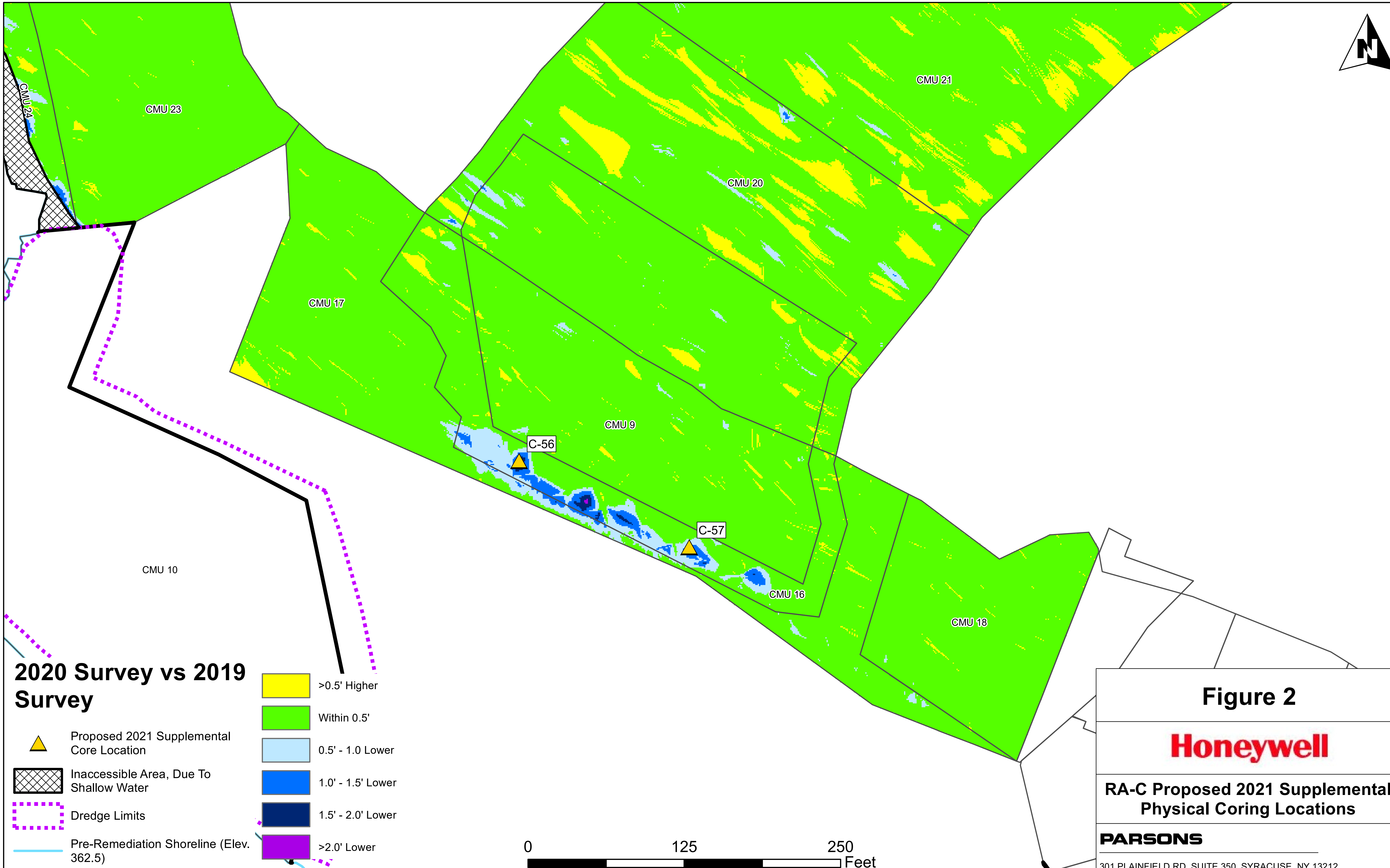
Honeywell

RA-A Proposed 2021 Supplemental Physical Coring Locations

PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

Document Path: \\nysyr04fs01\PrjData\GIS\Hon_Syracuse\OLMMS\MXDs\2021 Scope\Figure 1_RAA 2021 Proposed Supplemental Cores.mxd



2020 Survey vs 2019 Survey

- Proposed 2021 Supplemental Core Location
- Inaccessible Area, Due To Shallow Water
- Dredge Limits
- Pre-Remediation Shoreline (Elev. 362.5)

- >0.5' Higher
- Within 0.5'
- 0.5' - 1.0 Lower
- 1.0' - 1.5' Lower
- 1.5' - 2.0' Lower
- >2.0' Lower

0 125 250 Feet

Plotted By: Domanski, Joshua

Plot Date: 5/24/2021

Figure 2

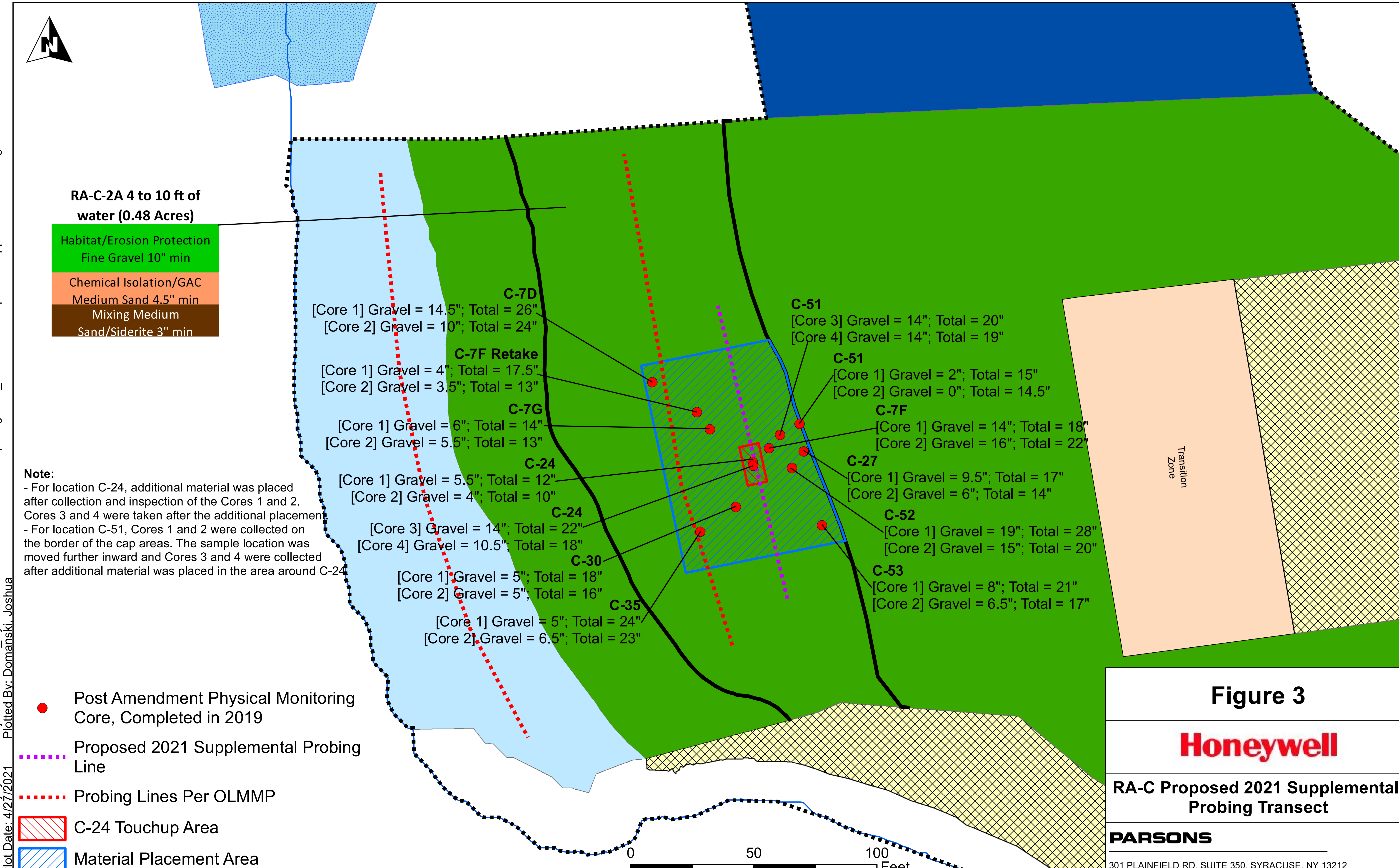
Honeywell

RA-C Proposed 2021 Supplemental Physical Coring Locations

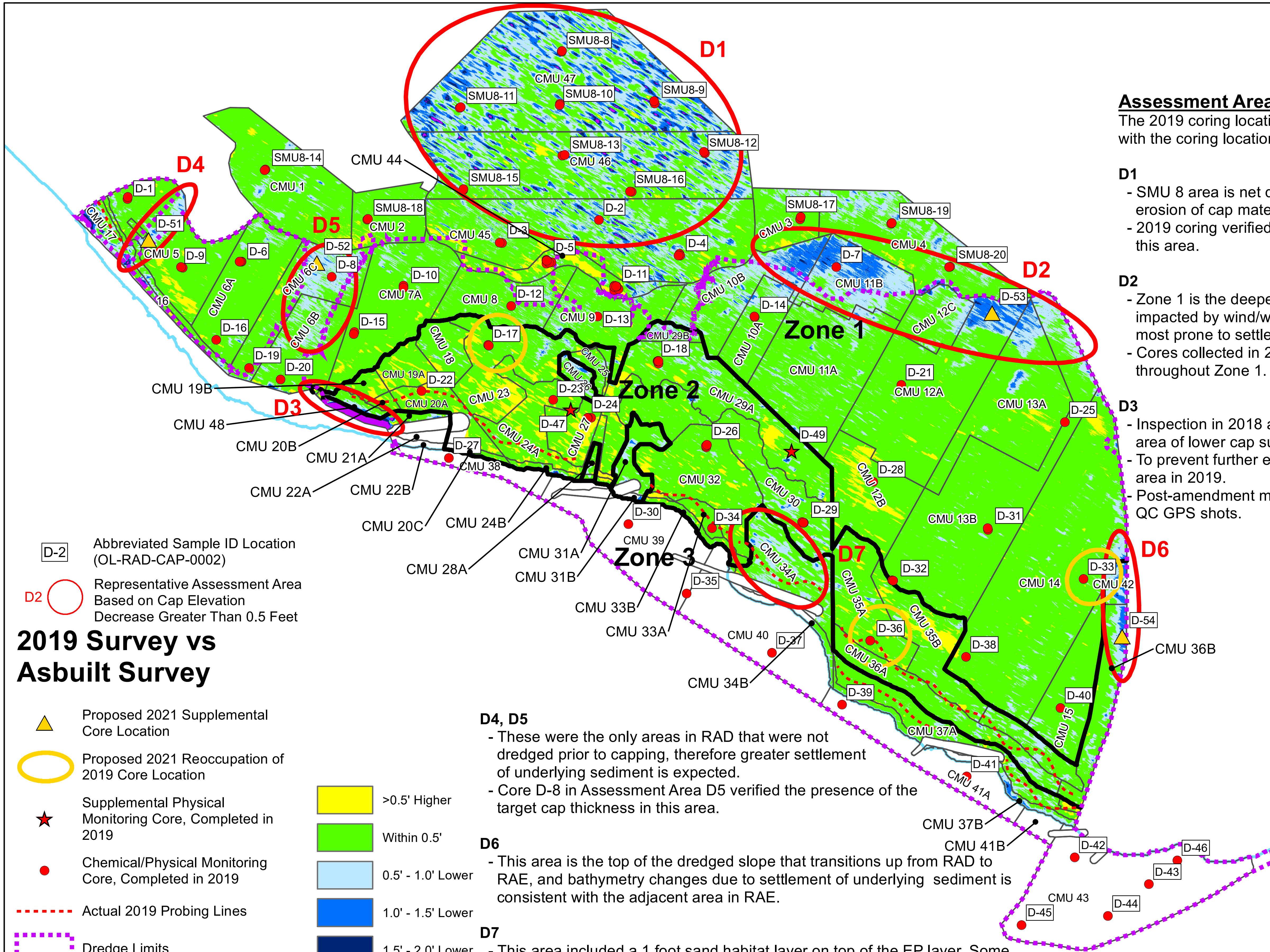
PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

Document Path: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\2021 Scope\Figure 2_RAC 2021 Proposed Supplemental Cores_Rev1.mxd



File Name: \\nysyr04fs01\PrjData\GIS\Hon_Syracuse\OLMMS\MXDs\2021 Scope\Figure 3_RAC 2021 Proposed Supplemental Probing.mxd
Plot Date: 4/27/2021 Plotted By: Domanski, Joshua



Assessment Area Summary and 2020 Recommendations

The 2019 coring locations (excluding supplemental coring) are consistent with the coring locations specified in the OLMMP.

D1
- SMU 8 area is net depositional, so there is minimum likelihood of erosion of cap material.
- 2019 coring verified the presence of target cap thickness throughout this area.

D2
- Zone 1 is the deepest area of the cap and thus least likely to be impacted by wind/wave action. and where underlying sediments are most prone to settlement.
- Cores collected in 2019 verified the presence of target cap thicknesses throughout Zone 1.

D3
- Inspection in 2018 and spring of 2019 identified a localized shoreline area of lower cap surface elevation.
- To prevent further erosion, a layer of coarse cobble was placed in the area in 2019.
- Post-amendment material thicknesses were verified using a series of QC GPS shots.

D4, D5
- These were the only areas in RAD that were not dredged prior to capping, therefore greater settlement of underlying sediment is expected.
- Core D-8 in Assessment Area D5 verified the presence of the target cap thickness in this area.

D6
- This area is the top of the dredged slope that transitions up from RAD to RAE, and bathymetry changes due to settlement of underlying sediment is consistent with the adjacent area in RAE.

D7
- This area included a 1 foot sand habitat layer on top of the EP layer. Some loss of this sand is expected.

D-2 Abbreviated Sample ID Location (OL-RAD-CAP-0002)

D2 Representative Assessment Area Based on Cap Elevation Decrease Greater Than 0.5 Feet

2019 Survey vs Asbuilt Survey

- Proposed 2021 Supplemental Core Location
- Proposed 2021 Reoccupation of 2019 Core Location
- Supplemental Physical Monitoring Core, Completed in 2019
- Chemical/Physical Monitoring Core, Completed in 2019
- Actual 2019 Probing Lines
- Dredge Limits
- Pre-Remediation Shoreline (Elev. 362.5)

- >0.5' Higher
- Within 0.5'
- 0.5' - 1.0' Lower
- 1.0' - 1.5' Lower
- 1.5' - 2.0' Lower
- >2.0' Lower

0 750 1,500 Feet

Figure 4

Honeywell

RA-D Proposed 2021 Supplemental Physical Coring Locations

PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

Plotted By: Domanski, Joshua

Plot Date: 4/28/2021

Document Path: \\nysyr04fs01\PrjData\GIS\Hon_Syracuse\OLMMS\MXDs\2021 Scope\Figure 4_RAD 2021 Proposed Supplemental Cores.mxd

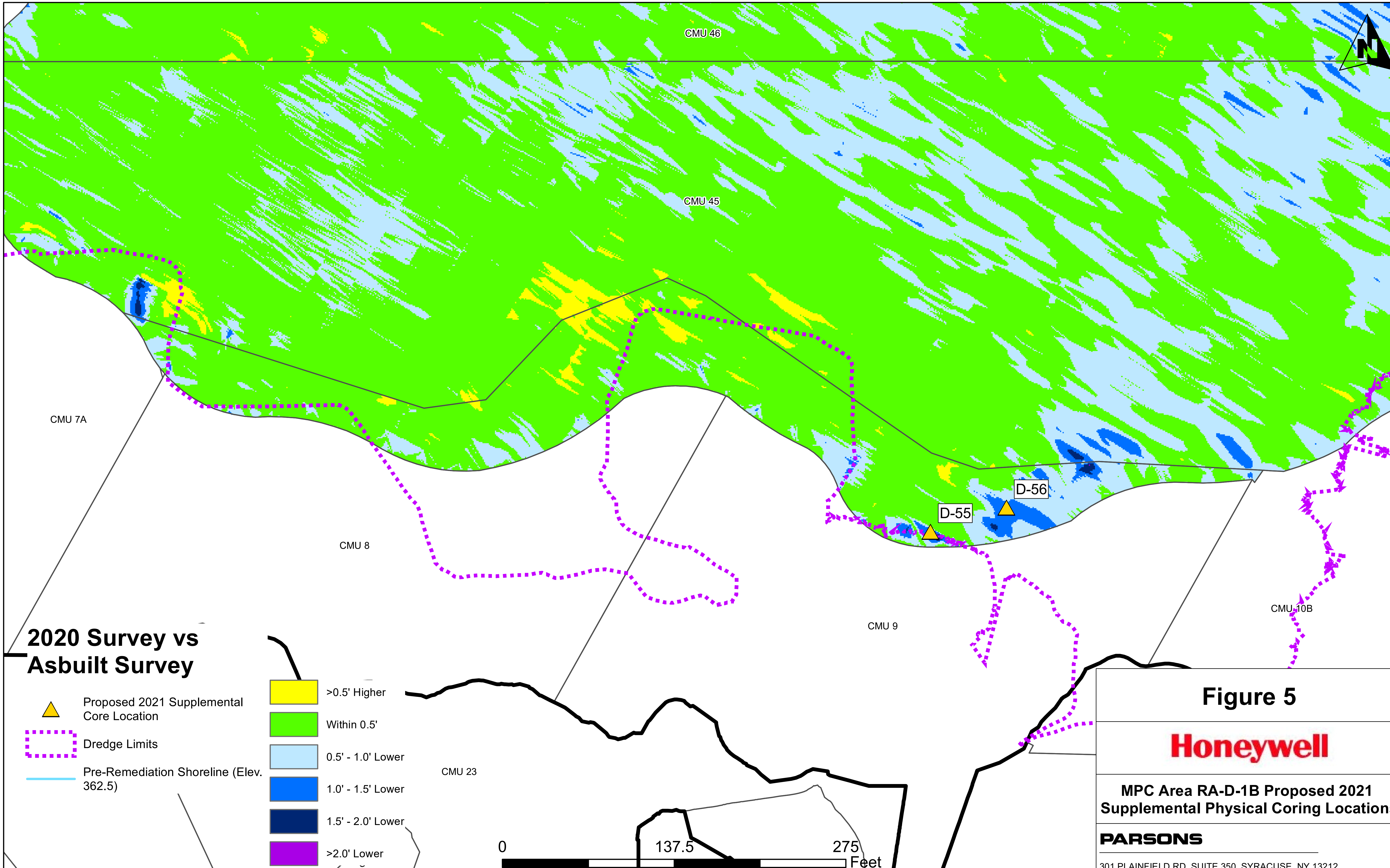


Figure 5

Honeywell

MPC Area RA-D-1B Proposed 2021 Supplemental Physical Coring Locations

PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

Plotted By: Domanski, Joshua

Plot Date: 4/28/2021

Document Path: \\nysyr04fs01\PrjData\GIS\Hon_Syracuse\OLMMS\MXDs\2021 Scope\Figure 5_RAD 2021 Proposed Supplemental Cores.mxd

Assessment Area Summary and 2020 Recommendations

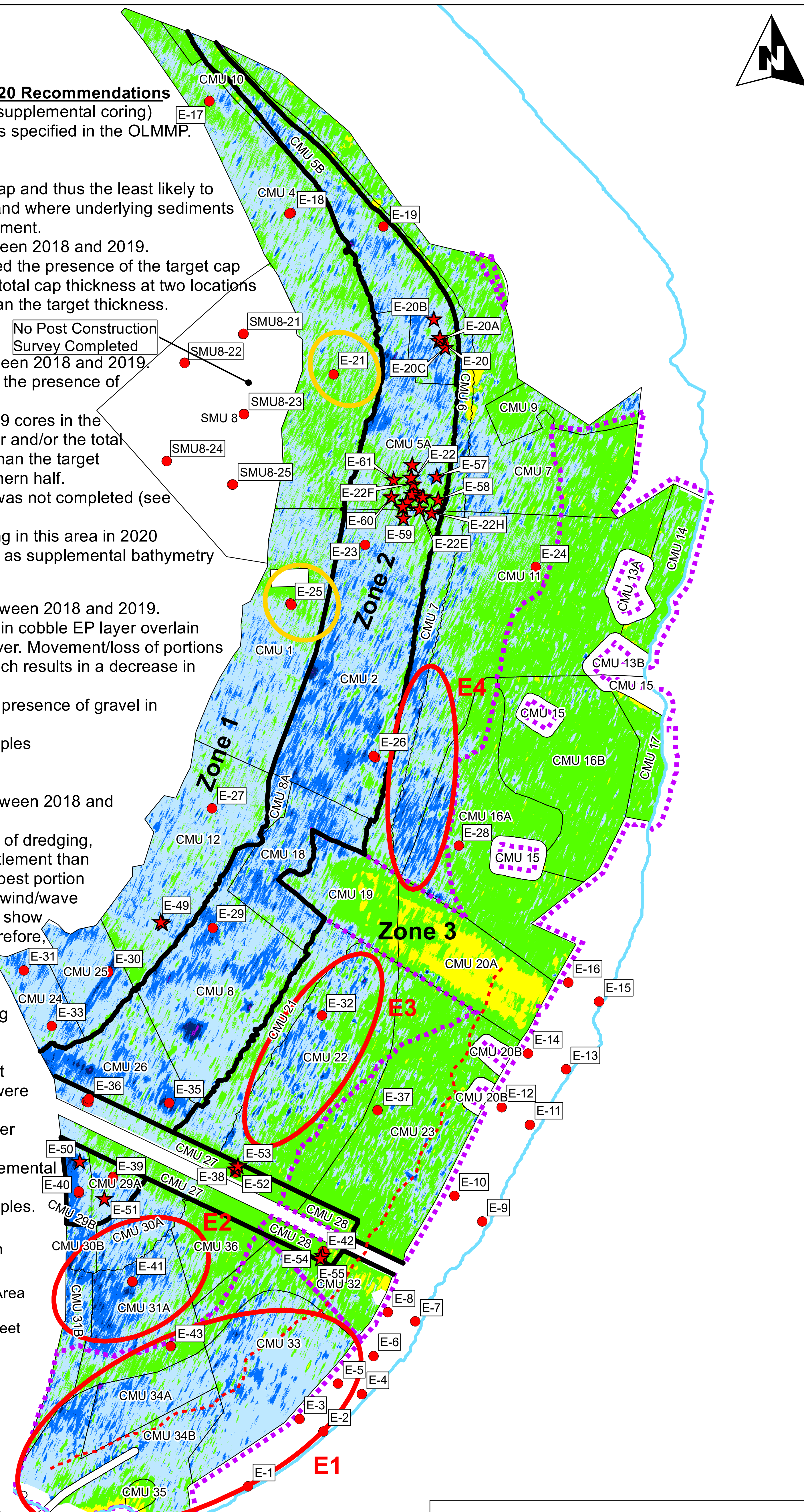
The 2019 coring locations (excluding supplemental coring) are consistent with the coring locations specified in the OLMMP.

Zone 1
- Zone 1 is the deepest area of the cap and thus the least likely to be impacted by wind/wave action, and where underlying sediments are softest and most prone to settlement.
- Minimal change is bathymetry between 2018 and 2019.
- The majority of cores in 2019 verified the presence of the target cap thickness. However, the measured total cap thickness at two locations (E21 and E25) were slightly less than the target thickness.

Zone 2
- Minimal change in bathymetry between 2018 and 2019.
- 2019 cores in southern half verified the presence of target cap thickness.
- EP substrate was present in all 2019 cores in the northern half. However, the EP layer and/or the total cap thickness measured was less than the target thickness in some cores in the northern half.
- Planned 2019 probing in this area was not completed (see Zone 1 note).
- Recommendation: Complete probing in this area in 2020 consistent with the OLMMP, as well as supplemental bathymetry measured in 2020.

E1
- Minimal changes in bathymetry between 2018 and 2019.
- The cap in this area includes 12" min cobble EP layer overlain by 12" min coarse gravel habitat layer. Movement/loss of portions of the habitat layer is expected, which results in a decrease in cap elevation.
- 2019 probing transects verified the presence of gravel in this area.
- EP layer is too coarse for core samples

E2, E3, E4
- Minimal changes in bathymetry between 2018 and 2019.
- These areas are beyond the extent of dredging, resulting in greater potential for settlement than other areas of Zone 3, while in deepest portion of Zone 3 and thus least subject to wind/wave erosion. Shallower areas of Zone 3 show minimal decrease in elevation. Therefore, decrease in cap elevation is likely due to settlement, not loss of cap material.
- Planned 2019 supplemental probing in these areas previously recommended based on similar bathymetry results in 2018 were not completed in 2019. Probing poles were broken during field activities and replacements did not arrive until after 2019 field activities concluded.
- Recommendation: Complete supplemental probing in these areas in 2020.
- EP layer is too coarse for core samples.



E-2 Abbreviated Sample ID Location (OL-RAE-CAP-0002)

E2 Representative Assessment Area Based on Cap Elevation Decrease Greater Than 0.5 Feet

2019 Survey vs Asbuilt Survey

- Proposed 2021 Reoccupation of 2019 Core Location
- Supplemental Physical Monitoring Core, Completed in 2019
- Chemical/Physical Monitoring Core, Completed in 2019
- Actual 2019 Probing Lines
- Pre-Remediation Shoreline (Elev. 362.5)
- Dredge Outlines

- >0.5' Higher
- Within 0.5'
- 0.5' - 1.0' Lower
- 1.0' - 1.5' Lower
- 1.5' - 2.0' Lower
- >2.0' Lower

0 700 1,400 Feet

Figure 6

Honeywell

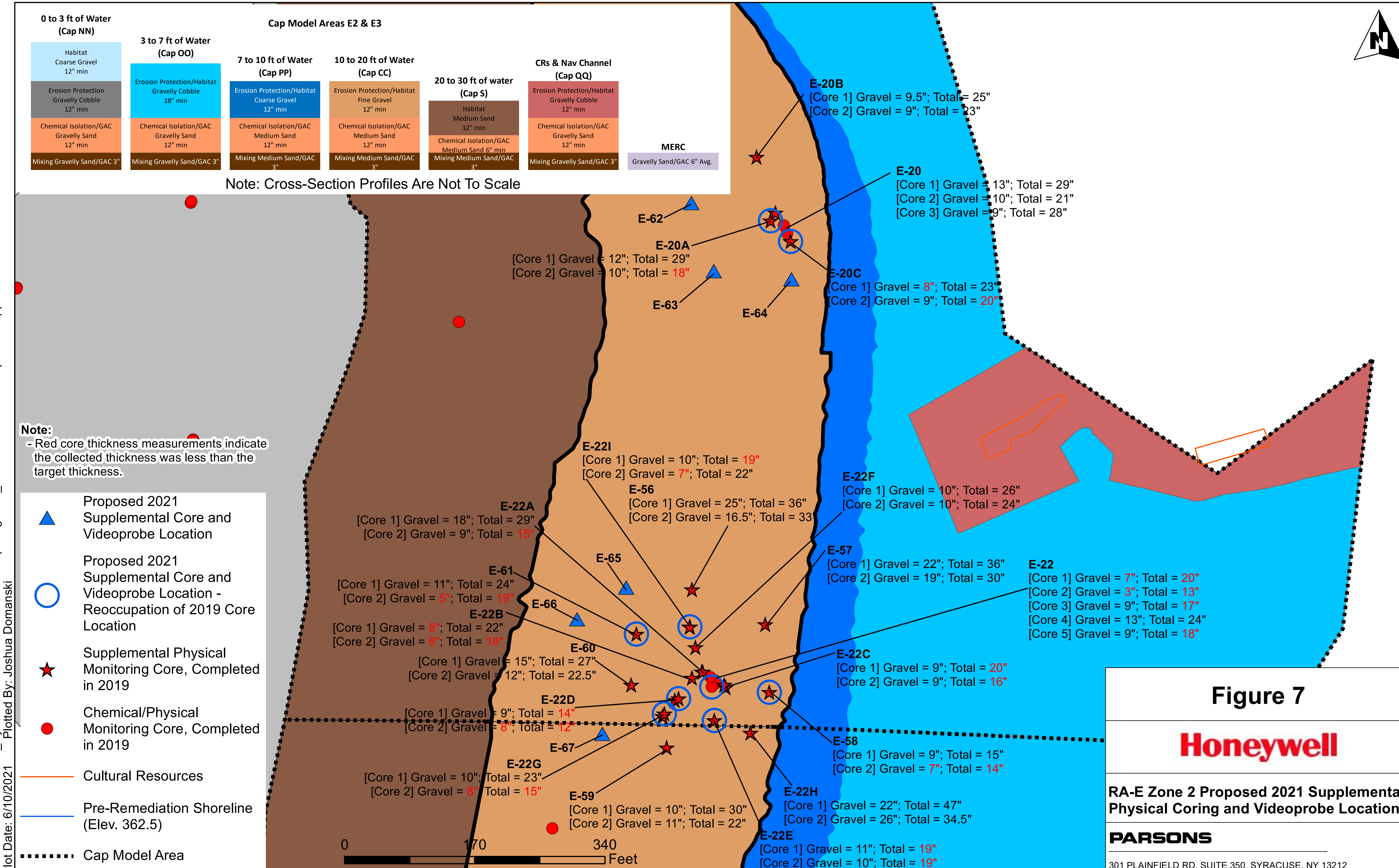
RA-E Zone 1 Proposed 2021 Supplemental Physical Coring Locations

PARSONS

301 PLAINFIELD RD, SUITE 350, SYRACUSE, NY 13212

Plot Date: 4/28/2021 Plotted By: Domanski, Joshua

Document Path: \\nysyr04fs01\PrjData\GIS\Hon_Syracuse\OLMMS\MXDs\2021 Scope\Figure 6_RAE 2021 Proposed Supplemental Cores.mxd



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Plot Date: 6/10/2021 Plotted By: Joshua Domanski

ATTACHMENT 1 RESPONSE TO NYSDEC COMMENTS

ATTACHMENT 1 RESPONSE TO NYSDEC COMMENTS RELEVANT TO 2021 CAP PHYSICAL MONITORING

35. Page 6-3, Paragraph 2, Section 6.1.3. It is stated that "The consistent presence of coarse substrate was consistently verified along the probing transects completed in 2019 in areas with coarse gravel and cobble habitat/erosion protection layers, with one exception. Some soft material was periodically noted during probing transects down the centerline of the mouth of Ninemile Creek and adjacent to the topsoil area in RA-A. Based on the comparison of the 2018 and as built bathymetry survey results, this typically corresponded to areas of decreased bathymetry, indicating deposition of sediment rather than erosion of cap material." It should be stated whether the probing was able to determine the thickness of this soft layer and potential presence of coarse substrate (EP layer) below it. In addition, although the comparison of the 2018 and as-built bathymetry survey (Figure 6.8 of the 2018 report) shows a > 0.5 ft higher surface in 2018, the comparison of the 2019 to 2018 bathymetry surveys (Figure 6.14 of the 2019 report) in this area shows a > 1 ft lower surface in 2019 suggesting potential erosion. This should also be noted in the text. Coring in this area should be considered during the next event to confirm the presence and, if possible, thickness of the cap.

    Preliminary Response: Based on cross-sections through this area presented and discussed with NYSDEC on 4/1/21, there is no evidence of loss of cap material and we do not believe additional cores are needed in this area.

37. Page 6-4, Section 6.1.4. In the discussion of comparisons of bathymetry showing decreases in elevation which could be attributable to settlement, it should be clarified if that is based on the comparison of the 2019 survey with the as-built survey or also comparison of the 2019 and 2018 surveys. However, as most cap settlement would be expected to occur within one to two years after cap placement, it is possible that settlement is not the cause of decreases in elevation between 2018 and 2019 (which is more than 2 years after completion of cap placement). For example, in the Remediation Area (RA) A text it is stated that "all significant decreases in bathymetry (i.e., lowering of the cap surface elevation) in RA-A are attributable to settlement of the underlying sediment." Figure 6.14 shows a significant decrease in cap elevation from 2018 to 2019 in the area of supplement core location A-33, which may not be due to settlement as this is more than 2 years since cap completion. The text should be revised for clarification in the discussions for each RA.

    Preliminary Response: The text will be revised as requested regarding the discussion of comparisons of bathymetry. Supplemental core location A-33 was added specifically to evaluate this area, and results indicated that the cap thickness in this area exceeds criteria. Nevertheless, an additional core location will be collected in this area, and repeat coring will be completed at location at A-33. For these and all other cores discussed herein, a minimum of 2 cores will be collected at each location. If habitat layer or total thicknesses are less that the target, additional cores as well as step-out cores may be collected, to be determined in consultation with NYSDEC.

44. Page 6-7, Section 6.1.9. In addition to the recommendations for 2020 physical monitoring noted in this section, bathymetry and coring should be conducted in 2021 in the areas where additional cap material was placed in 2019 to confirm the physical stability of these areas, as well as locations (including supplemental locations) where thicknesses were less than the target thickness as per the OLMMP and presented in Table 6.1.

    Preliminary Response: The bathymetric survey from 2020, presented and discussed with NYSDEC on 4/1/21, shows there has been no loss of material in the area of additional placement in RA-C, therefore we do not believe additional cores are required in this area. A supplemental probing transect through the

middle of this area running parallel with the shore will be completed in 2021 to verify the presence of the gravel layer In addition, as part of the monitoring per the OLMMP, a bathymetric survey of this area will be completed in 2022 as part of the comprehensive physical monitoring, and coring will be completed at location C-7 which is within this area.

The substrate is too coarse to core in the area of additional placement in RA-D. Elevation measurements of the area of additional placement in RA-D will be collected in 2021 for comparison to the elevations measured shortly after material placement.

Regarding locations (including supplemental locations) where thicknesses were less than the target thickness as per the OLMMP and presented in Table 6.1, additional coring will be implemented to evaluate locations D-17, D-33, D-36, E-21, E-25. A combination of coring and video probing is proposed to evaluate fine-gravel locations E-20 and E-22. Depending on the coring results from fine gravel locations D-17 and D-33 and other 2021 supplemental coring locations, videoprobing may also be considered for these areas.

76. Table 6.1, RA-D. At location D-33 in RA-D East, two cores were collected with cap thicknesses of 10 and 20 inches, both less than the minimum target of 21 inches and design minimum of 24 inches. As noted in the OLMMP, "additional verification and delineation of the affected cap areas will be implemented if any of these conditions occur." If any delineation of the affected cap area was conducted in this area in 2019 (as was done with similar results at/near location E-22 in RA-E in 2019), those results should be presented in the report. If not, additional physical monitoring should be conducted in this area in 2021 as per the OLMMP.

Preliminary Response: Consistent with the response to comment 44, additional coring will be implemented to evaluate location D-33.

98. Figures 6.13 and 6.14. The figures show a greater than 1 ft decrease in cap elevation in the area of supplement core location A-33, including a greater than 1 ft decrease from 2018 to 2019 (as per Figure 6.14) which may not necessarily be due to settlement as 2019 was more than 2 years since cap completion. Although the 2019 cores at this location indicate 24 inches or more of cap thickness (as per Table 6.1), this location and at least one additional location at about 100 ft to the west should also be included in the next round of cap monitoring as this area exhibited a greater than 1 ft decrease in only one year. The A-33 area should be shown as an assessment area on Figure 6.14.

Preliminary Response: Consistent with the response to comment 37, additional coring will be implemented to evaluate location A-33.

99. Figures 6.7 through 6.22 and Table 6.1. With the exception of the areas in RAs B, C, and D where high densities of physical monitoring cores were collected in 2019, the locations where supplemental cores were collected in 2019 should be considered for inclusion in future events (e.g., in RA-C, locations C-39, C-40, C-54, C-55) to provide better coverage in these areas where the comparisons of bathymetric surveys indicated a significant (>0.5 ft) decrease in cap elevation. In the high-density areas, the cores should be repeated at the supplemental locations where thicknesses were less than the target thickness as indicated in Table 6.1.

Preliminary Response: The need for supplemental cores and their locations will be determined on an annual basis based on bathymetry results. The areas of high density coring in RAs B and C were comprehensively investigated, including via video probing, therefore we do not believe additional coring is needed in these areas. In the high-density areas in RA-E, cores will be repeated at the supplemental locations where thicknesses were less than the target thickness as indicated in Table 6.1.

101. Figure 6.19 (2019 vs As-built). For Assessment Areas D4 and D5, the following is noted: "These were the only areas in RAD that were not dredged prior to capping, therefore greater settlement of underlying sediment is expected." The decrease may not be due to settlement as neither the 2017 vs as-built figure or the 2018 vs as-built figure included in the 2018 Annual and Comprehensive Report showed this decrease. It is recommended that a physical monitoring core be added in the D4 area and a second core be added in the D5 area in the next physical monitoring event.

Preliminary Response: Supplemental cores will be added in these areas.

102. Figure 6.19 (2019 vs As-built). Similarly, for Assessment Area D6, although the assessment noted is understood, the decrease in this area was not seen in either the 2017 vs as-built figure or the 2018 vs as-built figure included in the 2018 Annual and Comprehensive Report. It is recommended that a physical monitoring core be added in the D6 area in the next event.

Preliminary Response: A supplemental core will be added in this area.

ATTACHMENT 2 STANDARD OPERATING PROCEDURE FOR SEDIMENT VIDEOPROBING

Standard Operating Procedure (SOP)
for
Sediment Videoprobe

Prepared by:
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April 2017

STANDARD OPERATING PROCEDURE FOR THE SEDIMENT VIDEOPROBE
REVISIONS AND APPROVAL

Prepared by: INSPIRE Environmental, 88 Silva Lane, Suite 4, Middletown, RI 02842

Revision Number: 0

Effective Date: April 20, 2017

Approved by: Dave Browning, Senior Scientist

Record of Revision:

Revision Number	Effective Date	Comment
0	04/20/17	

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1.0 OVERVIEW OF THE SEDIMENT VIDEOPROBE

The videoprobe is a sampling device that collects a continuous, in situ record of the sediment column in standard video format. The system is similar to a framed vibracore system, where the vibrating tube is controlled in a frame that sits on the seabed. A hydraulic vibratory motor and weights on the videoprobe are used to drive the videoprobe into the seabed. Depending upon substrate properties, the videoprobe can capture video of the top 5 ft of the sediment column.

2.0 PROCEDURES

2.1 Scope and Applicability

The purpose of this Standard Operation Procedure (SOP) for the Sediment Videoprobe is to provide standardized methods for videoprobe operation, field documentation, and electronic data control. Videoprobe digital video files are collected to evaluate sediment column stratigraphy including but not limited to:

- Identifying and measuring the thickness of sediment layers
- Identifying and measuring the depth and thickness of debris (e.g., seafood waste, wood processing waste)
- Measuring the thickness of dredged and cap material
- Measuring the thickness of allochthonous materials

Videos of seabed material can be analyzed in the field to meet data quality objectives. Videoprobe data are one of the few data types that provide direct measurements of strata in situ and it can also be used in concert with other information in a weight-of-evidence approach. Sediment types or deposited material encountered during videoprobe surveys can be ground-truthed with sediment core and/or grab samples. However, ground-truthing applies to information on sediment type only given that thickness measurements derived from coring are measured ex situ and do not always reflect the sediment as it exists in situ. More extensive video analyses can be performed post-survey in the office.

2.2 Method Summary

The videoprobe is a sampling device that collects a continuous, in situ record of the sediment column in standard video format (640 line NTSC). Depending upon substrate properties, the videoprobe can capture video of the top 5 ft of the sediment column. The videoprobe is similar to a frame mounted vibracore but instead of a core barrel it has a probe rod outfitted with an underwater videocamera. The base structure is a tetrapod frame system with two of the frame rails also functioning as guides upon which the probe apparatus can slide. The other two frame rails are telescoping and their lengths may be shortened as necessary to gimble the landing pad so that changes in seafloor slope can be accommodated up to a 1:3 slope.

The videoprobe consists of a videocamera mounted in downward orientation that looks through a conical acrylic lens port that is, in turn, mounted on the end of 6 ft stainless steel penetration rod. Lighting is provided by a ring of LED lights surrounding the videocamera lens. The rod and camera unit are mounted on a 6 ft tall self-standing frame with 300 lbs of headweight and a hydraulically actuated vibrator mounted on the drive head. Hydraulics to the vibratory unit are controlled from the vessel deck.

A second videocamera is mounted on the head of the probe unit and as the head unit descends it records displacement, i.e., the distance to which the probe has travelled into the sediment column relative to a tape measure mounted on the fixed, non-moving portion of the videoprobe frame.

The two cameras feed data to the surface and the videos are viewed and recorded in real-time aboard the survey vessel in PiP (picture in picture) format. Both feeds are synchronized to GPS time at the start of the survey day. Time, date, and station name are input to the video overlay recorded on each video stream. This method allows for the synchronous review of both video feeds for subsequent analysis. Both video feeds are recorded in AVI format on a digital video recorder (Outland Technology UWS-410 or similar).

2.3 Equipment and Supplies

To conduct a videoprobe survey on a vessel the following are required: a winch, cable or line (e.g., spectra), a davit or A-Frame, and the videoprobe system. The videoprobe system also can be deployed from a crane when the aquatic system is not navigable but is in reach of a crane. The vessel or crane system must be capable of safely lifting ~1,000 lbs. (greater than the weight of the videoprobe system due to the force of suction and friction during retrieval from the sediment). The winch must be capable of slow and controlled deployment and retrieval (some older winch systems only have free-fall deployment, which is not acceptable). A block/sheave system capable of lifting from the deck and moving over the water is required to deploy the videoprobe system from a vessel. The block/sheave can be mounted on a davit, A-frame, or similar structure.

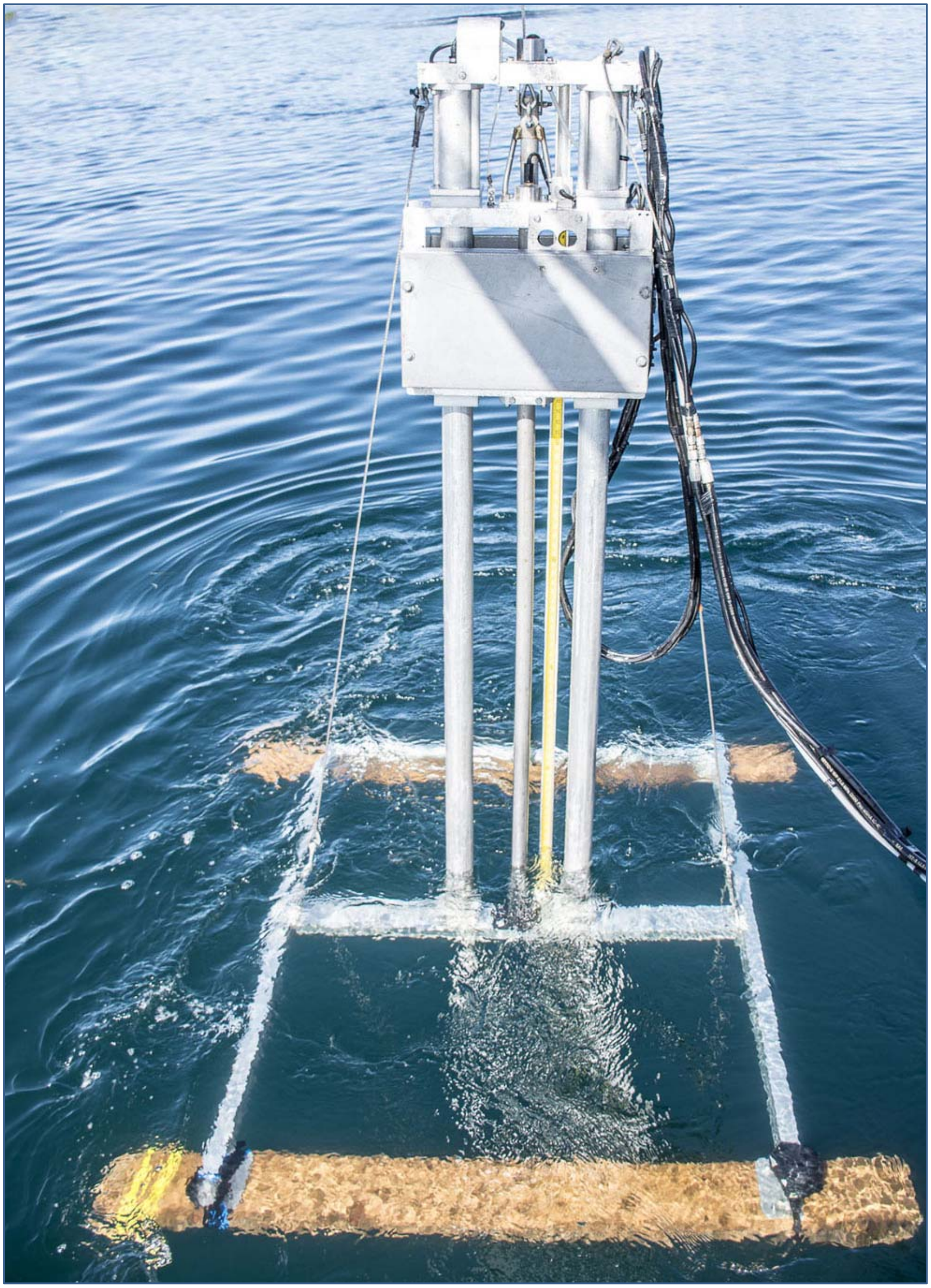


Figure 1. Photo of Videoprobe

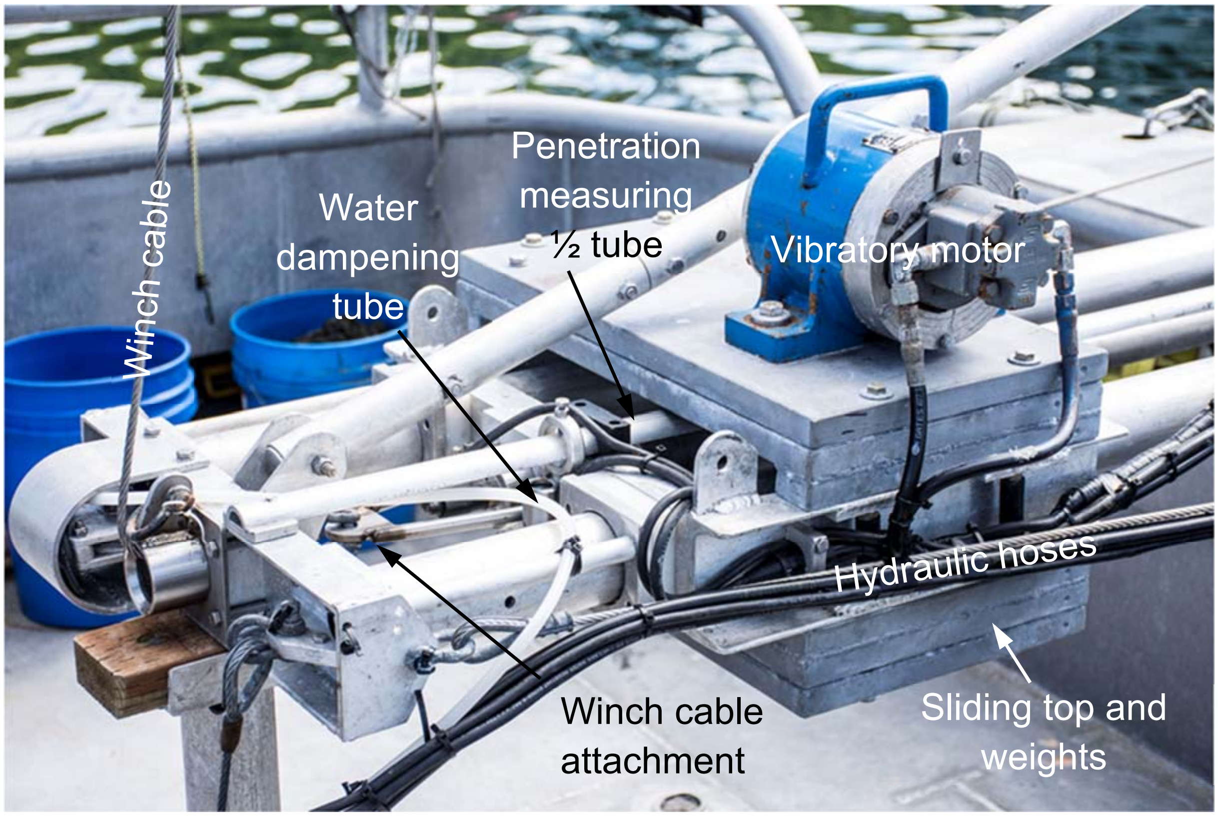


Figure 2. Top of Videoprobe

A videoprobe typically consists of the following components (see Figure 1):

- Videoprobe frame system
  - Horizontal base (combination of metal and wood)
  - Vertical frame:
    - Two rails for guiding and controlling video probe
    - Measuring tape system
    - Top mount for winch cable, electric cable control, hydraulic hose control
  - Lead weights
  - Hydraulic dampener system
    - Valving
    - Tubes
    - Bucket for water on deck
- Hydraulic vibratory motor
- Hydraulic power unit (110v Electric motor and hydraulic pump)
- Hydraulic tubing (in and out; adequate length for maximum project water depth)
- Acrylic cone tips (≥3, project dependent)
- Depth sounder

  - Transducer
  - Cable
  - Deck electronics and screen
  - 12v power supply (battery and/or convertor)
- Video camera systems and backups
  - Pelican case video probe system
  - Penetration screen system
  - All cables, including power supplies
- Tool kits
  - One general hand tool kit
  - One specific videoprobe system tool and spare parts kit
  - One hydraulic system tool and spare parts kit
  - Lens polishing kit
- External hard drives
- Log book

2.4 Procedure

2.4.1 Equipment Calibration and Preparation

Prior to field operations, the internal clock in the videoprobe cameras is synchronized with the integrated navigation system. At each station, the video files are assigned a unique name. The digital file is time-stamped, and redundant notations are made in the field and navigation logs.

2.4.2 Sample Collection Procedure

The typical videoprobe team consists of seven staff:

1. Vessel Captain
2. Lead scientist / video operations
3. Navigator
4. Winch operator
5. Primary deck crew handling the videoprobe and associated hoses and cables
6. Secondary deck crew handling the videoprobe and associated hoses and cables
7. Hydraulic unit operator

2.4.2.1 Navigation

Sample locations are defined in survey planning documents (e.g., work plans). Vessel positioning is accomplished by the vessel captain. The captain steers the vessel within the project specific acceptable distance from the station target using real-time GPS location data. To aid in precise navigation, the simplest system is to have a GPS antenna davit-mounted above the block/sheave where the videoprobe is deployed. If the GPS cannot be mounted above the videoprobe lifting point, then an offset from the antenna to the lifting point is measured and entered in the videoprobe field log. Advanced navigation systems allow real-time integration of the offset within the navigation software. If no real-time integration is possible, the offset must either be within the acceptable accuracy limits or the navigator must work with the captain to adjust positioning in the field. When the videoprobe contacts the seafloor, the position of the sampling location is recorded both in the GPS/Navigation system and in the field log.

2.4.2.2 Vessel Set Up

The following steps are taken to set up the videoprobe:

1. Unpack videoprobe and assemble on deck
    a. Review inventory and confirm all parts, tools, and materials are on the vessel
2. Assemble videoprobe frame
    a. Use pictures to confirm configuration
3. Attach vibratory motor to the frame sliding plate
    a. Use thread lock on vibratory motor bolts
    b. Tighten bolts to >100lbs torque (i.e., very tight, use extended handle or hammer for more torque)
4. Attach measuring tape to 'U' pipe
    a. Attach penetration video camera
    b. Attach orientation weight in field of penetration camera using string or rubber band to allow weight to swing so camera can document angle of videoprobe (used to determine if probe is lying on its side)
5. Attach depth finder transducer to videoprobe top mount (make sure the transducer is pointed perpendicular to the frame and the protective bracket shields the transducer
6. Lay out hydraulic hose, video wires, cables and fiber optics, and water dampening tube on pier or deck
    a. Contain wires/hoses/tubes in one bundle with multiple wraps of electric tape (strong tape is good) at least every meter
    b. When bundled wires/hoses/tubes are wrapped, coil using a large figure 8 pattern. A figure 8 pattern allows the bundle to be stored without twisting the bundle (if area is limited, an under/over coil method can be used)
7. On the videoprobe:
    a. Attach hydraulic hoses to vibratory motor (follow color coding to maintain proper in and out of the fluid)
    b. Attach video cables to the videoprobe system
    c. Attach video cables to penetration camera
    d. Attach depth finder cable to the transducer
    e. Attach water line to the dampening system

   f. Control all wires and hoses with electrical tape, taking care to keep wires/hoses/tubes away from moving parts and crush points while maintaining a non-stressful radius (i.e., do not allow wires/hoses/tubes to bend too tightly)
8. On the vessel:
   a. Attach hydraulic hoses to hydraulic power unit (follow color coding)
   b. Attach the video cables to the correct on-deck video system
   c. Connect the water line dampening system to the water valve and place tube from valve into bucket of water (secure bucket if seas require)
   d. Attach transducer cable to depth finder
   e. Attach depth finder where it can be seen by deck crew
   f. Connect depth finder to 12v power supply
9. Check systems
   a. Test the vibratory power unit and motor by running system briefly (excessive running in air can damage the system)
   b. Check both video systems
   c. Check that the hydraulic dampening system is engaged
   d. Synchronize date/time of video cameras to each other and to GPS time and all other time-keeping devices used in the survey

2.4.2.3 Videoprobe Survey Operations

The video footage of both the sediment column and survey tape should be synchronized at the start of each survey day. Once all videoprobe components are checked and camera feeds are synchronized, the videoprobe unit is lifted over the vessel transom and lowered to the seafloor. As the videoprobe unit descends, the operator starts recording the two video feeds and verifies that all video overlays are displaying the correct information with respect to dates, times, and station names. Once the videoprobe unit contacts the seafloor the probe tip (the acrylic conical lens tip) descends into the seafloor until either penetration stops or the full length of the probe is achieved. If penetration ceases prior to the full length deployed or the feature of interest is encountered (e.g., native sediment), a hydraulic vibrator is actuated from the surface to further penetrate the seafloor. Penetration with vibration continues until either there is refusal, the feature of interest is recorded, or the full length of the probe has been pushed into the sediment column. Refusal may be determined by exceedingly slow (i.e., <1 inch of penetration per 30 seconds) advancement of the probe. Penetration and vibration should be halted when encountering any hard object that has the potential to gouge or damage the lens tip.

The specific order of operations is as follows:

1. When checks are complete, vessel captain and navigator work to position the vessel at the sampling station
   a. During this time, the lead scientist:

        i. Prepares video recording system, including labeling video files with survey and station location information
        ii. Records information in the log book
2. When the lead scientist confirms the vessel is on station and the captain judges it safe to deploy, the videoprobe is raised off the deck, moved seaboard, and suspended over the target station
3. The videoprobe is slowly lowered towards the seabed
4. The lead scientist and/or deck crew communicate to the team when the videoprobe is observed to contact the seabed (as seen on video and/or when winch line is slack)
5. The lead scientist directs the timing and amount of vibration to the hydraulic unit operator
6. The lead scientist directs the crew when the videoprobe deployment is terminated due to target depth, refusal, or other reasons (e.g., safety, gear malfunction, etc.)
7. The winch operator very slowly pulls the videoprobe from the seabed
8. When free of the seabed, the videoprobe is slowly retrieved to the target distance (vessel and system specific) above the water surface
9. The deck team positions the videoprobe system (lying down) on the back deck (exact manner is vessel dependent)
10. When the videoprobe system is secure and tension is off the winch cable:
    a. The deck team visually inspects the system, including:
        i. Attachment system shackles and cable/line eyes and splices
        ii. Cables and hoses
        iii. Cone tip
        iv. Penetration tape/video system
        v. Depth transducer
        vi. Remove and clean all sediment from videoprobe
    b. Lead scientist or their designee:
        i. Works with navigator and captain to determine next sampling station and directs move to agreed station
        ii. Reviews video footage and determines acceptability of the video
        iii. Copies and stores video to a second memory device (e.g., external hard drive)
        iv. Reviews log book information and completes log book records for the station
        v. Begins preparations for next station
11. Repeat process beginning at #1 (above)

2.4.3 Troubleshooting

The videoprobe is a complicated electro-mechanical system. Below is a list of a few of the potential sources of problems:

1. Saltwater shorting out electronic connections and cables, enhanced by vibration

2. Vibration causing mechanical failures (e.g., fatigued/cracked metal and loose bolts)
3. Failure of the acrylic cone (scratching and breakage from hard material (e.g., rocks and concrete)
4. Electric power supply failure
5. Hydraulic power unit failure
6. Hydraulic hose or fitting failure

Initial troubleshooting that typically can be carried out in the field consists of visually inspecting the system looking for mechanical issues such as loose/missing hardware, bent metal, cut/abraded wire/hose/tubing, water in connections. It also is important to note that all hydraulic fluids used in videoprobe activities are vegetable oil/glycol-based and are not harmful to marine life.

2.4.4 Data Logging and Control

The following information is recorded on the Videoprobe Log Book

For the survey:

- Name of person responsible for collection
- Field survey staff, including subcontractor company and personnel names, and observers
- Vessel name
- Project ID
- Location of GPS antenna
- DGPS estimate of accuracy

For each station:

- Video file name
- Station Identification
- Station position (coordinates)Water depth
- Date and time of sampling
- Depth of videoprobe penetration
- Sediment description including any observed layering e.g., distinct bands of sediment or debris layers (may include general particle size description, color, organisms, material type)
- Special remarks if appropriate

Videoprobe video files

- StationID, date and time from the navigation system should be overlaid on both video recordings.

3.0 CALCULATIONS

Following are the minimal calculations involved with operating the videoprobe:

1. Determine the water depth at high tide prior to sampling

   a. Assure the equipment is capable of operating at the depth
   b. Assure the hoses, tubes, and cables are long enough to operate in the site depths
   c. Allow a minimum of 20% additional length of hoses/tubes/cables to account for some streaming of the equipment and include the length needed on the vessel to reach surface equipment

3.1 Acceptability Criteria

An acceptable videoprobe recording will have:

1. Adequate penetration to meet project specific data quality objectives
   a. If unsuccessful after a minimum of two attempts, follow project guidance for re-locating additional attempts
   b. Note observed or suspected reasons for lack of success
2. Adequate image quality (e.g., light, contrast, focus) to meet data quality objectives of the sediment properties required for the specific project
   a. Adjust settings of system as needed/possible
3. In some instances, the nature of the substrate will not allow for successful videoprobe operations. After videoprobe sampling at the target station is attempted the minimum number of times specified in the project work plan (typically three), the station is considered "Rejected." All attempts are noted on the videoprobe Field Log.

Best efforts should be made to successfully sample all stations. These efforts include adjustments to the equipment and vessel operations and creative compromises for the goal of getting results with value to the project.

4.0 VIDEOPROBE PROCESSING/ANALYSIS

The sediment column video and the penetration depth video are played back synchronously, allowing the analyst to ascertain the depth within the sediment column where features of interest were observed. During the analysis, start and end time of the probe entering the sediment column, the times where depositional layers are observed, the times where native sediment are observed, and the times where other features of interest are observed should be recorded. Depth of all layers observed are determined from the penetration depth video. It is estimated that the absolute vertical accuracy of the depth measurements is +/- 0.1 ft.

The following data are compiled into an Excel spreadsheet:

Probe Start Time

Probe End Time

Penetration Depth

Thickness of depositional layers

Depth of native material above/below depositional layers

Estimated composition by volume (>0-10%, 10-25%, >50%)

Notes

The thickness of depositional layers and estimated composition are mapped using ArcGIS to determine the spatial extent of substrates.

5.0 QUALITY ASSURANCE AND QUALITY CONTROL

Before the first videoprobe sample is collected each day, the clocks of the GPS and the two cameras are confirmed to be synchronized to within one second.

At a minimum, at mid-day and the end of the day, the lead scientist or designee should confirm that the video files stored in the camera memory match those noted in the field log.

The lead scientist will review project planning documents for project specific QA/QC requirements, which may include, but are not limited, to duplicate videoprobe sampling. Field duplicates for the videoprobe are primarily used to assess sediment variability.

6.0 TRAINING/QUALIFICATIONS

At a minimum, all personnel performing any of the procedures outlined in this document must read this SOP. Personnel new to the procedure must work with an experienced field technician until they demonstrate proficiency in all areas of assembly, collection, and processing.

7.0 HEALTH AND SAFETY

While on deck, personal flotation devices (PFDs) are worn at all times. When performing videoprobe operations, PFDs, work gloves, hard hats, and steel-toed boots are required. Site-specific hazards such as the need for hearing protection and weather hazards are documented in applicable project health and safety plans.

APPENDIX 2A – MOUTH OF NINEMILE CREEK AND WASTEBED B/ HARBOR BROOK OUTBOARD AREA PHOTOGRAPHIC LOG

Habitat Reestablishment Photographic Log
Onondaga Lake
Syracuse, NY

Photo Number: 1 Date: 7/15/21

Photo Description: View from Mouth of Ninemile Creek photo location 1

Photo Number: 2 Date: 7/15/21

Photo Description: View from Mouth of Ninemile Creek photo location 2

Photo Number: 3 Date: 7/15/21

Photo Description: View from Mouth of Ninemile Creek photo location 3

Photo Number: 4 Date: 7/15/21

Photo Description: View from Mouth of Ninemile Creek photo location 4

Photo Number: 5 Date: 7/15/21

Photo Description: View from Mouth of Ninemile Creek photo location 5

Photo Number: 6 Date: 7/15/21

Photo Description: View from Mouth of Ninemile Creek photo location 6

Photo Number: 7 Date: 7/29/21

Photo Description: View from Mouth of Ninemile Creek photo location 7

Photo Number: 8 Date: 7/15/21

Photo Description: View from Mouth of Ninemile Creek photo location 8

Photo Number: 9 Date: 7/29/21

Photo Description: View from Mouth of Ninemile Creek photo location 9

Photo Number: 10 Date: 7/15/21

Photo Description: View from Mouth of Ninemile Creek photo location 10

Photo Number: 11 Date: 7/15/21

Photo Description: View from Mouth of Ninemile Creek photo location 11

Photo Number: 12 Date: 7/15/21

Photo Description: View from Mouth of Ninemile Creek photo location 12

Photo Number: 13 Date: 7/29/21

Photo Description: View from Mouth of Ninemile Creek photo location 13

Photo Number: 14 Date: 7/16/21

Photo Description: View from Wastebed B/Harbor Brook Outboard Area photo location 1

Photo Number: 15 Date: 8/15/21

Photo Description: View from Wastebed B/Harbor Brook Outboard Area photo location 2

Photo Number: 16 Date: 7/26/21

Photo Description: View from Wastebed B/Harbor Brook Outboard Area photo location 3

Photo Number: 17 Date: 6/17/21

Photo Description: View from Wastebed B/Harbor Brook Outboard Area photo location 4

Photo Number: 18 Date: 7/16/21

Photo Description: View from Wastebed B/Harbor Brook Outboard Area photo location 5

Photo Number: 19 Date: 7/26/21

Photo Description: View from Wastebed B/Harbor Brook Outboard Area photo location 6

Photo Number: 20 Date: 7/16/21

Photo Description: View from Wastebed B/Harbor Brook Outboard Area photo location 7

Photo Number: 21 Date: 6/30/21

Photo Description: View from Wastebed B/Harbor Brook Outboard Area photo location 8

Photo Number: 22 Date: 7/26/21

Photo Description: View from Outboard/Harbor Brook photo location 9

Photo Number: 23 Date: 6/1/21

Photo Description: View from Outboard/Harbor Brook photo location 10

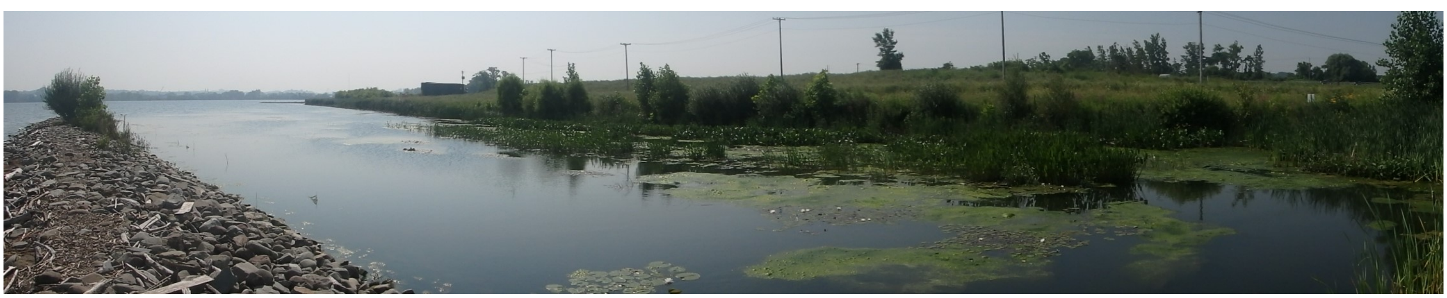


Photo Number: 24 Date: 7/26/21

Photo Description: View from Wastebed B/Harbor Brook Outboard Area photo location 11

Photo Number: 25 Date: 6/17/21

Photo Description: View from Outboard/Harbor Brook photo location 12

Photo Number: 26 Date: 6/17/21

Photo Description: View from Outboard/Harbor Brook photo location 13

Photo Number: 27 Date: 7/26/21

Photo Description: View from Wastebed B/Harbor Brook Outboard Area photo location 14

Photo Number: 28 Date: 7/14/21

Photo Description: View from Wastebed B/Harbor Brook Outboard Area photo location 15

APPENDIX 2B – VEGETATION DATA

TABLE 2B.1 2021 PLANT SPECIES OBSERVED IN RESTORATION AREAS

Scientific Name[1]	Common Name	Wetland Indicator Status[2,3]	Mouth of Ninemile Creek	Outboard/ Harbor Brook
Woody Species				
Acer negundo	Boxelder	FAC		X
Acer rubrum	Red maple	FAC	X	X
Acer saccharinum	Silver maple	FACW	X	X
Acer xfreemanii	Freeman maple	UPL	X	X
Alnus incana ssp. rugosa	Speckled alder	FACW	X	X
Alnus serrulata	Hazel alder	OBL	X	X
Aronia melanocarpa	Black chokeberry	FAC	X	
Betula nigra	River birch	FACW		X
Celtis occidentalis	Hackberry	FAC		X
Cephalanthus occidentalis	Common buttonbush	OBL	X	X
Cornus amomum	Silky dogwood	FACW	X	X
Cornus racemosa	Gray dogwood	FAC	X	X
Cornus sericea	Red-osier dogwood	FACW		X
Fraxinus americana	White ash	FACU	X	X
Gleditsia triacanthos	Honey locust	FAC		X
Ilex verticillata	Common winterberry	FACW		X
Juglans nigra	Black walnut	FACU	X	
Juniperus virginiana	Eastern red cedar	FACU	X	
Lindera benzoin	Northern spicebush	FACW		X
Lonicera sp.	Honeysuckle	Unknown		X
Morus alba	White mulberry	FACU		X
Myrica gale	Sweetgale	OBL		X
Parthenocissus quinquefolia	Virginia creeper	FACU	X	X
Pinus strobus	White pine	FACU	X	X
Platanus occidentalis	American sycamore	FACW	X	X
Populus deltoides	Eastern cottonwood	FAC	X	X
Populus tremuloides	Quaking aspen	FACU		X
Quercus bicolor	Swamp white oak	FACW	X	X
Quercus macrocarpa	Bur oak	FACU	X	
Quercus rubra	Northern red oak	FACU	X	
Rhus typhina	Staghorn sumac	FAC		X
Robinia pseudoacacia	Black locust	FACU	X	X
Rosa palustris	Swamp rose	OBL		X
Rosa sp.	Rose	unknown	X	
Rubus occidentalis	Black raspberry	UPL		X
Salix discolor	Pussy willow	FACW	X	X
Salix interior	Sandbar willow	FACW	X	X
Salix nigra	Black willow	OBL	X	X
Thuja occidentalis	Arborvitae	FACW		X
Toxicodendron radicans	Eastern poison ivy	FAC	X	X
Viburnum dentatum	Southern arrowwood	FAC		X
Viburnum lentago	Nannyberry	FAC		X
Viburnum opulus	Highbush-cranberry	FACW	X	
Vitis riparia	Riverbank grape	FAC	X	X

TABLE 2B.1 2021 PLANT SPECIES OBSERVED IN RESTORATION AREAS

Scientific Name[1]	Common Name	Wetland Indicator Status[2,3]	Mouth of Ninemile Creek	Outboard/ Harbor Brook
Herbaceous Species				
Abutilon theophrastii	Velvetleaf	FACU	X	X
Achillea millefolium	Common yarrow	FACU	X	
Acorus americana	Sweetflag	OBL		X
Agrostis stolonifera	Creeping bent	FACW	X	
Alisma subcordatum	American water plantain	OBL	X	X
Ambrosia artemisiifolia	Annual ragweed	FACU	X	X
Angelica atropurpurea	Purple-stemmed angelica	OBL	X	
Anthoxanthum odoratum	Sweet vernal grass	FACU	X	
Apocynum cannabinum	Indianhemp	FAC	X	X
Arctium lappa	Greater burdock	FAC	X	X
Artemisia vulgaris	Common wormwood	UPL	X	X
Asclepias incarnata	Swamp milkweed	OBL	X	X
Asclepias syriaca	Common milkweed	UPL	X	X
Atriplex prostrata	Triangle orache	FAC		X
Azolla cristata	Mosquito fern	OBL	X	
Barbarea vulgaris	Garden yellow rocket	FAC	X	X
Bidens frondosa	Devil's beggartick	FACW	X	X
Boehmeria cylindrica	Small-spike false nettle	OBL	X	
Bolboschoenus robustus	Sturdy bulrush	OBL		X
Boltonia asteroides	White doll's daisy	FACW	X	
Brassica nigra	Black mustard	UPL	X	X
Bromus sp.	Brome	unknown		X
Calystegia sepium	Hedge false bindweed	FAC	X	X
Carex comosa	Longhair sedge	OBL		X
Carex granularis	Limestone meadow sedge	FACW	X	
Carex lurida	Shallow sedge	OBL	X	X
Carex scoparia	Broom sedge	FACW		X
Carex stricta	Upright sedge	OBL		X
Carex vulpinoidea	Fox sedge	OBL	X	X
Centaurea jacea	Brown-ray knapweed	FACU		X
Cenaurea nigra	Black knapweed	UPL	X	X
Centaurea ×moncktonii	Meadow knapweed	FACU	X	X
Centaurea stoebe	Spotted knapweed	FAC	X	X
Centaurium erythraea	Common centaury	FAC	X	
Ceratophyllum demersum	Coon's tail	OBL	X	X
Cirsium arvense	Canada thistle	FACU	X	X
Cirsium vulgare	Bull thistle	FACU	X	X
Conium maculatum	Poison-hemlock	FACW		X
Coreopsis sp.	Tickseed	unknown		X
Cyperus esculentus	Yellow nutsedge	FACW	X	X
Cyperus fuscus	Brown galingale	FAC	X	X
Daucus carota	Queen Anne's lace	UPL	X	X
Decodon verticillatus	Water willow	OBL	X	
Desmodium canadense	Showy ticktrefoil	FAC	X	X
Dianthus armeria	Deptford pink	UPL	X	
Dichanthelium clandestinum	Deer-tongue rosette grass	FACW	X	

TABLE 2B.1 2021 PLANT SPECIES OBSERVED IN RESTORATION AREAS

Scientific Name[1]	Common Name	Wetland Indicator Status[2,3]	Mouth of Ninemile Creek	Outboard/ Harbor Brook
Dipsacus fullonum	Fuller's teasel	FACU	X	X
Dipsacus laciniatus	Cutleaf teasel	FACU		X
Echinochloa spp.	Barnyard grass	FACW	X	X
Eleocharis sp.	Spikerush	OBL	X	X
Elodea canadensis	Canadian waterweed	OBL	X	X
Elymus virginicus	Virginia wildrye	FACW	X	X
Epilobium coloratum	Eastern willowherb	OBL		X
Erechtites hieraciifolius	American burnweed			X
Erigeron annuus	Eastern daisy fleabane	FACU	X	X
Eupatorium perfoliatum	Common boneset	FACW	X	X
Euthamia graminifolia	Flat-top goldenrod	FAC	X	X
Eutrochium fistulosum	Hollow Joe pye weed	FACW		X
Eutrochium maculatum	Spotted Joe pye weed	OBL	X	X
Eutrochium purpureum	Purple Joe Pye weed	FAC		X
Fragaria virginica	Common wild strawberry	FACU	X	
Galium album	Hedge bedstraw	FACU	X	X
Galium asprellum	Rough bedstraw	OBL		X
Galium palustre	Common marsh bedstraw	OBL	X	X
Geum aleppicum	Yellow avens	FAC		X
Geum laciniatum	Rough avens	FACW		X
Geum sp.	Avens	unknown	X	
Helenium autumnale	Common sneezeweed	FACW	X	X
Heliopsis helianthoides	Ox-eye sunflower	FACU	X	X
Heteranthera dubia	Grassleaf mudplantain	OBL	X	X
Hibiscus moscheutos	Crimsoneyed rosemallow	OBL	X	X
Hypericum perforatum	Common St. Johnswort	UPL	X	X
Impatiens capensis	Jewelweed	FACW	X	X
Iris versicolor	Harlequin blueflag	OBL	X	X
Juncus effusus	Common rush	OBL	X	X
Leersia oryzoides	Rice cutgrass	OBL	X	X
Lemna minor	Common duckweed	OBL	X	X
Lepidium campestre	Field pepperweed	UPL		X
Leucanthemum vulgare	Oxeye daisy	UPL	X	X
Lobelia cardinalis	Cardinal flower	OBL		X
Lobelia siphilitica	Great blue lobelia	FACW	X	
Lotus corniculatus	Bird's-foot trefoil	FACU	X	X
Ludwigia palustris	Marsh primrose-willow	OBL		X
Lycopus sp.	Water horehound	OBL	X	X
Lysimachia nummularia	Monewort	FACW	X	
Lythrum salicaria	Purple loosestrife	OBL	X	X
Malva moschata	Musk mallow	UPL	X	X
Medicago lupulina	Black medic	FACU	X	
Melilotus albus	White sweetclover	FACU	X	X
Melilotus officinalis	Yellow sweetclover	FACU	X	X
Mentha sp.	Mint	FACW		X
Mimulus ringens	Allegheny monkeyflower	OBL	X	X
Monarda fistulosa	Wild bergamot	FACU	X	X
Myriophyllum sibiricum	Northern watermilfoil	OBL	X	
Myriophyllum spicatum	Eurasian watermilfoil	OBL	X	X
Najas guadalupensis	Guadalupe water nymph	OBL	X	
Najas minor	Brittle waternymph	OBL	X	

TABLE 2B.1 2021 PLANT SPECIES OBSERVED IN RESTORATION AREAS

Scientific Name[1]	Common Name	Wetland Indicator Status[2,3]	Mouth of Ninemile Creek	Outboard/ Harbor Brook
Najas sp.	Water nymph	OBL		X
Nepeta cataria	Catnip	FACU		X
Nitellopsis obtusa	Starry stonewort	OBL	X	X
Nuphar lutea	Yellow pond-lily	OBL	X	X
Nymphaea odorata	American white waterlily	OBL	X	X
Oenothera biennis	Common evening primrose	FACU	X	X
Onoclea sensibilis	Sensitive fern	FACW	X	X
Oxalis stricta	Common yellow oxalis	FACU		X
Panicum dichotomiflorum	Fall panicgrass	FACW	X	X
Panicum virgatum	Switchgrass	FAC	X	X
Pastinaca sativa	Wild parsnip	UPL	X	
Peltandra virginica	Green arrow arum	OBL	X	X
Penstemon digitalis	Foxglove beardtongue	FAC	X	X
Persicaria amphibia	American water smartweed	OBL	X	
Persicaria lapathifolia	Curlytop knotweed	FACW		X
Persicaria maculosa	Lady's thumb	FAC	X	
Persicaria pensylvanica	Pennsylvania smartweed	FACW	X	X
Phalaris arundinacea	Reed canarygrass	FACW	X	X
Phleum pratense	Common Timothy	FACU	X	
Phragmites australis	Common reed	FACW	X	X
Picris hieracioides	Hawkweed oxtongue	UPL	X	X
Plantago lanceolata	Narrowleaf plantain	FACU	X	X
Plantago major	Common plantain	FACU		X
Plantago rugelii	Rugel's plantain	FAC	X	
Poa sp.	Blue grass	unknown	X	
Pontederia cordata	Pickerelweed	OBL	X	X
Potamogeton crispus	Curly pondweed	OBL	X	X
Potamogeton illinoensis	Illinois pondweed	OBL	X	X
Potentilla anserina	Silverweed cinquefoil	FACW	X	X
Potentilla norvegica	Norwegian cinquefoil	FAC		X
Potentilla recta	Sulphur cinquefoil	UPL		X
Potentilla simplex	Oldfield cinquefoil	FACU	X	
Ranunculus acris	Tall buttercup	FAC	X	X
Ranunculus longirostris	Long-beaked white water butterc	OBL	X	
Reseda lutea	Yellow mignonette	UPL		X
Rorippa palustris	Bog yellowcress	OBL		X
Rudbeckia hirta	Blackeyed Susan	FACU	X	X
Rumex crispus	Curly dock	FAC	X	X
Sagittaria latifolia	Broadleaf arrowhead	OBL	X	X
Schoenoplectus acutus	Hardstem bulrush	OBL	X	X
Schoenoplectus pungens	Common threesquare	OBL	X	X
Schoenoplectus tabernaemontani	Softstem bulrush	OBL	X	X
Scirpus atrovirens	Green bulrush	OBL	X	X
Scirpus cyperinus	Common wool grass	OBL	X	X
Securigera varia	Crownvetch	FAC	X	X
Senna hebecarpa	American senna	FACW		X
Silene latifolia	Bladder campion	UPL		X
Sisyrinchium angustifolium	Narrow-leaved Blue-eyed Grass	FAC		X
Solanum dulcamara	Climbing nightshade	FAC	X	X
Solidago canadensis/altissima	Goldenrod	FACU	X	X
Solidago rigida	Flat-top goldenrod	FACU	X	

TABLE 2B.1 2021 PLANT SPECIES OBSERVED IN RESTORATION AREAS

Scientific Name[1]	Common Name	Wetland Indicator Status[2,3]	Mouth of Ninemile Creek	Outboard/ Harbor Brook
Sonchus arvensis	Field sowthistle	FACU	X	X
Sonchus asper	Spiny sowthistle	FACU	X	X
Sorghastrum nutans	Indian grass	FACU	X	X
Sparganium americanum	American bur-reed	OBL	X	X
Sparganium eurycarpum	Giant bur-reed	OBL	X	X
Spartina alterniflora	Smooth cordgrass	OBL	X	
Spartina pectinata	Prairie cordgrass	FACW	X	X
Spiraea alba	White meadowsweet	FACW	X	X
Spirodela polyrhiza	Common duckmeat	OBL	X	X
Stuckenia pectinata	Sago pondweed	OBL	X	X
Symphyotrichum lanceolatum	White panicled American aster	FACW	X	
Symphyotrichum novae-angliae	New England aster	FACW	X	X
Symphyotrichum pilosum	Hairy white oldfield aster	FACU	X	X
Symphyotrichum puniceum	Purple-stemmed aster	OBL	X	
Trapa natans	Water chestnut	OBL	X	
Trifolium hybridum	Alsike clover	FACU	X	X
Trifolium pratense	Red clover	FACU	X	X
Tussilago farfara	Coltsfoot	FACU		X
Typha ×glauca	Hybrid cattail	OBL	X	X
Typha angustifolia	Narrowleaf cattail	OBL	X	X
Typha latifolia	Broadleaf cattail	OBL	X	X
Urtica dioica	Stinging nettle	FAC	X	X
Utricularia sp.	Bladderwort	OBL	X	X
Vallisneria americana	Water celery	OBL	X	X
Verbascum blattaria	Moth mullein	FACU	X	X
Verbascum thapsus	Common mullein	UPL	X	X
Verbena hastata	Swamp verbena	FACW	X	X
Vernonia noveboracensis	New York ironweed	FACW		X
Veronica anagallis-aquatica	Water speedwell	OBL	X	
Vicia cracca	Bird vetch	FACU	X	X
Vicia villosa	Hairy vetch	UPL	X	
Xanthium strumarium	Rough cocklebur	FAC	X	X
Zannichellia palustris	Horned pondweed	OBL		X
Zizania aquatica	Wild rice	OBL	X	X

1 Botanical nomenclature follows Mitchell and Tucker (1997)
2 Wetland Indicator Status nomenclature:
- Obligate Wetland (OBL): occurs almost always (estimated probability >99%) in wetlands.
- Facultative Wetland (FACW): usually occurs in wetlands (estimated probability 67%-99%),
- Facultative (FAC): equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
- Facultative Upland (FACU): usually occurs in non-wetlands (estimated probability 67%-99%),
- Obligate Upland (UPL): occurs almost always (estimated probability >99%) in non-wetlands.

3 References for Wetland Statuses throughout document from the following:
http://plants.usda.gov
https://gobotany.newenglandwild.org

TABLE 2B.2 2021 QUANTITATIVE VEGETATION MONITORING PLOT PERCENT PLANT COVERS, MOUTH OF NINEMILE CREEK WETLAND RESTORATION AREA

Wetland Monitoring Locations		
Monitoring Location	Total Plant Cover	Total Invasive Cover[1]
Ninemile Creek Spits		
Plot 30	100%	0%
Plot 31	100%	0%
Plot 32	100%	0%
Plot 33	100%	0%
Plot 34	100%	0%
Plot 35	100%	0%
Plot 36	100%	0%
Plot 37	100%	1%
Plot 38	100%	0%
Plot 39	100%	0%
Plot 40	100%	0%
Plot 41	50%	0%
Plot 42	20%	0%
Plot 43	100%	5%
Plot 44	100%	0%
Plot 45	80%	0%
Plot 46	90%	0%
Plot 47	30%	0%
2021 Average Cover[2]	**87.2%**	**0.33%**
In-Lake Planted Areas		
Plot 1	100%	0%
Plot 2	100%	0%
Plot 3	100%	0%
Plot 4	100%	0%
Plot 5	100%	0%
Plot 6	100%	0%
Plot 7	100%	0%
Plot 8	50%	0%
Plot 9	0%	0%
Plot 10	75%	0%
Plot 11	60%	0%
Plot 12	95%	0%
Plot 13	25%	0%
Plot 14	100%	0%
Plot 15	75%	0%
Plot 16	60%	0%
Plot 17	100%	0%
Plot 18	100%	0%
Plot 19	50%	0%
Plot 20	100%	0%
Plot 21	100%	0%
Plot 22	100%	0%

TABLE 2B.2 2021 QUANTITATIVE VEGETATION MONITORING PLOT PERCENT PLANT COVERS, MOUTH OF NINEMILE CREEK WETLAND RESTORATION AREA

Wetland Monitoring Locations		
Monitoring Location	Total Plant Cover	Total Invasive Cover[1]
Plot 23	30%	0%
Plot 24	80%	0%
Plot 25	80%	0%
Plot 26	85%	0%
Plot 27	30%	0%
Plot 28	50%	0%
Plot 29	30%	0%
Plot 48	75%	0%
Plot 49	95%	0%
Plot 50	100%	0%
Plot 51	30%	0%
Plot 52	60%	0%
Plot 53	80%	0%
Plot 54	100%	0%
Plot 55	90%	0%
Plot 56	15%	0%
Plot 57	75%	0%
Plot 58	80%	0%
Plot 59	40%	0%
2021 Average Cover[3]	73.5%	0.00%

[1]Table 7.4 of the OLMMP provides a list of invasive vegetative species to be managed

[2] The OLMMP thresholds for the Ninemile Creek Spits after the fifth growing season are total wetland plant cover is at least 85 percent and invasive wetland species are is less than or equal to 5 percent.

[3] The OLMMP thresholds for the Ninemile Creek in-lake planted areas after the fourth growing season are total wetland plant cover is at least 75 percent and invasive wetland species is less than or equal to 5 percent.

TABLE 2B.3 2021 RELATIVE COVER OF DIFFERENT WETLAND INDICATOR STATUS VEGETATION TYPES, MOUTH OF NINEMILE CREEK RESTORATION AREA

Wetland Indicator Status[1,2]	Overall (%)[3]
UPL	0.55%
FACU	0.83%
FAC	0.72%
FACW	0.87%
OBL	97.02%

[1] Wetland Indicator Status nomenclature:
- Obligate Wetland (OBL): occurs almost always (estimated probability >99%) in wetlands.
- Facultative Wetland (FACW): usually occurs in wetlands (estimated probability 67%-99%), but is occasionally found in non-wetlands.
- Facultative (FAC): equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
- Facultative Upland (FACU): usually occurs in non-wetlands (estimated probability 67%-99%), but is occasionally found in wetlands (estimated probability 1%-33%).
- Obligate Upland (UPL): occurs almost always (estimated probability >99%) in non-wetlands.

[2] References for Wetland Statuses throughout document from the following:
http://plants.usda.gov
https://gobotany.newenglandwild.org

[3] Calculated from all sampling plots combined.

TABLE 2B.4 2021 QUANTITATIVE VEGETATION MONITORING PLOT PERCENT PLANT COVERS, WASTEBED B/HARBOR BROOK OUTBOARD AREA

Monitoring Location	Total Plant Cover	Total Invasive Cover[1]
Upland Areas		
Plot 15	100%	2%
Plot 16	100%	0%
Plot 18	100%	5%
Plot 25	100%	0%
Plot 44	100%	2%
Plot 48	100%	0%
Plot 49	100%	0%
2021 Average Cover[2]	**100.0%**	**1.3%**
Wetland Areas		
Plot 1	75%	0%
Plot 2	100%	0%
Plot 3	80%	2%
Plot 4	100%	2%
Plot 5	100%	0%
Plot 6	100%	2%
Plot 7	100%	0%
Plot 8	100%	0%
Plot 9	100%	0%
Plot 10	100%	0%
Plot 11	100%	0%
Plot 12	100%	0%
Plot 13	100%	0%
Plot 14	100%	0%
Plot 17	100%	0%
Plot 19	100%	0%
Plot 20	100%	35%
Plot 21	80%	0%
Plot 22	85%	0%
Plot 23	95%	0%
Plot 24	100%	0%
Plot 26	100%	0%
Plot 27	75%	0%
Plot 28	100%	0%
Plot 29	100%	0%
Plot 30	100%	0%
Plot 31	85%	0%
Plot 32	100%	0%
Plot 33	100%	0%
Plot 34	100%	0%
Plot 35	80%	0%

TABLE 2B.4 2021 QUANTITATIVE VEGETATION MONITORING PLOT PERCENT PLANT COVERS, WASTEBED B/HARBOR BROOK OUTBOARD AREA

Monitoring Location	Total Plant Cover	Total Invasive Cover[1]
Plot 36	100%	0%
Plot 37	100%	2%
Plot 38	75%	0%
Plot 39	100%	0%
Plot 40	80%	0%
Plot 41	0%	0%
Plot 42	75%	0%
Plot 43	100%	0%
Plot 45	100%	1%
Plot 46	0%	0%
Plot 47	0%	0%
Plot 50	100%	0%
Plot 51	100%	5%
Plot 52	100%	0%
Plot 53	100%	0%
Plot 54	100%	0%
Plot 55	5%	0%
Plot 56	100%	0%
Plot 57	10%	0%
Plot 58	20%	0%
2021 Average Cover[3]	**84.7%**	**1.0%**
25' Planted Buffer		
Plot 59	25%	0%
Plot 60	70%	0%
Plot 61	0%	0%
Plot 62	80%	0%
Plot 63	100%	0%
Plot 64	0%	0%
2021 Average Cover[4]	**45.8%**	**0.0%**

[1]Table 7.4 of the OLMMP provides a list of invasive vegetative species to be managed

[2] The OLMMP thresholds for planted upland areas after the fourth full growing season are total plant cover is at least 85 percent and Invasive species are not present

[3] The OLMMP thresholds for planted wetland areas after the fourth full growing season are total wetland plant cover is at least 85 percent and invasive wetland species are not present.

[4]The 25' Planted Buffer is outside of the Wastebed B/Harbor Brook Outboard Area boundary.

TABLE 2B.5 2021 RELATIVE COVER OF DIFFERENT WETLAND INDICATOR STATUS VEGETATION TYPES WASTEBED B/HARBOR BROOK OUTBOARD AREA

Wetland Indicator Status[1,2]	Overall (%)[3]
UPL	0.7%
FACU	5.4%
FAC	6.1%
FACW	6.1%
OBL	81.8%

[1] Wetland Indicator Status nomenclature:
- Obligate Wetland (OBL): occurs almost always (estimated probability >99%) in wetlands.
- Facultative Wetland (FACW): usually occurs in wetlands (estimated probability 67%-99%), but is occasionally found in non-wetlands.
- Facultative (FAC): equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
- Facultative Upland (FACU): usually occurs in non-wetlands (estimated probability 67%-99%), but is occasionally found in wetlands (estimated probability 1%-33%).
- Obligate Upland (UPL): occurs almost always (estimated probability >99%) in non-wetlands.

[2] References for Wetland Statuses throughout document from the following:
http://plants.usda.gov
https://gobotany.newenglandwild.org

[3] Calculated from all sampling plots combined.

Honeywell PARSONS

TABLE 2B.6 2021 PLANT INSTALLATION SUMMARY
MOUTH OF NINEMILE CREEK AND WASTEBED B/HARBOR BROOK OUTBOARD AREAS

Scientific Name	Common Name	MoNMC Quantity	OB/HB Quantity
Large Trees			
Thuja occidentalis	Northern white cedar	-	1
Acer rubrum	Red maple	-	1
	Total	-	**2**
Plugs			
Elodea canadensis	Canadian waterweed	-	5000
Potamogeton nodosus	Longleaf pondweed	-	2500
Vallisneria americana	American eelgrass	-	2500
Hibiscus moscheutos	Swamp rose mallow	150	500
Nuphar lutea	Spatterdock	2250	4500
Nymphaea odorata	American white water lily	3100	3400
Pontederia cordata	Pickerelweed	6000	5250
Schoenoplectus acutus	Hardstem bulrush	1350	2000
Schoenoplectus tabernaemontani	Softstem Bulrush	2750	1750
Sparganium americanum	American burreed	250	500
Sparganium eurycarpum	Giant burreed	750	500
Spartina alterniflora	Smooth cordgrass	750	500
	Total	**17350**	**28900**

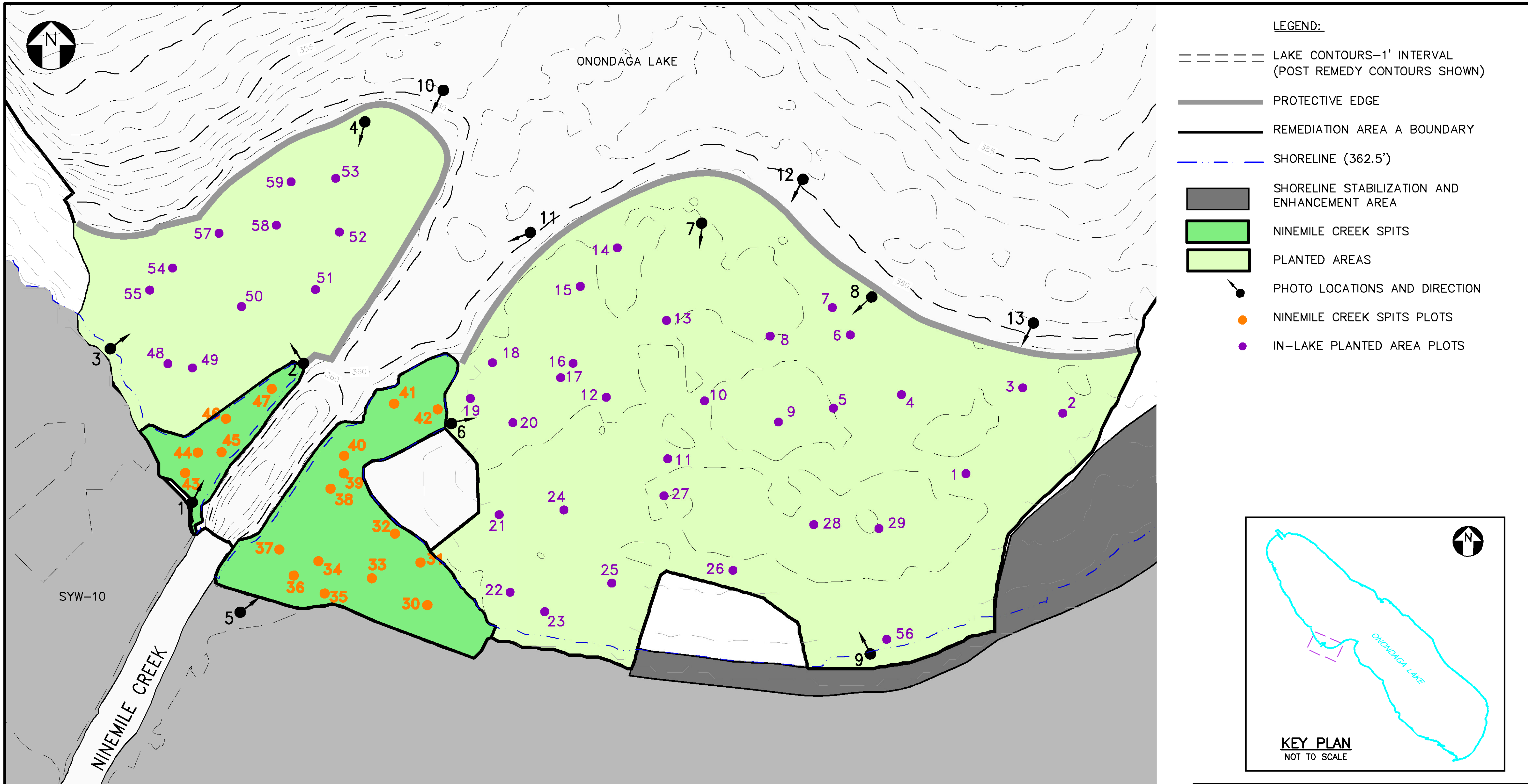


FIGURE 2B.1

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

MOUTH OF NINEMILE CREEK PLANTED AREA VEGETATION MONITORING PLOTS AND PHOTOGRAPH LOCATIONS

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450704 2017-2018 OL PVM\10 TECHNICAL CATEGORIES\10.1 CAD\2020 ANNUAL REPORT\450704-ANNUALRPT-2020-04.DWG
PLOT DATE: 3/1/2021 1:36 PM PLOTTED BY: RUSSO, JILL

1. PLOTS 6, 7, 8, 13, 14, 15, 16, 18, 19, 20, AND 25 MONITORED FOR HERBACEOUS AND WOODY COMPONENTS. ALL OTHER PLOTS ARE HERBACEOUS ONLY.

2. PLOTS 59, 60, AND 61 CONDUCTED WITH A THROW RAKE DUE TO WATER DEPTH.

150 0 150 300

SCALE: 1"=150'

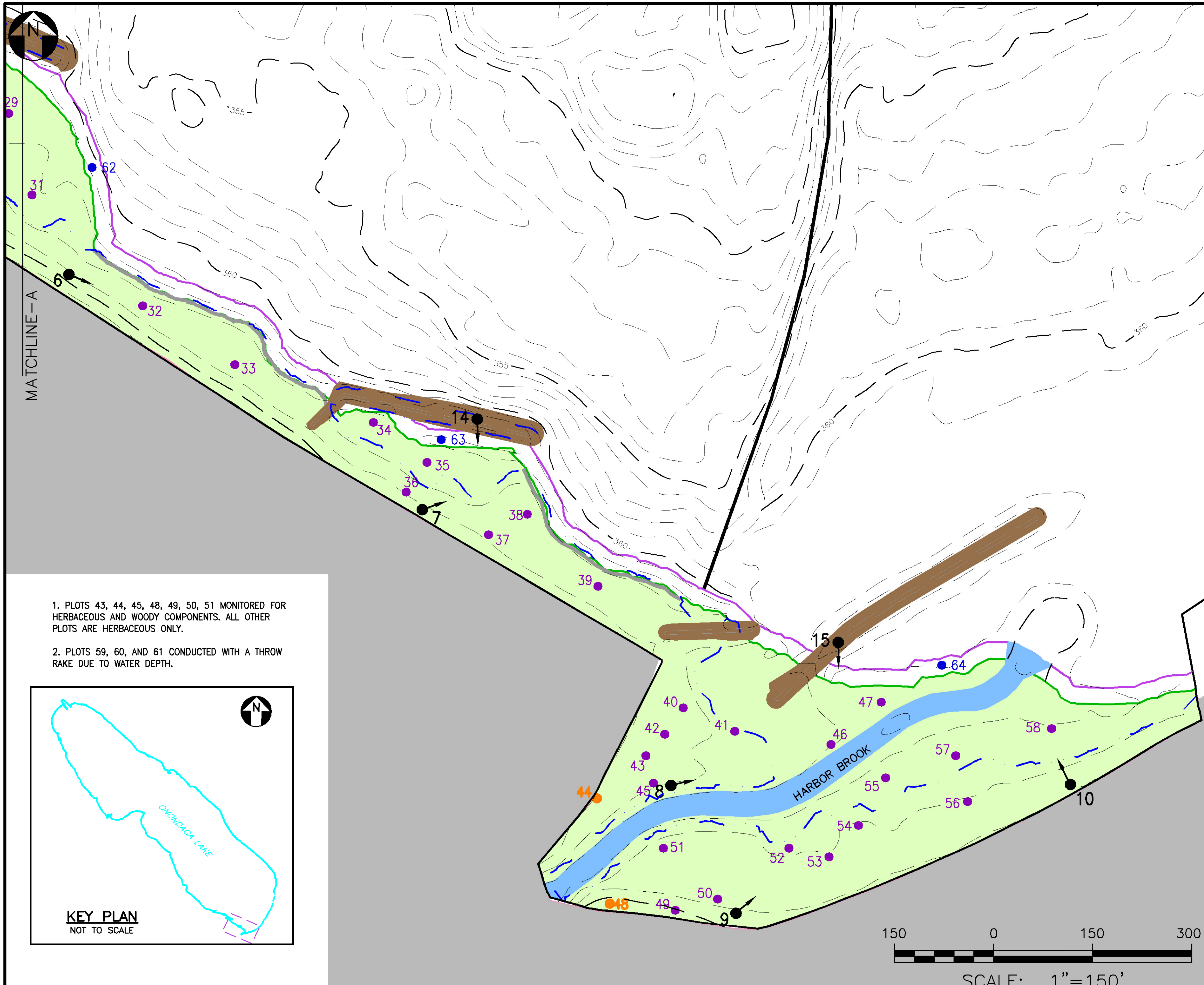
FIGURE 2B.2

Honeywell — ONONDAGA LAKE SYRACUSE, NEW YORK

WESTERN WASTEBED B/HARBOR BROOK OUTBOARD AREA VEGETATION MONITORING PLOTS AND PHOTOGRAPH LOCATIONS

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450704 2017-2018 OL PVM\10 TECHNICAL CATEGORIES\10.1 CAD\2020 ANNUAL REPORT\450704-ANNUALRPT-2020-05.DWG
PLOT DATE: 7/19/2021 3:52 PM PLOTTED BY: RUSSO, JILL



1. PLOTS 43, 44, 45, 48, 49, 50, 51 MONITORED FOR HERBACEOUS AND WOODY COMPONENTS. ALL OTHER PLOTS ARE HERBACEOUS ONLY.

2. PLOTS 59, 60, AND 61 CONDUCTED WITH A THROW RAKE DUE TO WATER DEPTH.

LEGEND:

- LAKE CONTOURS–1' INTERVAL (POST REMEDY CONTOURS SHOWN)
- PROTECTIVE EDGE
- REMEDIATION AREA CAP BOUNDARY
- SHORELINE (362.5')
- OUTBOARD BOUNDARY
- 25' PLANTED BUFFER LIMIT
- PLANTED AREAS
- PROTECTIVE BERMS
- STREAM

VEGETATION PLOTS[1,2]

- UPLAND VEGETATION PLOT
- WETLAND VEGETATION PLOT
- 25' PLANTED BUFFER VEGETATION PLOTS
- PHOTO LOCATIONS AND DIRECTION

FIGURE 2B.3

Honeywell — ONONDAGA LAKE SYRACUSE, NEW YORK

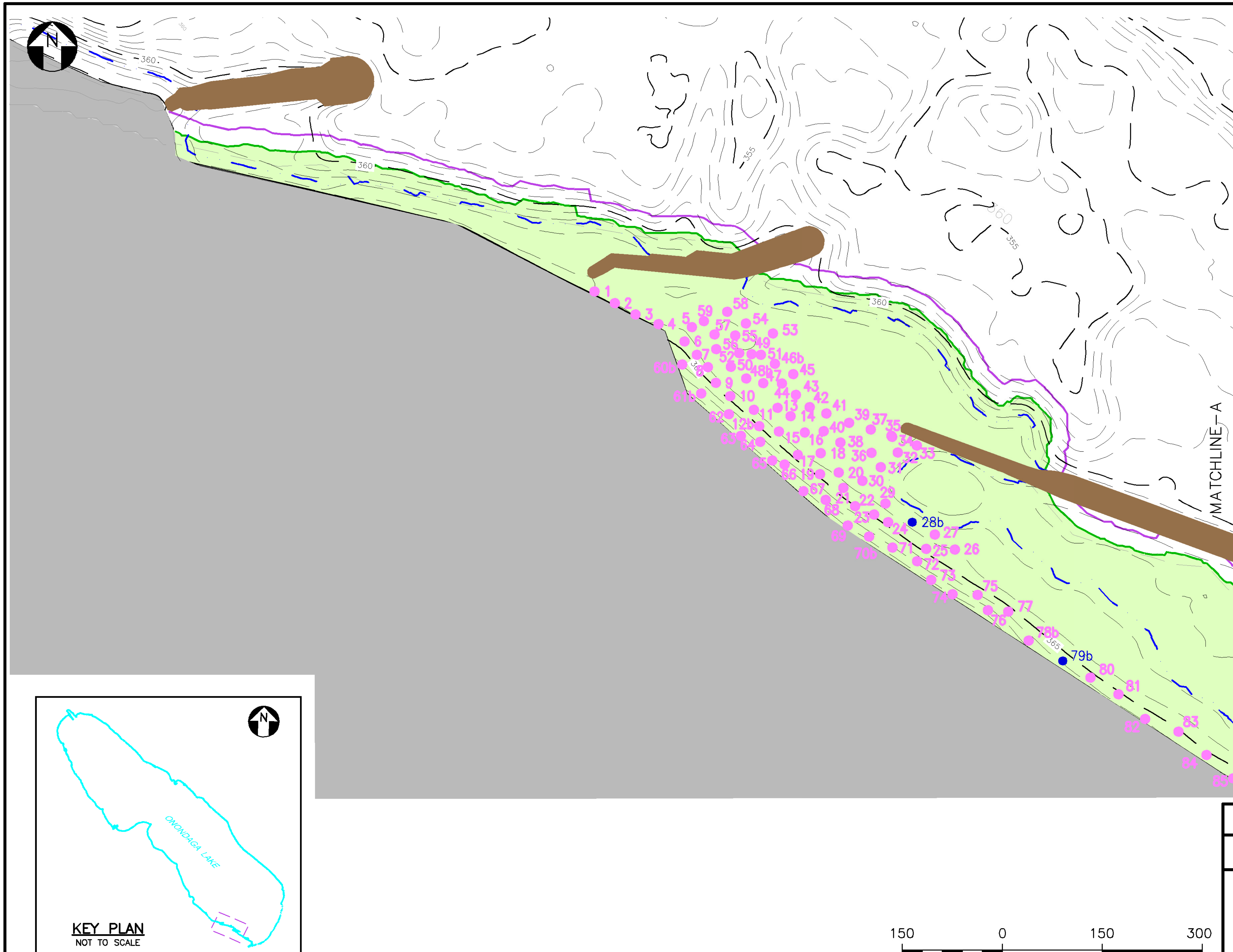
EASTERN WASTEBED B/HARBOR BROOK OUTBOARD AREA VEGETATION MONITORING PLOTS AND PHOTOGRAPH LOCATIONS

PARSONS

301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450704 2017-2018 OL PVM\10 TECHNICAL CATEGORIES\10.1 CAD\2020 ANNUAL REPORT\450704-ANNUALRPT-2020-05.DWG

PLOT DATE: 7/19/2021 3:54 PM PLOTTED BY: RUSSO, JILL



LEGEND:

- LAKE CONTOURS-1' INTERVAL (POST REMEDY CONTOURS SHOWN)
- REMEDIATION AREA CAP BOUNDARY
- SHORELINE (362.5')
- OUTBOARD BOUNDARY
- 25' PLANTED BUFFER LIMIT
- PLANTED AREAS
- PROTECTIVE BERMS
- LARGE TREE LOCATIONS
- LAGRE TREE LOCATIONS (REPLACED)
- PHOTO LOCATIONS AND DIRECTION

150 0 150 300

SCALE: 1"=150'

FIGURE 2B.4

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

WESTERN WASTEBED B/HARBOR BROOK OUTBOARD AREA LARGE TREE LOCATIONS

PARSONS

301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450704 2017-2018 OL PVM\10 TECHNICAL CATEGORIES\10.1 CAD\2020 ANNUAL REPORT\450704-AR-TREES-2020.DWG
PLOT DATE: 4/8/2022 2:37 PM PLOTTED BY: RUSSO, JILL [US-US]

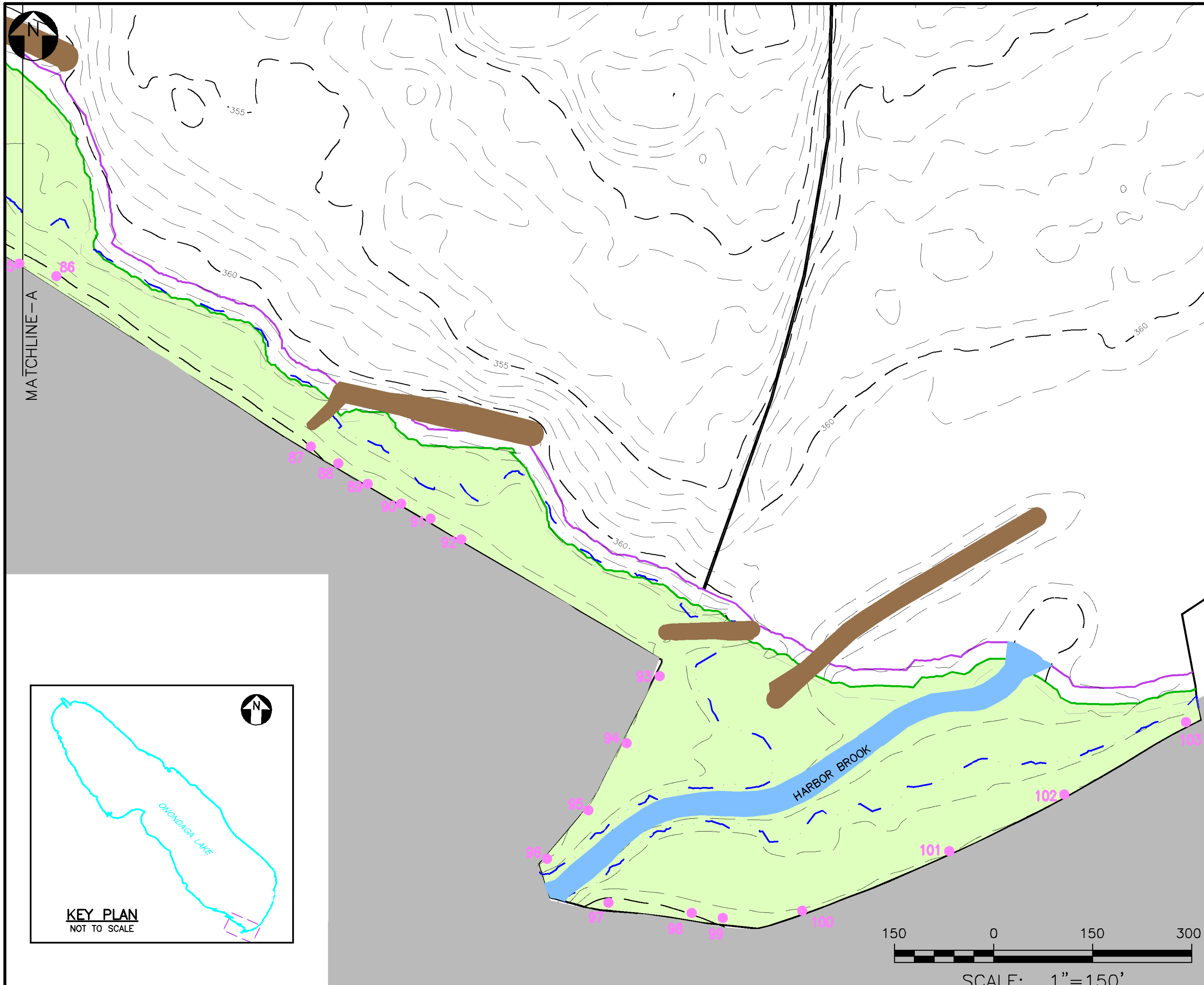


FIGURE 2B.5

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

EASTERN WASTEBED B/HARBOR BROOK OUTBOARD AREA LARGE TREE LOCATIONS

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450704 2017-2018 OL PVM\10 TECHNICAL CATEGORIES\10.1 CAD\2020 ANNUAL REPORT\450704-AR-TREES-2020.DWG
PLOT DATE: 2/24/2021 4:08 PM PLOTTED BY: RUSSO, JILL

APPENDIX 2C – MOUTH OF NINEMILE CREEK YEAR 5 WETLAND DELINEATION

DRAFT
WETLANDS/WATERS DELINEATION REPORT
MOUTH OF NINEMILE CREEK
(REMEDIATION AREA A AND SHORELINE STABILIZATION AND ENHANCEMENT AREAS)

ONONDAGA COUNTY, NEW YORK

Prepared For:

Honeywell

301 Plainfield Road
Suite 330
Syracuse, New York 13212

Prepared By:

PARSONS

301 Plainfield Road
Suite 350
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and

JOSEPH MCMULLEN, PWS
17 Quail Path
Liverpool, NY 13090

APRIL 2024

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LIST OF ACRONYMS

EW	Emergent Wetland
ft.	Foot/Feet
FAC	Facultative
FACW	Facultative Wetland
GPS	Global Positioning System
NMC	Ninemile Creek
NYSDEC	New York State Department of Environmental Conservation
NWI	National Wetlands Inventory
OBL	Obligate
OF	Open Field
OLMMP	Onondaga Lake Monitoring and Maintenance Plan
SSU	Scrub-Shrub Upland
TES	Terrestrial Environmental Specialists, Inc.
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey

EXECUTIVE SUMMARY

Following completion of remediation in 2017, habitats were restored in an area of Remediation Area A where Ninemile Creek (NMC) discharges to Onondaga Lake. The area is referred to as the Mouth of Ninemile Creek restoration area, and includes the spits of land at the creek mouth and lake-ward areas extending out approximately 500 to 600 feet from the shoreline of Onondaga Lake. An adjacent shoreline stabilization and enhancement area was also included as part of the study area. Monitoring was required of the restored habitats for five years, and one of the requirements of the monitoring plan was a formal delineation of the wetlands/waters in the area. This report presents the results of this formal delineation, along with additional information on wildlife usage and quality of the restored habitats using functions and values comparisons to pre-remediation habitats. The delineation was performed by Joseph M. McMullen (McMullen) and Parsons on August 31, 2021. Following discussions with NYSDEC, additional wetland determination soil plots were performed on February 14, 2023 to further support the delineation results.

The specific study areas addressed in this delineation report are the Mouth of Ninemile Creek restoration area, often referred to as Remediation Area A (RA-A), and the adjacent Shoreline Stabilization and Enhancement area. The Mouth of NMC restoration area proper includes the areas within Onondaga Lake on either side (designated as east or west) of the Ninemile Creek mouth and totals approximately 18 acres. The area west of the creek mouth extends from the shore approximately 500 feet, with the larger east area extending approximately 600 feet. Within each area is a spit of land that occurs along the creek channel mouth. The spit areas were present prior to remediation, and were excavated as part of the remediation plan and subsequently restored. The shoreline stabilization and enhancement area extends along the lake shore to the east from the limit of the east spit. Much of the area is bordered on the landward side by an access road to the Lakeshore Amphitheater.

Methods involved in the delineation included an initial review of background resource maps, aerial photographs, as-built surveys, and information gathered by Parsons over the years. Wetlands/waters were delineated with numbered flags using state and federal methodologies on August 31, 2021, with additional information collected on August 4. Each flag was located using global positioning system (GPS) equipment by Parsons and plotted on an as-built survey of the area. During the field effort, data on vegetation, soils, and hydrology were collected in plots on either side of the delineated boundary at various locations. The plot data were recorded on standard federal forms. Photographs were taken, and a cover map of wetland and upland habitat types was developed. Information was recorded on wildlife usage and vegetation abundance throughout the field efforts.

Results of the delineation effort are presented in text and tabular form, supplemented with figures. Plot data and photographs are provided in appendices. Acreage of each wetland/water was calculated from the plotted GPS-located points. Lists of plants and animals recorded at the study areas are presented in tables; these lists include species documented by Parsons and McMullen since 2017. The wetlands/waters delineated on the site are described, including detailed information on vegetation and wildlife/fish usage, as well as information on soils and hydrology.

ES.1 Restoration Areas

The Mouth of Ninemile Creek restoration area is approximately 18 acres in size. Persistent emergent wetlands dominated by native plant species were established on the spits that bordered the east and west edges of the Creek channel mouth and totaled 2.47 acres. Lakeward and shoreline persistent and non-persistent emergent wetlands were created in the restoration area and totaled 5.31 acres. Common species found throughout the emergent wetlands included: cattail, softstem bulrush, three square, bur-reed, broadleaf arrowhead, and pickerelweed. Several large patches of floating aquatic wetlands, which totaled 2.53 acres, were developed in the restoration area. Common floating aquatics were: white water lily, yellow water lily, and Illinois pondweed. A well-vegetated shoreline, 0.16 acres of which is within the restoration area, fringed the upland edge. Beds of submerged aquatic plants of water stargrass, coontail, bladdernut, tapegrass, waterweed, and sago pondweed dominated the remaining 7.46 acres of the Mouth of NMC restoration area.

A shoreline stabilization and enhancement area adjacent to the Mouth of NMC restoration area was included in the wetland delineation study area. Shoreline emergent wetlands of 0.57 acre occurred in this area.

Various wildlife/fish species were observed in the restoration areas. A number of waterfowl species and other birds dependent on wetlands habitat were observed in or near the wetlands/waters of the study area. The landscape position of the wetlands within the adjacent Onondaga Lake waters increases their value for this group. Several duck species were noted utilizing the area, including pied-billed grebe and American coot, which nested in the lakeward emergent wetlands. Green heron, great blue heron, great egret, spotted sandpiper, and red-winged blackbird, as well as special concern raptors, such as bald eagle and osprey were observed. Large and small mammals noted in the area included American beaver, muskrat, and raccoon.

With a restored substrate mix of soil and gravel/cobble improving the in-water habitat in the restoration areas, various fish species were noted. Evidence of spawning for largemouth bass and sunfish was indicated by young of year in the area.

ES.2 Goals and General Functions and Benefits Comparisons

The report also includes a section addressing the goals of the habitat restoration plan from a quantitative standpoint, as well as a comparison of the quality of the habitats restored to those that existed pre-remediation using a functions and benefit parameters. All of these quantitative goals were accomplished.

The only wetlands that occurred in the restoration areas prior to remediation were in the spit areas. These spits totaled 1.9 acres prior to remediation and were dominated by dense stands of the invasive common reed grass. Results of the wetlands/waters delineation indicated that a total of 2.47 acres of wetland dominated by native species were created in the spit areas. An additional 5.31 acres of emergent wetland and 2.53 acres of floating aquatic wetlands were created in the surrounding area.

Quantitative comparisons using acreage numbers is part of what should be considered when viewing successful restoration. The other part is the quality of the restored habitats, especially wetlands/waters habitats, in comparison to that which existed pre-remediation. A wetlands functions and benefits analysis and wildlife assessment were made of the areas prior to remediation. The results of this study were used to make general quality comparisons to the restored habitats and showed that functions are being maintained in the restored habitats, with plant diversity and wildlife habitat value greatly increased. In-water habitat has also likely greatly improved with restoration.

Invasive species, particularly common reed grass, were common in the restoration areas prior to remediation. The wetlands are now dominated by a diverse mix of native species greatly improving habitat value.

SECTION 1 - INTRODUCTION

Mr. McMullen was contracted to assist Parsons personnel in the performance of a delineation of wetlands/waters at a restoration site/study area associated with the Onondaga Lake projects. The delineation is required as part of the Onondaga Lake Monitoring and Maintenance Plan (OLMMP) (Parsons 2018). The study areas are referred to as the Mouth of Ninemile Creek restoration area. They are located lakeward of the Ninemile Creek channel mouth with Onondaga Lake, and are in the Town of Geddes, Onondaga County, NY.

Environmental studies were performed in this area prior to any remediation activities. These studies included wetlands/waters delineation efforts. Mr. McMullen led the original wetlands/waters delineations when he was a Principal in the firm Terrestrial Environmental Specialists, Inc. (TES). An overview of these studies is provided in Section 2 Prior Studies.

The current investigation included a review of background information, maps, and aerial photographs prior to the field delineation of wetlands/waters and associated efforts, as indicated in Section 3. Detailed methods involved in the wetlands/waters delineation are provided in Section 4. Results of the delineation and habitat assessment are presented in Section 5, and are supplemented by various tables and figures, as well as appendices of wetland determination plot data forms and photographs. A general functions and benefits analysis of the restored habitats is also provided (Section 6).

SECTION 2 – PRIOR STUDIES

As previously indicated, prior to remediation studies of the Mouth of NMC restoration areas were part of work performed by TES under contract to Parsons. These prior studies included detailed wetlands delineations of the mouth of Ninemile Creek area. At the time of the delineation (2003), essentially the only wetlands in the area were the spits on either side of the Ninemile Creek channel mouth. These areas were dominated by dense stands of common reed grass (*Phragmites australis*)

Relevant prior TES reports include a wetland delineation report for the lower reach of NMC (TES 2003), which was incorporated into Parsons (2005). Another pertinent report, TES (2009), which incorporated the original delineation, was a wetlands/floodplain assessment report for various areas along NMC. A separate wetlands/floodplain assessment report (O'Brien & Gere and Parsons 2010) for Onondaga Lake covered the wetland areas, particularly Wetland SYW-10, along the lake. The O'Brien & Gere and Parsons (2010) report provides information that is helpful in assessing the habitat changes and the success of the wetland/waters habitat restoration. Such comparisons are further addressed in Section 6 General Functions and Benefits Assessment Comparisons.

SECTION 3 – BACKGROUND INFORMATION REVIEW

Prior to the field investigations of the Mouth of NMC restoration areas, various background maps and information were assembled and reviewed. This information included prior reports of the area and the following specific information.

- The United States Geological Survey (USGS) topographic map (Syracuse West quadrangle) (Figure 1).
- New York State Department of Environmental Conservation (NYSDEC) New York State Freshwater Wetlands map (Figure 2).
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) map (Figure 3).
- 2022 aerial photographs used to present the vegetation/land use cover map of the Mouth of NMC area (Figure 4).

As indicated, these background resource maps were developed into figures. All figures are provided after the text of the report.

SECTION 4 – METHODS

The agency resource maps and aerial photographs discussed in Section 3 were used during the field review of the areas. Delineation of the wetlands/waters and plot data collection along the wetland boundaries were performed by Mr. McMullen and Parsons on August 31, 2021. The boundaries were delineated using the state and federal criteria for delineating wetlands (NYSDEC 1995, Environmental Laboratory 1987, USACE 2012, USACE 2018, and USDA NRCS 2017).

Mr. McMullen and Parsons performed an additional review of the wetlands and upland habitats on August 4, 2021. This review included a refinement of the vegetation cover map and collection of qualitative information on abundant plant species in each cover type. Observations on wildlife usage were recorded during all field visits.

Surveyors ribbon was placed along the wetland/waters boundaries based on observations of vegetation, soils, and hydrologic conditions. Each wetland flag was labeled with a letter identifier of the wetland and was numbered consecutively (for example, A-1, A-2, A-3, etc.). The flagged wetland boundaries were surveyed by Parsons using a Trimble SPS995 GPS unit, with sub 2-inch accuracy. GPS location efforts occurred shortly after the flags were placed.

To further support the wetland boundaries, data on vegetation, soils, and hydrology were collected during the field efforts in plots located along the wetland boundaries. A total of twelve plots were sampled in and around the wetland and in other representative areas of the site. The plot data were recorded on wetland determination data forms designed to follow the requirements in USACE (2012). Representative photographs of each plot and each wetland area were taken as well.

Vegetation data were collected in each of the plots. Ocular estimates of the percent areal cover by plant species for each vegetation layer (tree, shrub, and herbaceous layers) were recorded. The plots varied in size by vegetation layer being sampled. The sizes were: 30-foot (ft.) radius for the trees, 10-ft. radius for the shrubs, and 5-ft. radius for the herbaceous layer.

The presence of wetland vegetation was determined using the dominance test, which is met when more than 50 percent of the dominant species in a sample plot have an indicator status of obligate (OBL), facultative-wet (FACW), or facultative (FAC). The dominant species for each layer in a plot were determined by ranking the species in decreasing order of percent cover and recording those species which, when cumulatively totaled, exceed 50 percent of the total cover of that layer. Additionally, any plant species that comprises 20 percent or more of the total cover for each layer was considered to be a dominant species. As provided in USACE (2012), dominants are determined by layer and treated equally.

The identification of plant species not readily known were determined using various plant identification keys and floras. Scientific nomenclature for plant species generally follows the New York Flora Atlas (Weldy et al. 2021). The indicator status for each plant species was determined using the 2018 National Wetland Plant List for the Northcentral and Northeastern Region (USACE 2018).

Soil and hydrology data were collected in soil pits or soil borer holes within each sample plot. Soil characteristics were noted along the soil profile as specified by USACE (2012). Procedures for identifying hydric soils as outlined in the Field Indicators of Hydric Soils in the United States (USDA NRCS 2017) were also followed. Soil colors were determined by using the Munsell color chart. Primary and secondary indicators of hydrology were also noted at each sample plot. If necessary, the wetland boundaries were refined on the basis of additional soil borer holes taken along a transect perpendicular to the wetland boundary.

It should be noted that in addition to the information on plant and animal species recorded during the current wetland delineation, a number of observations on species occurrence were made by Mr. McMullen and Parsons personnel from 2017 to 2021 in the restored wetlands/waters study areas. These species observations were added to those made during the wetland delineation and are presented in tabular form (Tables 1 and 2). All observations were used in the discussion of wildlife usage of the area.

SECTION 5 –RESULTS

Results of the wetlands/waters delineation and habitat assessment are provided for the Mouth of NMC restoration areas in the following sections. Included is a general study area description identifying the features and setting. Figures 1 to 3 and the aerial photograph base of Figures 4 supplement the descriptions.

The study area ecology section describes the vegetation/land use types found in the study areas, as well as descriptions of the areas of upland habitat. Tables 1 and 2 include lists of plant and animal species, respectively, observed in the study area. The acreage of each vegetation/waters cover type is provided in Table 3, with the cover map provided as Figure 5. The specific areas designated for wetland mitigation are shown on Figure 8.

Each delineated wetland type is described in detail based on collected plot data and other observations in the wetland descriptions section. Acreage of each wetland is provided in Table 3, and the surveyed delineation limit is presented on Figures 5 and 6. Sample plot and photograph locations are provided on Figures 7, with representative photographs and completed data forms presented in Appendices A and B, respectively. Additional details to support the findings of the delineation are provided in Attachment 1.

General wildlife and fish observations and usage of each habitat type are provided in the wildlife section. Table 2 lists the animals noted in the Mouth of Ninemile Creek restoration and enhancement study areas based on visual observations or sign (tracks, scat, etc.).

5.1 Study Area Description

The Mouth of Ninemile Creek study area encompasses the Mouth of NMC restoration area, often referred to as Remediation Area A (RA-A), and the adjacent shoreline stabilization and enhancement area. The Mouth of NMC restoration area proper (RA-A) includes the areas within Onondaga Lake on either side (designated as east or west) of the Ninemile Creek mouth (Figures 1 and 4). The area west of the creek mouth extends out from the shore approximately 500 feet, with the larger east area extending approximately 600 feet. Within each area is a spit of land that occurs along the creek channel mouth. There were spits in these areas prior to remediation. Following remediation, the spit areas were restored.

The shoreline stabilization and enhancement area extends along the lake shore to the east from the limit of the east spit (Figure 4). Much of the area is bordered on the landward side by an access road to the Lakeshore Amphitheater.

As indicated on Figure 1, both the restoration and enhancement areas occur along the west shore of the lake east of the West Shore Recreational Trail and Interstate Route 690, in the Town of Geddes, Onondaga County. Lake water level elevation fluctuates and varies seasonally, but the summer level averages 362.8 feet (NAVD 1988). However, water levels were consistently high in 2021, with the elevation on the August 31, 2021 delineation date around 363.9 feet. The lake bottom in much of the area was restored with fine material on a series of plateaus of different water depths, with shallow areas created to accommodate emergent plants on the spits and lakeward emergent areas, and deeper areas for the floating aquatics. Coarser material of gravel and cobble was used in a protective edge on the lakeward edge of the restoration area and much of the shoreline stabilization area.

As indicated on the NYSDEC New York State freshwater wetlands map (Figure 2), state-regulated wetland SYW-10 occurs in the vicinity of the study area. It occurs along the western edge of NMC between the County's West

Shore Recreational Trail and Onondaga Lake near the west spit. Wetland SYW-10 is rated as a Class I wetland, which is the highest state wetland ranking value. It should be noted that much of Wetland SYW-10 was restored as part of the Onondaga Lake project and was subject to a formal wetland delineation in 2018. A detailed description of the wetland area can be found in Appendix C (Parsons and McMullen 2019) of the 2018 Annual Monitoring & Maintenance Report for the Geddes Brook/Ninemile Creek/LCP OU-1 (Parsons 2019).

The USFWS National Wetlands Inventory map (Figure 3) does not map any wetlands in the area. It does, however, indicate three different water habitat types in Onondaga Lake in the area. These waters are: L2UBH (Lacustrine, Littoral, Unconsolidated Bottom, Permanently Flooded); L2UBG (Lacustrine, Littoral, Unconsolidated Bottom, Intermittently Exposed); and L2USCs (Lacustrine, Littoral, Unconsolidated Shore, Seasonally Flooded, spoils). Ninemile Creek in this area is shown on the NYSDEC stream classification maps as Item No. 77 and Waters Index Number P 154-6-2, and has a Class and Standard of C.

As part of the remediation activities, soils/substrate that were originally present in the study area were removed and replaced with approved substrate and topsoil as part of the restoration activities. Soils, therefore, do not match those shown on published soil survey maps.

5.2 Study Area Ecology

The study area ecology section describes the cover types and small upland habitats of the area. Wetlands are described in detail in the following Section 5.3 and wildlife usage in Section 5.4. Representative photographs are provided in Appendix A and field plot data forms in Appendix B. Plants and animals observed are presented in Tables 1 and 2, respectively.

As indicated on the vegetation and land use cover map (Figure 5), the Mouth of Ninemile Creek restoration area consists primarily of emergent (7.78 acres) and floating aquatic (2.53 acres) wetlands intermixed with areas of submerged aquatic beds. A strip of shoreline emergent wetland (0.57 acre) occurs within the shoreline stabilization and enhancement area.

A very small area of open field/scrub-shrub upland habitat covers 0.16 acre of the restoration area (Table 3). This cover type borders the lakeward edge of the east spit, and extends across the restored banks and adjacent lake shoreline landward of the eastern study area (Figures 5). This cover type is densely vegetated with a mix of herbaceous and woody species (Photos 5 and 6, Appendix A), which provides an extremely stable area on the lakeshore. Most of the area is dominated with herbaceous vegetation. Grasses and forbs dominate the area with the following being abundant species: tall goldenrod (*Solidago altissima*), tick trefoil (*Desmodium canadense*), switchgrass (*Panicum virgatum*), wild bergamot (*Monardo fistulosa*), great lobelia (*Lobelia siphilitica*), bitterweed (*Picris hieracoides*), and farther to the east, tall sweet clover (*Melilotus sp.*) and wormwood (*Artemisia vulgaris*).

Woody species are mixed with the herbaceous species in the open-field/scrub-shrub cover type. Abundant tree and shrub species noted included: eastern cottonwood (*Populus deltoides*), willows (*Salix* sp.), and silky dogwood (*Cornus amomum*).

5.3 Wetlands/Waters Description

Wetlands/waters delineated by Mr. McMullen and Parsons within the restoration areas are described in this section. Figure 6 shows the surveyed wetland boundaries. Sample plot and photograph locations are indicated on Figures 7. Photographs of the wetlands and plot data forms are provided in Appendix A and Appendix B, respectively.

As indicated on Figures 5 and 6, wetlands delineated within the area are primarily emergent types, with scattered patches of floating aquatics. Wetlands within the Mouth of NMC restoration area includes the east and west spits emergent, lakeward emergent, a small patch of shoreline emergent, and several scattered floating aquatic patches. There is also a narrow strip of shoreline emergent in the shoreline stabilization and enhancement area. Submerged aquatic vegetation dominates the waters of the remainder of the restoration and enhancement areas.

5.3.1 Mouth of Ninemile Creek Restoration Area (RA-A)

Wetlands in the Mouth of Ninemile Creek restoration area total 10.31 acres, and consist of 7.78 acres of emergent wetlands, 2.47 acres of which are in the east and west spits, and 2.53 acres of floating aquatic wetlands (Table 3 and Figures 5 and 6). The remainder of the area, 7.46 acres, is submerged aquatic beds. Detailed descriptions of each area is presented in the following text.

Emergent Wetlands – Spits

The east and west spits that border the Ninemile Creek channel as it enters Onondaga Lake are primarily dominated by persistent emergent wetlands, with some areas of nonpersistent emergents in the deeper water areas on their lakeward ends (Photos 1, 2, 7, 8, 9, and 10, Appendix A). With the high water levels experienced in 2021, they were inundated throughout the growing season. During the August 31 delineation, lake water level elevation was 363.9 feet (NAVD 1988), and sample plots in the east spit (Plot A-4W) and west spit (Plot E-1W) recorded a water depth of 18 inches (Figure 7 and Appendix B). Soils/substrates recorded in the sample plots in the spits were primarily silt loam and sandy silt loam, with mixes of gravel; they exhibited sulphidic odor, a strong hydric soil indicator.

The east spit wetland area (within the A flag line on Figure 6) consists of 1.82 acres (Table 3). Common species in the east spit include: broadleaf cattail (*Typha latifolia*), softstem bulrush (*Schoenoplectus tabernaemontani*), three square (*S. pungens*), bur-reed (*Sparganium spp.*), broadleaf arrowhead (*Sagittaria latifolia*), and pickerelweed (*Pontederia cordata*). Willows (*Salix sp.*) and several other woody species occur on the landward edge.

The west spit wetland area was 0.65 acres (Table 3) and had similar dominant vegetation, with some larger patches of pickerelweed along its western edge. It also contains prairie cordgrass (*Sporobolus michauxiansis),* rice cutgrass (*Leersia oryzoides*), and shrubs, such as willows (*Salix sp.*), along the shoreline area adjacent to state-mapped Wetland SYW-10.

Emergent Wetlands – In Lake Area

There are large areas dominated primarily by emergent wetland vegetation out from the mouth of Ninemile Creek in the lakeward portion of the restoration area, and are shown on Figure 6 within the C, D, and G flag lines (Photos 4, 13, 14, and 16, Appendix A). These in-lake (lake-ward) emergent areas total 5.18 acres (Table 3). They are permanently inundated areas, with water depth of 30 to 50 inches recorded during the August 31 sampling.

Broadleaf cattail, blue cattail (*Typha x glauca*), softstem bulrush, and bur-reed dominate the areas, especially on the east side (within the G line of flags). These species, as well as pickerelweed, dominate the west side (within the C and D lines), where the vegetation is more sparse. Scattered wild rice (*Zizania sp.)* and submerged aquatic vegetation occur in the slightly deeper water inclusions within these areas.

Emergent Wetlands – Shoreline

There is a small strip of emergent wetlands within the Mouth of NMC restoration area along the shoreline east of the eastern limit of the east spit (Figures 5 and 6); it totals 0.13 acre within the restoration area (Table 3). Broadleaf cattail is abundant in this area and common bladderwort (*Utricularia sp*.) was noted as a dominant species in the sample plot in this area, along with softstem bulrush and bur-reed.

Floating Aquatic Wetlands

Floating aquatic vegetation is prevalent in areas east of the east spit between the large area of lake-ward emergent wetland and lake shore. They are all within the F flag lines on Figure 6 and total 2.53 acres (Table 3). Dominant floating aquatic species were white water lily (*Nymphaea odorata),* yellow water lily (*Nuphar advena* or *N. lutea spp. advena*), and pondweed (*Potamogeton illinoensis*). They were not as evident during the wetland delineation, because of the high water levels (Photos 11 and 12, Appendix A). Submerged aquatic vegetation is mixed in these areas.

Submerged Aquatic Vegetation

The remainder of the area of the Mouth of Ninemile Creek restoration area within the protective edge is dominated by aquatic beds of primarily submerged aquatic vegetation (Figures 5 and 6) and totals 7.46 acres (Table 3). Common species in these areas are water stargrass (*Heteranthera dubia*), coontail (*Ceratophyllum demersum*), bladderwort (*Utricularia sp*.), tapegrass (*Vallisneria americana*), waterweed (*Elodea canadensis*), and sago pondweed (*Stukenia pectinata*). Scattered wild rice also occurs.

5.3.2 Shoreline Stabilization and Enhancement Area

There is a linear strip of emergent vegetation, outside the RA-A restoration area, along the shoreline east of the eastern tip of the east spit (Figure 5); it is shown within the B line on Figure 6 and totals 0.57 acre (Table 3). Broadleaf cattail, softstem bulrush, and bur-reed dominate this area. Cottonwood (*Populus deltoides*) is also common along the landward edge.

Substrate within the stabilization area is a gravel/cobble mix. Surprisingly, submerged aquatic vegetation of the species previously noted was abundant on this coarse substrate material here and along the outer protective edge.

5.4 Invasive Species

Invasive species were infrequent in the wetlands or uplands of the Mouth of Ninemile Creek study areas. Total cover of invasive species was estimated to be well less than 1%. Scattered individuals of purple loosestrife (*Lythrum salicaria*) and common reed grass were noted in isolated places. On occasion, water chestnut (*Trapa natans*) was noted, and it was removed.

5.5 Wildlife, Fish, and Other Organisms

Wildlife species noted in and near the Mouth of Ninemile Creek restoration areas are presented in Table 2. This table includes fish and wildlife species noted in the last five years. A tremendously diverse mix of wildlife species utilized the areas, especially waterfowl and other bird species (last page of photos, Appendix A). The primary reasons for this increased wildlife usage are: creation of interspersed wetland habitats in the lake where none previously existed, occasional mudflats during periods of low water levels, dense protective cover from floating and submerged aquatics for young-of-year fish species, and the lack of ice cover at the mouth of Ninemile Creek during the winter months.

Amphibians and reptiles were observed occasionally in the Mouth of Ninemile Creek restoration areas. Green frogs (*Lithobates clamitans*) and northern leopard frog *(L. pipiens*) occur in the area. Reptiles included garter snake (*Thamnophis brachystoma*), brown snake (*Storeria kekayi*), and snapping turtle *(Chelydra serpentina*).

Any fish species that is found in the lake could occur in the restoration areas. The emergent and floating aquatic wetlands in the lake offer sheltering habitat and cover for young fish. Restored substrates also provided improved spawning habit for certain fish species, with young of year noted for largemouth bass (*Micropterus salmoides*) and sunfish (*Lepomis spp.*).

A number of bird species used the restored and newly created wetlands habitat within the study areas for nesting and foraging (Table 2). Ducks, shorebirds, and wading birds were common. Among the puddle ducks, mallard (*Anas platyrhynchos*) are probably the most common, but diving ducks, such as wood duck (*Aix sponsa*) and bufflehead (*Bucephala albeola*) were noted. Pied-billed grebe (*Podilymbus podiceps*), a state threatened species, nested in the in-lake emergent wetlands (last page of photos, Appendix A), as did American coots (Fulica americana). Canada goose (*Branta canadensis*) were also abundant. Spotted sandpiper (*Actitis macularius*) was a frequent shorebird along the edges of the fringing wetlands, along with wading birds, like great blue heron (*Ardea herodias*) and great egret (*A. alba*). Green heron (*Butorides virescens*) was abundant as well. Belted kingfisher (*Megaceryle alcyon*) feeds along the lake shore where overhanging perching habitat exists, like by Wetland SYW-10. Raptors were also noted frequently in the study area, especially bald eagle *(Haliaeetus* l*eucocephalus*) and osprey (*Pandion haliaetus*). A number of passerines, including: song sparrow (*Melospiza melodia*), red-winged blackbird (*Agelaius phoeniceus),* and American goldfinch (*Spinus tristis*), are frequent.

Mammals frequenting the study areas (Table 2) included muskrat (*Ondatra zibethicus*) and American beaver (*Castor canadensis*). Muskrat houses are common throughout the persistent emergent wetlands.

A diverse mix of showy flowering plants are abundant in the uplands of the shoreline in and near the study area and offer feeding opportunities for a variety of butterflies, bees, and other invertebrate pollinators.

SECTION 6 –GENERAL FUNCTIONS AND BENEFITS ASSESSMENT COMPARISONS

The goals of the restoration plan for the Mouth of Ninemile Creek restoration areas are reviewed in this section and a discussion is provided as to how these goals have been met. This discussion includes the quality of the habitats that occurred prior to remediation compared to those that currently exist after restoration. As the discussion indicates, the ability of wetlands/waters to provide functions and values has been maintained and the goals of the plan met.

6.1 Goals of Habitat Restoration

One of the overarching goals of the Onondaga Lake Habitat Restoration Plan was to: "*maintain or improve the size, diversity, and ecological function of wetlands.*" Success criteria and goals of the restoration plan for the various portion of the Lake project, including the spits in the Mouth of NMC Restoration areas, are covered in the Onondaga Lake Monitoring and Maintenance Plan (Parsons 2018). Wetland acreage of the restored spits designed to meet requirement in the plan are also provided in this report. The goal was to restore the spits to their pre-remediation acreage of 1.9 acres.

It should be noted that during the design process, it was determined that due to the extent of remedial action needed, the acreage of wetlands created at each site individually would likely differ from what was present prior to the remedy, but that the total wetland acreage across all lake sites should holistically achieve the wetland acreage goals outlined in the OLMMP. To achieve this, slightly more wetland acreage was constructed overall than was needed. This provided a buffer in the event that some restored wetland/upland transition areas were drier than expected and were delineated as upland. Wastebeds 1-8 Perched Wetlands and Connected Wetlands, Wastebed B/Outboard Harbor Brook Wetland, and the Wastebed B/Harbor Brook Inboard Wetland are included with the Mouth of NMC Spits in the holistic overall goal for wetland acreage. Although the estimated wetland acreage across the restoration areas for 2021 shows that the wetland mitigations acreage goals are being met, the overall wetland acreages goals have to be assessed holistically once all areas have been officially delineated at the end of their respective five-year monitoring periods.

6.2 Goal Accomplishment and Quantity of Restored Habitats

The overall ecological and community benefit goals of the Mouth of Ninemile Creek restoration areas have been met. Vegetation cover thresholds and limits on invasive species were accomplished

Required acreage of restored wetland habitat for the restoration areas was also met, and were discussed in detail in prior sections of this report and are presented in Table 3. A total of 2.47 acres of contiguous wetlands were created/restored in the spits, which exceeded the 1.9 acres that existed prior to remediation. In addition to the specific requirements for the spit areas, 8.41 acres of valuable wetlands were created in the Mouth of NMC restoration areas and adjacent shoreline stabilization and enhancement area. This includes 5.88 acres of emergent wetlands and 2.53 acres of floating aquatic wetlands. The remaining 7.46 acres of these areas were restored to submerged aquatic beds.

6.3 Quality of Restored Habitats

Habitat quality or value can be as important as habitat quantity when determining restoration success. But, habitat quality is difficult to evaluate, primarily because there is no one universally accepted method of making habitat quality determinations.

For upland habitats, species richness (number of species), species diversity (a combined measure of species richness and evenness of species abundance), habitat interspersion, and percent cover or amount of invasive species are common metrics used to compare habitat quality.

In wetlands, considerable literature exists on the functions and benefits of wetlands, and these functions and benefits are used to compare wetland quality or value among habitats. To understand wetlands functions and benefits, the following text is abstracted from McMullen (2014).

The relative importance of different wetlands has been greatly studied over the years, with numerous attempts made to quantify their worth to both the ecosystem (functions) and to man (benefits, formerly called values). The functions and benefits of wetlands were originally formally recognized by Adamus (1983) and further refined in the Wetland Evaluation Technique methodology (Adamus et al. 1987). The following ten functions of wetlands were recognized:

- Ground water recharge
- Ground water discharge
- Nutrient removal/transformation
- Production export
- Flood flow alteration
- Sediment stabilization
- Sediment/toxicant retention
- Uniqueness/heritage
- Wildlife diversity/abundance
- Aquatic diversity/abundance

With a few adjustments, these ten functions are still recognized today, with recreation and several subsequent benefits also recognized. Although the quantification of these functions and benefits among wetlands remains a rather elusive quarry, there are several reasonable methods of assessing the relative worth that wetlands provide.

Regardless of the method used to assess wetlands functions and benefits, any such assessment should always consider both the ability and opportunity of a wetland to provide a given function or benefit. This ability versus opportunity assessment can be critical to the determination of how well a wetland provides these attributes.

Ability or effectiveness of a wetland to provide a function relates to its innate properties, regardless of its landscape position or connectivity to outside systems. The question when assessing ability is, does the wetland by itself have the capability to provide a given function or benefit?

Opportunity is different. When assessing opportunity, you need to consider whether a wetland is so located in the landscape and has a connection to outside systems that it has the chance to provide a function or benefit. Whether it has such properties depends on the nature of the wetland, as well as the characteristics of the surrounding area. The question here is not just whether it has the capability to provide a function, but whether it has the opportunity to do so.

6.4 Comparisons of Pre-Remediation Habitat to Restored Habitat

Prior to remediation, a functions and benefits assessment was made of the wetlands in the lower reach of Ninemile Creek and Wetland SYW-10, which included the spit areas. This assessment was presented in O'Brien & Gere and Parsons (2010) and incorporated into the TES (2009) assessment.

Wetlands in the spit areas prior to remediation were generally emergent types. However, all the wetlands consisted of dense stands of common reed grass, with native vegetation comprising only a small portion of the wetland plant cover. Regardless of the plant cover, these wetlands have the ability and opportunity to provide several wetland functions and benefits, such as flood flow attenuation, nutrient removal, sediment/toxicant retention, etc. (O'Brien & Gere and Parsons 2010).

Wetlands restored/created in the spits in the Mouth of NMC restoration areas currently provide similar flood flow attenuation, nutrient removal, and sediment/toxicant retention to those that existed prior to remediation. However, the improvement in habitat quality has been dramatic.

Relative to habitat types and quality, the created wetlands are a mix of persistent and nonpersistent emergent types dominated by a number of native species. On a per acre basis, these created wetlands offer considerably more habitat value than the Phragmites-dominated wetlands present prior to restoration. In addition, there was a sizeable area of created wetlands established at Mouth of NMC where no wetlands existed prior to remediation. The overall increase in habitat value of this area was tremendous.

Below water lake habitat quality was also increased with the restoration. Improvements to lake substrate and the addition of below water portions of emergent and floating aquatics, as well as submerged aquatics has increased the spawning and cover habitat for a number of fish and other aquatic species.

The Mouth of Ninemile Creek restoration areas have also improved in function by providing habitat for unique/heritage element animal species. State-listed bird species, including bald eagle and osprey, were documented in the restored wetlands and were usually not present in these areas prior to remediation. Nesting was recorded for pied-billed grebe and American coot in the lake-ward emergent habitat at the Mouth of NMC restoration area.

In regard to invasive species cover, as previously discussed, prior to remediation common reed grass was a prevalent species in the spits and shoreline at the Mouth of NMC restoration areas. Currently, common reed grass cover is very low, well less than 1 percent. This reduction in common reed grass has permitted the establishment of a diverse plant species mix that benefits many different wildlife species and also many invertebrate pollinators.

SECTION 7 - REFERENCES

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TABLES

TABLE 1 LIST OF PLANT SPECIES RECORDED IN 2017 - 2021, MOUTH OF NINEMILE CREEK RESTORATION AREA, TOWN OF GEDDES, ONONDAGA COUNTY, NEW YORK

Common Name	Scientific Name[1]
Woody Species	
Boxelder	*Acer negundo*
Red maple	*Acer rubrum*
Silver maple	*Acer saccharinum*
Sugar maple	*Acer saccharum*
Freeman maple	*Acer xfreemanii*
Speckled alder	*Alnus incana ssp. rugosa*
Hazel alder	*Alnus serrulata*
Black chokeberry	*Aronia melanocarpa*
Pawpaw	*Asimina triloba*
River birch	*Betula nigra*
European white birch	*Betula pendula*
Grey birch	*Betula populifolia*
American hornbeam	*Carpinus caroliniana*
Hackberry	*Celtis occidentalis*
Common buttonbush	*Cephalanthus occidentalis*
Silky dogwood	*Cornus amomum*
Gray dogwood	*Cornus racemosa*
Red-osier dogwood	*Cornus sericea*
American hazelnut	*Corylus americana*
Hawthorn	*Crataegus sp.*
Common persimmon	*Diospyros virginiana*
Autumn olive	*Elaeagnus umbellata*
White ash	*Fraxinus americana*
Green ash	*Fraxinus pennsylvanica*
Honey locust	*Gleditsia triacanthos*
Kentucky coffeetree	*Gymnocludus dioicus*
American witchhazel	*Hamamelis virginiana*
Common winterberry	*Ilex verticillata*
Black walnut	*Juglans nigra*
Eastern red cedar	*Juniperus virginiana*
Northern spicebush	*Lindera benzoin*
Morrow's honeysuckle	*Lonicera morrowii*
Honeysuckle	*Lonicera sp.*
White mulberry	*Morus alba*
Sweetgale	*Myrica gale*
Eastern hophornbeam	*Ostrya virginiana*
Virginia creeper	*Parthenocissus quinquefolia*
White pine	*Pinus strobus*
American sycamore	*Platanus occidentalis*
Bigtooth aspen	*Populus grandidentata*
Eastern cottonwood	*Populus deltoides*
Quaking aspen	*Populus tremuloides*
Swamp white oak	*Quercus bicolor*
Bur oak	*Quercus macrocarpa*
Northern red oak	*Quercus rubra*
Staghorn sumac	*Rhus typhina*
Black locust	*Robinia pseudoacacia*
Swamp rose	*Rosa palustris*
Rose	*Rosa sp.*
Black raspberry	*Rubus occidentalis*
Pussy willow	*Salix discolor*
Sandbar willow	*Salix interior*
Black willow	*Salix nigra*
Arborvitae	*Thuja occidentalis*
Eastern poison ivy	*Toxicodendron radicans*
Southern arrowwood	*Viburnum dentatum*
Nannyberry	*Viburnum lentago*
Highbush-cranberry	*Viburnum opulus*
Riverbank grape	*Vitis riparia*

TABLE 1 LIST OF PLANT SPECIES RECORDED IN 2017 - 2021, MOUTH OF NINEMILE CREEK RESTORATION AREA, TOWN OF GEDDES, ONONDAGA COUNTY, NEW YORK

Common Name	Scientific Name[1]
Herbaceous Species	
Velvetleaf	*Abutilon theophrastii*
Common yarrow	*Achillea millefolium*
Sweetflag	*Acorus americana*
Creeping bent	*Agrostis stolonifera*
American water plantain	*Alisma subcordatum*
Annual ragweed	*Ambrosia artemisiifolia*
Purple-stemmed angelica	*Angelica atropurpurea*
Sweet vernal grass	*Anthoxanthum odoratum*
Indianhemp	*Apocynum cannabinum*
Greater burdock	*Arctium lappa*
Common wormwood	*Artemisia vulgaris*
Swamp milkweed	*Asclepias incarnata*
Common milkweed	*Asclepias syriaca*
Triangle orache	*Atriplex prostrata*
Mosquito fern	*Azolla cristata*
Garden yellow rocket	*Barbarea vulgaris*
Devil's beggartick	*Bidens frondosa*
Small-spike false nettle	*Boehmeria cylindrica*
Sturdy bulrush	*Bolboschoenus robustus*
White doll's daisy	*Boltonia asteroides*
Black mustard	*Brassica nigra*
Brome	*Bromus sp.*
Hedge false bindweed	*Calystegia sepium*
Longhair sedge	*Carex comosa*
Limestone meadow sedge	*Carex granularis*
Shallow sedge	*Carex lurida*
Broom sedge	*Carex scoparia*
Upright sedge	*Carex stricta*
Fox sedge	*Carex vulpinoidea*
Brown-ray knapweed	*Centaurea jacea*
Black knapweed	*Cenaurea nigra*
Meadow knapweed	*Centaurea ×moncktonii*
Spotted knapweed	*Centaurea stoebe*
Common centaury	*Centaurium erythraea*
Coon's tail	*Ceratophyllum demersum*
Canada thistle	*Cirsium arvense*
Bull thistle	*Cirsium vulgare*
Poison-hemlock	*Conium maculatum*
Tickseed	*Coreopsis sp.*
Yellow nutsedge	*Cyperus esculentus*
Brown galingale	*Cyperus fuscus*
Queen Anne's lace	*Daucus carota*
Water willow	*Decodon verticillatus*
Showy ticktrefoil	*Desmodium canadense*
Deptford pink	*Dianthus armeria*
Deer-tongue rosette grass	*Dichanthelium clandestinum*
Fuller's teasel	*Dipsacus fullonum*
Cutleaf teasel	*Dipsacus laciniatus*
Barnyard grass	*Echinochloa spp.*
Spikerush	*Eleocharis sp.*
Canadian waterweed	*Elodea canadensis*
Virginia wildrye	*Elymus virginicus*
Eastern willowherb	*Epilobium coloratum*
American burnweed	*Erechtites hieraciifolius*
Eastern daisy fleabane	*Erigeron annuus*
Common boneset	*Eupatorium perfoliatum*
Flat-top goldenrod	*Euthamia graminifolia*
Hollow Joe pye weed	*Eutrochium fistulosum*
Spotted Joe pye weed	*Eutrochium maculatum*
Purple Joe Pye weed	*Eutrochium purpureum*

TABLE 1 LIST OF PLANT SPECIES RECORDED IN 2017 - 2021, MOUTH OF NINEMILE CREEK RESTORATION AREA, TOWN OF GEDDES, ONONDAGA COUNTY, NEW YORK

Common Name	Scientific Name[1]
Common wild strawberry	*Fragaria virginica*
Hedge bedstraw	*Galium album*
Rough bedstraw	*Galium asprellum*
Common marsh bedstraw	*Galium palustre*
Yellow avens	*Geum aleppicum*
Rough avens	*Geum laciniatum*
Avens	*Geum sp.*
Common sneezeweed	*Helenium autumnale*
Ox-eye sunflower	*Heliopsis helianthoides*
Water Stargrass	*Heteranthera dubia*
Crimsoneyed rosemallow	*Hibiscus moscheutos*
Common St. Johnswort	*Hypericum perforatum*
Jewelweed	*Impatiens capensis*
Harlequin blueflag	*Iris versicolor*
Common rush	*Juncus effusus*
Rice cutgrass	*Leersia oryzoides*
Common duckweed	*Lemna minor*
Field pepperweed	*Lepidium campestre*
Oxeye daisy	*Leucanthemum vulgare*
Cardinal flower	*Lobelia cardinalis*
Great blue lobelia	*Lobelia siphilitica*
Bird's-foot trefoil	*Lotus corniculatus*
Marsh primrose-willow	*Ludwigia palustris*
Water horehound	*Lycopus sp.*
Monewort	*Lysimachia nummularia*
Purple loosestrife	*Lythrum salicaria*
Musk mallow	*Malva moschata*
Black medic	*Medicago lupulina*
White sweetclover	*Melilotus albus*
Yellow sweetclover	*Melilotus officinalis*
Mint	*Mentha sp.*
Allegheny monkeyflower	*Mimulus ringens*
Wild bergamot	*Monarda fistulosa*
Northern watermilfoil	*Myriophyllum sibiricum*
Eurasian watermilfoil	*Myriophyllum spicatum*
Guadalupe water nymph	*Najas guadalupensis*
Brittle waternymph	*Najas minor*
Water nymph	*Najas sp.*
Catnip	*Nepeta cataria*
Starry stonewort	*Nitellopsis obtusa*
Yellow pond-lily	*Nuphar lutea*
American white waterlily	*Nymphaea odorata*
Common evening primrose	*Oenothera biennis*
Sensitive fern	*Onoclea sensibilis*
Common yellow oxalis	*Oxalis stricta*
Fall panicgrass	*Panicum dichotomiflorum*
Switchgrass	*Panicum virgatum*
Wild parsnip	*Pastinaca sativa*
Green arrow arum	*Peltandra virginica*
Foxglove beardtongue	*Penstemon digitalis*
American water smartweed	*Persicaria amphibia*
Curlytop knotweed	*Persicaria lapathifolia*
Lady's thumb	*Persicaria maculosa*
Pennsylvania smartweed	*Persicaria pensylvanica*
Reed canarygrass	*Phalaris arundinacea*
Common Timothy	*Phleum pratense*
Common reed	*Phragmites australis*
Hawkweed oxtongue	*Picris hieracioides*
Narrowleaf plantain	*Plantago lanceolata*
Common plantain	*Plantago major*
Rugel's plantain	*Plantago rugelii*
Blue grass	*Poa sp.*
Pickerelweed	*Pontederia cordata*

TABLE 1 LIST OF PLANT SPECIES RECORDED IN 2017 - 2021, MOUTH OF NINEMILE CREEK RESTORATION AREA, TOWN OF GEDDES, ONONDAGA COUNTY, NEW YORK

Common Name	Scientific Name[1]
Curly pondweed	*Potamogeton crispus*
Illinois pondweed	*Potamogeton illinoensis*
Silverweed cinquefoil	*Potentilla anserina*
Norwegian cinquefoil	*Potentilla norvegica*
Sulphur cinquefoil	*Potentilla recta*
Oldfield cinquefoil	*Potentilla simplex*
Tall buttercup	*Ranunculus acris*
Long-beaked white water buttercup	*Ranunculus longirostris*
Yellow mignonette	*Reseda lutea*
Bog yellowcress	*Rorippa palustris*
Blackeyed Susan	*Rudbeckia hirta*
Curly dock	*Rumex crispus*
Broadleaf arrowhead	*Sagittaria latifolia*
Hardstem bulrush	*Schoenoplectus acutus*
Common threesquare	*Schoenoplectus pungens*
Softstem bulrush	*Schoenoplectus tabernaemontani*
Green bulrush	*Scirpus atrovirens*
Common wool grass	*Scirpus cyperinus*
Crownvetch	*Securigera varia*
American senna	*Senna hebecarpa*
Bladder campion	*Silene latifolia*
Narrow-leaved Blue-eyed Grass	*Sisyrinchium angustifolium*
Climbing nightshade	*Solanum dulcamara*
Canada Goldenrod	*Solidago canadensis/altissima*
Stiff flat-topped goldenrod	*Solidago rigida*
Field sowthistle	*Sonchus arvensis*
Spiny sowthistle	*Sonchus asper*
Indian grass	*Sorghastrum nutans*
American bur-reed	*Sparganium americanum*
Giant bur-reed	*Sparganium eurycarpum*
White meadowsweet	*Spiraea alba*
Common duckmeat	*Spirodela polyrhiza*
Smooth cordgrass	*Sporobolus alterniflorus*
Prairie cordgrass	*Sporobolus michauxianus*
Sago pondweed	*Stuckenia pectinata*
White panicled American aster	*Symphyotrichum lanceolatum*
New England aster	*Symphyotrichum novae-angliae*
Hairy white oldfield aster	*Symphyotrichum pilosum*
Purple-stemmed aster	*Symphyotrichum puniceum*
Water chestnut	*Trapa natans*
Alsike clover	*Trifolium hybridum*
Red clover	*Trifolium pratense*
Coltsfoot	*Tussilago farfara*
Hybrid cattail	*Typha ×glauca*
Narrowleaf cattail	*Typha angustifolia*
Broadleaf cattail	*Typha latifolia*
Stinging nettle	*Urtica dioica*
Bladderwort	*Utricularia sp.*
Water celery	*Vallisneria americana*
Moth mullein	*Verbascum blattaria*
Common mullein	*Verbascum thapsus*
Swamp verbena	*Verbena hastata*
New York ironweed	*Vernonia noveboracensis*
Water speedwell	*Veronica anagallis-aquatica*
Bird vetch	*Vicia cracca*
Hairy vetch	*Vicia villosa*
Rough cocklebur	*Xanthium strumarium*
Horned pondweed	*Zannichellia palustris*
Wild rice	*Zizania aquatica*

1 Botanical nomenclature follows Weldy *et al.* (2021)

TABLE 2 LIST OF WILDLIFE SPECIES RECORDED IN 2017 - 2021, MOUTH OF NINEMILE CREEK RESTORATION AREA, TOWN OF GEDDES, ONONDAGA COUNTY, NEW YORK

Common Name	Scientific Name
Mammals	
Racoon	*Procyon lotor*
North American Beaver	*Castor canadensis*
Coyote	*Canis latrans*
Eastern Cottontail	*Sylvilagus floridanus*
Muskrat	*Ondatra zibethicus*
White-tailed Deer	*Odocoileus virginianus*
Woodchuck	*Marmota monax*
Birds	
Alder Flycatcher	*Empidonax alnorum*
American Black Duck	*Anas rubripes*
American Coot	*Fulica americana*
American Crow	*Corvus brachyrhynchos*
American Goldfinch	*Carduelis tristis*
American Kestrel	*Falco sparverius*
American Wigeon	*Anas americana*
American Woodcock	*Scolopax minor*
Bald Eagle[1]	*Haliaeetus leucocephalus*
Barn Swallow	*Hirundo rustica*
Belted Kingfisher	*Megaceryle alcyon*
Black-crowned Night Heron	*Nycticorax nycticorax*
Bonaparte's Gull	*Chroicocephalus philadelphia*
Brown-headed Cowbird	*Molothrus ater*
Bufflehead	*Bucephala albeola*
Canada Goose	*Branta canadensis*
Caspian Tern	*Hydroprogne caspia*
Cedar Waxwing	*Bombycilla cedrorum*
Chipping Sparrow	*Spizella passerina*
Common Gallinule	*Gallinula galeata*
Common Goldeneye	*Bucephala clangula*
Common Grackle	*Quiscalus quiscula*
Common Loon[2]	*Gavia immer*
Common Merganser	*Mergus merganser*
Common Yellow Throat	*Geothlypis trichas*
Dark-eyed Junco	*Junco hyemalis*
Double-crested Cormorant	*Phalacrocorax auritus*
Eurasian Widgeon	*Mareca penelope*
European Starling	*Sturnus vulgaris*
Field Sparrow	*Spizella pusilla*
Gadwall	*Anas strepera*
Gold Finch	*Spinus tristis*
Gray Catbird	*Dumetella carolinensis*
Great Black-backed Gull	*Larus marinus*
Great Blue Heron	*Ardea herodias*
Great Egret	*Ardea alba*
Green Heron	*Butorides virescens*
Green-winged Teal	*Anas carolinensis*

TABLE 2 LIST OF WILDLIFE SPECIES RECORDED IN 2017 - 2021, MOUTH OF NINEMILE CREEK RESTORATION AREA, TOWN OF GEDDES, ONONDAGA COUNTY, NEW YORK

Common Name	Scientific Name
Herring Gull	*Larus argentatus*
Hooded Merganser	*Lophodytes cucullatus*
Horned Grebe	*Podiceps auritus*
Indigo Bunting	*Passerina cyanea*
Killdeer	*Charadrius vociferus*
Least Flycatcher	*Empidonax minimus*
Least Sandpiper	*Calidris minutilla*
Lesser Scaup	*Aythya affinis*
Lesser Yellowlegs	*Tringa flavipes*
Mallard	*Anas platyrhynchos*
Mourning Dove	*Zenaida macroura*
Mute Swan	*Cygnus olor*
Northem Flicker	*Colaptes auratus*
Northern Cardinal	*Cardinalis cadrinalis*
Northern Harrier[1]	*Circus cyaneus*
Northern Pintail	*Ana acuta*
Northern Rough-Wing Swallow	*Stelgidopteryx serripennis*
Northern Sholver	*Anas clypeata*
Osprey[2]	*Pandion haliaetus*
Pied Billed Grebe[1]	*Podilymbus podiceps*
Red-breasted Merganser	*Mergus serrator*
Redhead	*Aythya americana*
Red-necked Grebe	*Podiceps grisegena*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoeniceus*
Ring-billed Gull	*Larus delawarensis*
Ring-necked Duck	*Aythya collaris*
Rock Pigeon	*Columba livia*
Scaup	*Passerculus sandwichensis*
Semipalmated Plover	*Charadrius semipalmatus*
Semipalmated Sandpiper	*Calidris pusilla*
Snowy Egret	*Egretta thula*
Song Sparrow	*Melospiza melodia*
Spotted Sandpiper	*Actitis macularius*
Tree Swallow	*Tachycineta bicolor*
Trumpeter Swan	*Cygnus buccinator*
Tundra Swan	*Cygnus columbianus*
Turkey Vulture	*Cathartes aura*
Virginia Rail	*Rallus limicola*
White Pelican	*Pelecanus erythrorhynchos*
Wood Duck	*Aix sponsa*
Reptiles / Amphibians	
American toad (tadpoles and adults)	*Anaxyrus americanus*
Northern Leopard Frog	*Lithobates pipiens*
Northern Water Snake	*Nerodia sipedon*
Northern Brown Snake	*Storeria dekayi*

TABLE 2 LIST OF WILDLIFE SPECIES RECORDED IN 2017 - 2021, MOUTH OF NINEMILE CREEK RESTORATION AREA, TOWN OF GEDDES, ONONDAGA COUNTY, NEW YORK

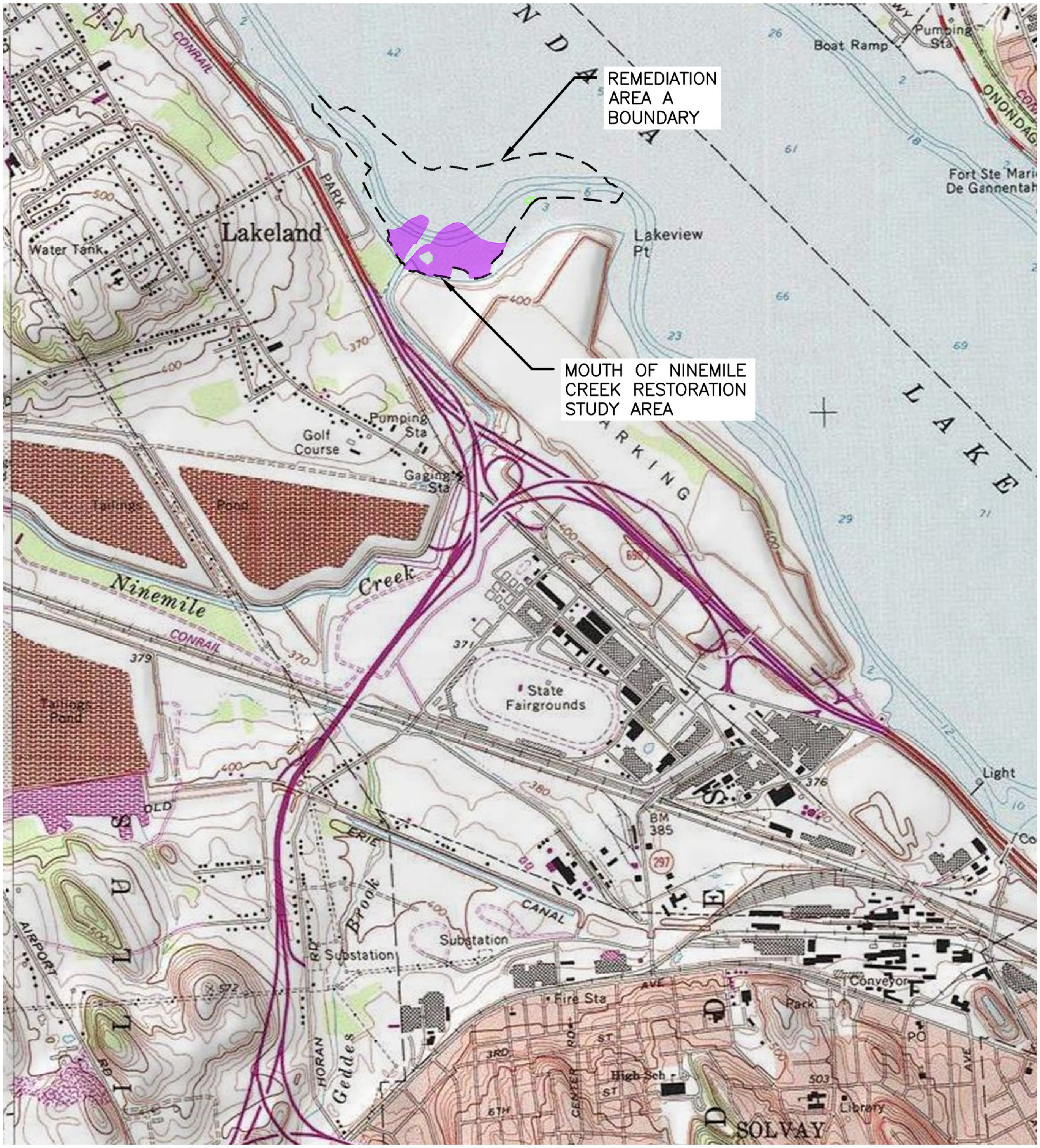
Common Name	Scientific Name
Fish	
Alewife	*Alosa pseudoharengus*
Banded Killifish	*Fundulus diaphanus*
Bluegill	*Lepomis macrochirus*
Bluntnose Minnow	*Pimephales notatus*
Bowfin	*Amia calva*
Brook Silverside	*Labidesthes sicculus*
Brook Stickleback	*Culaea inconstans*
Brown Bullhead	*Ameiurus nebulosus*
Channel Catfish	*Ictalurus punctatus*
Common Carp	*Cyprinus carpio*
Common Rudd	*Scardinius erythrophthalmus*
Emerald Shiner	*Notropis anterinoides*
Freshwater Drum	*Aplodinotus grunniens*
Gizzard Shad	*Dorosoma cepedianum*
Golden Shiner	*Notemigonus crysoleucas*
Goldfish	*Carassius sp.*
Greater Redhorse	*Notemigonus crysoleucas*
Green Sunfish	*Lepomis cyanellus*
Largemouth Bass	*Micropterus salmoides*
Longnose Gar	*Lepisosteus osseus*
Northern Pike	*Esox lucius*
Pumpkinseed	*Lepomis gibbosus*
Rock Bass	*Ambloplites rupestris*
Round Goby	*Neogobius melanostomus*
Smallmouth Bass	*Micropterus dolomieu*
Tadpole Madtom	*Noturus gyrinus*
Tiger Muskellunge	*Esox masquinongy* x *Esox lucius*
Walleye	*Sander vitreus*
White Perch	*Morone americana*
White Sucker	*Catostomus commersonii*
Yellow Bullhead	*Ameiurus natalis*
Yellow Perch	*Perca flavescens*
Mollusk	
Zebra mussel	*Dreissena polymorpha*
Arthropod	
Amphipods	*Amphipoda*
Backswimmer	*Notonectidae*
Banded Garden Spider	*Argiope trifasciata*
Bumble Bee	*Bombus pensylvanicus*
Cabbage White	*Pieris brassicae*
Damselfly	Zygoptera
Earthworm	Lumbricina
Green Darner	*Anax junius*
House fly	Muscidae
Katydid	*Tettigonioidea*
Ladybug	Coleoptera
Monarch Butterfly	Danaus plexippus
Pillbug	*Armadillidiidae*
Whirligig Beetle	*Gyrinus substriatus*
White Tail	*Plathemis lydia*

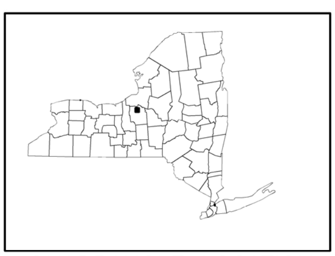
1 State listed as Threatened
2 State listed as a Species of Special Concern

TABLE 3 ACREAGE OF VEGETATION/WATERS COVER TYPES, MOUTH OF NINEMILE CREEK AND ADJACENT SHORELINE STABILIZATION AND ENHANCEMENT AREAS, TOWN OF GEDDES, ONONDAGA COUNTY, NEW YORK

Restoration Area	Primary Cover Type	Acreage (acres)
Mouth of Ninemile Creek (RA-A)		
East Spit	Persistent Emergent	1.82
West Spit	Persistent Emergent	0.65
Lake-ward Area	Persistent Emergent	5.18
East-central Area	Floating Aquatic	2.53
Shoreline Strip	Persistent Emergent	0.13
Remainder of RA-A Planted Area	Submerged Aquatic Bed	7.46
Upland	Open Field/Scrub Shrub Upland	0.16
	Total	17.93
Shoreline Enhancement Area		
Shoreline Strip	Persistent Emergent	0.57
	Grand Total	18.50

FIGURES





QUADRANGLE LOCATION

SOURCES:
USGS TOPOGRAPHIC MAP,
SYRACUSE WEST QUADRANGLE

2000 1000 0

SCALE: 1"=2000'

FIGURE 1

Honeywell

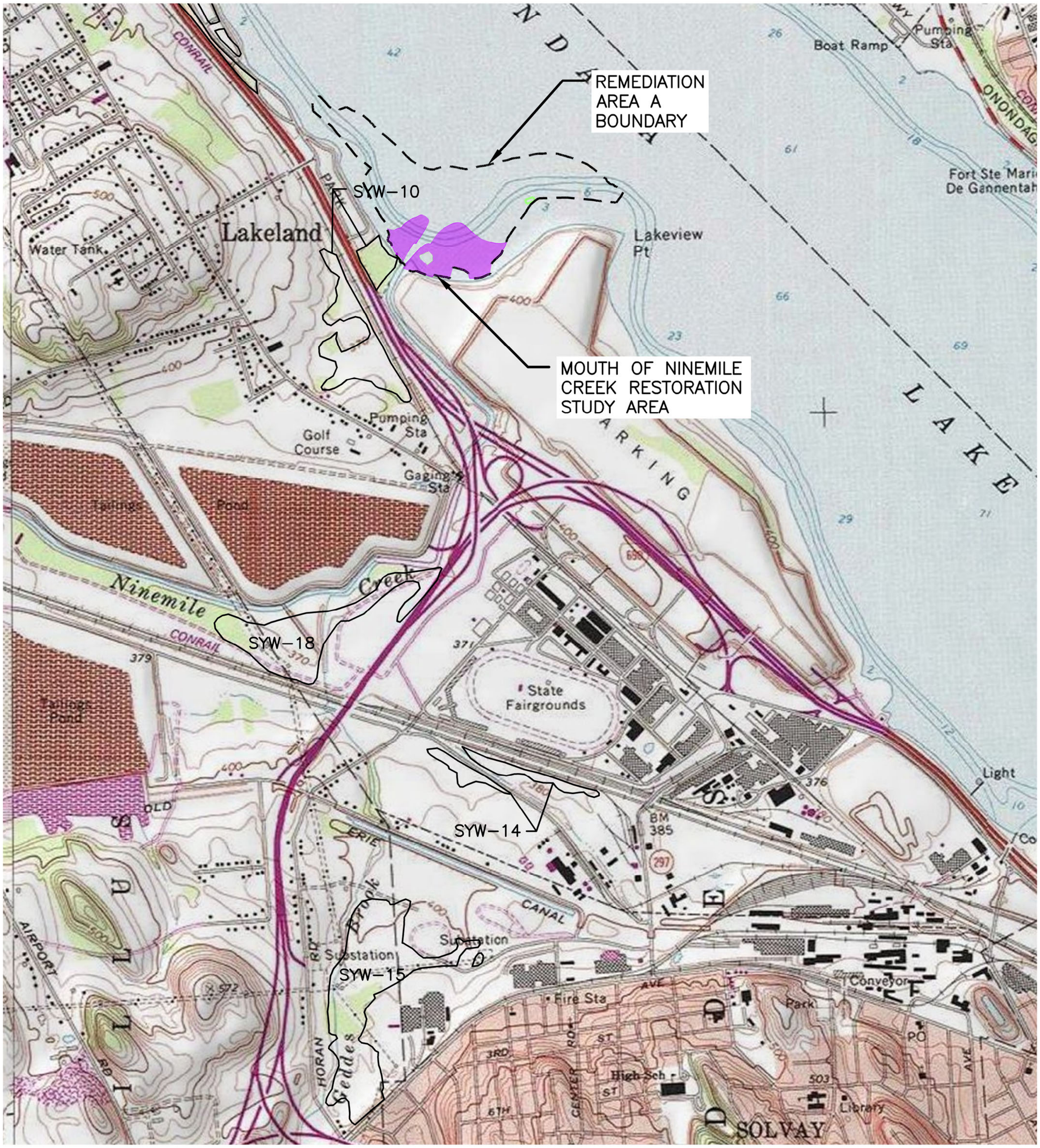
ONONDAGA LAKE
SYRACUSE, NEW YORK

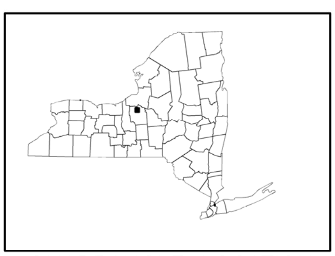
STUDY AREA LOCATION

PARSONS

301 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\HONEYWELL -SYR\452669 2021 OL PVM\10 TECHNICAL CATEGORIES\CAD\FIGURES\452669-MONMC-08.DWG
PLOT DATE: 6/8/2022 10:50 AM PLOTTED BY: RUSSO, JILL [US-US]





QUADRANGLE LOCATION

N

2000 1000 0

SCALE: 1"=2000'

SOURCES:
-USGS TOPOGRAPHIC MAP, SYRACUSE WEST QUADRANGLE
-NYS DEC ENVIRONMENTAL RESOURCE MAPPER

FIGURE 2

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

NEW YORK STATE
FRESHWATER WETLANDS MAP

PARSONS

301 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\HONEYWELL -SYR\452669 2021 OL PVM\10 TECHNICAL CATEGORIES\CAD\FIGURES\452669-MONMC-08.DWG
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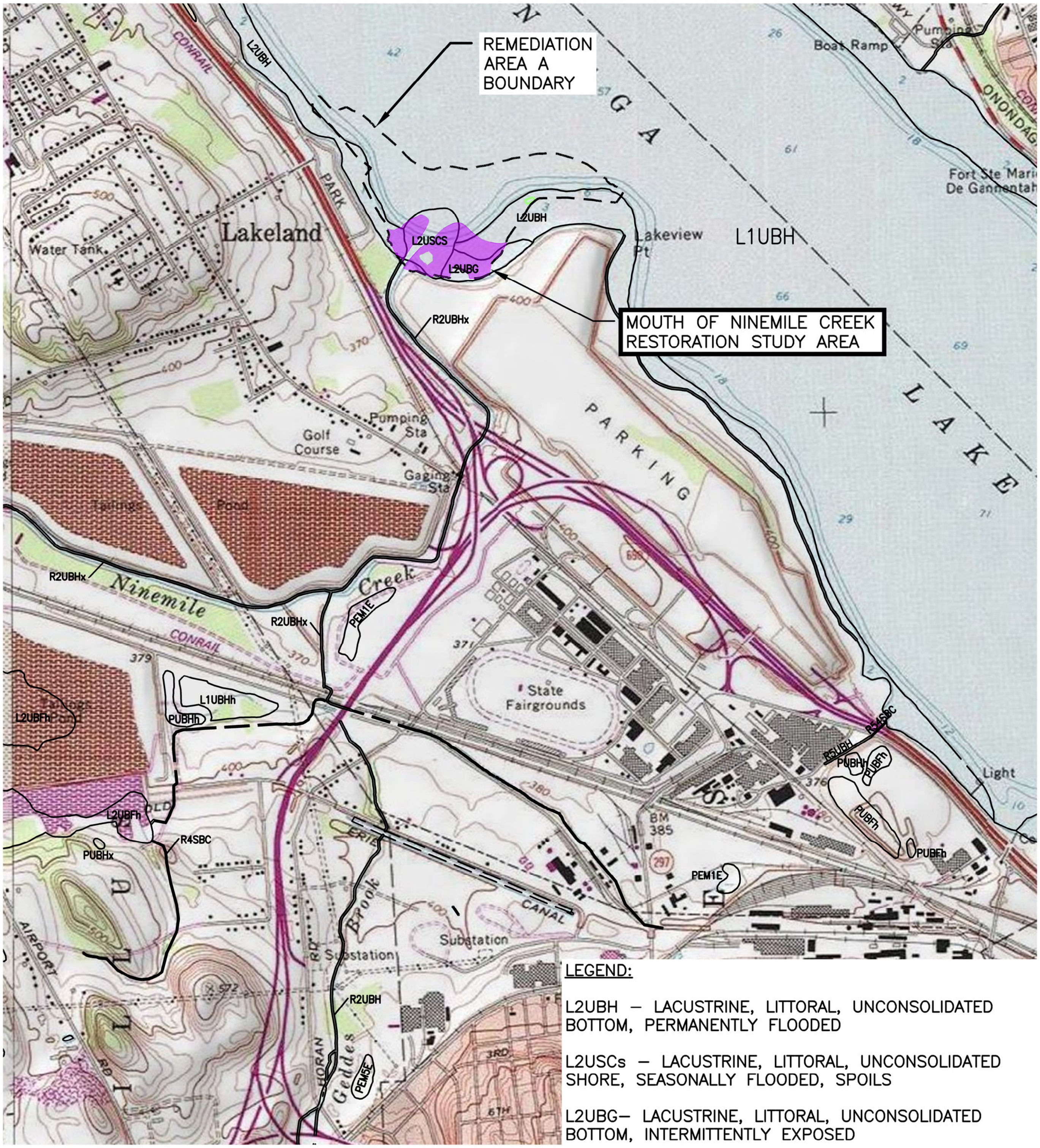
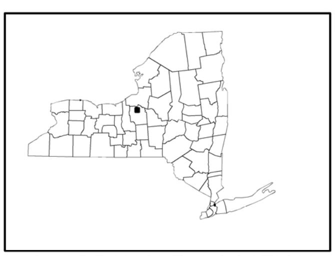


LEGEND:

L2UBH – LACUSTRINE, LITTORAL, UNCONSOLIDATED BOTTOM, PERMANENTLY FLOODED

L2USCs – LACUSTRINE, LITTORAL, UNCONSOLIDATED SHORE, SEASONALLY FLOODED, SPOILS

L2UBG– LACUSTRINE, LITTORAL, UNCONSOLIDATED BOTTOM, INTERMITTENTLY EXPOSED



QUADRANGLE LOCATION

2000 1000 0

SCALE: 1"=2000'

SOURCES:
-USGS TOPOGRAPHIC MAP, SYRACUSE WEST QUADRANGLE
-FISH AND WILDLIFE SERVICE NATIONAL WETLANDS INVENTORY

FIGURE 3

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

NATIONAL WETLANDS
INVENTORY MAP

PARSONS
301 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\HONEYWELL -SYR\452669 2021 OL PVM\10 TECHNICAL CATEGORIES\CAD\FIGURES\452669-MONMC-08.DWG
PLOT DATE: 6/8/2022 10:54 AM PLOTTED BY: RUSSO, JILL [US-US]

Orthoimagery from Microsoft Corp. 2022; Maxar 2022; CNES Distribution Airbus DS 2022.

1000 500 0 1000 2000

SCALE: 1"=1000'

FIGURE 4

Honeywell

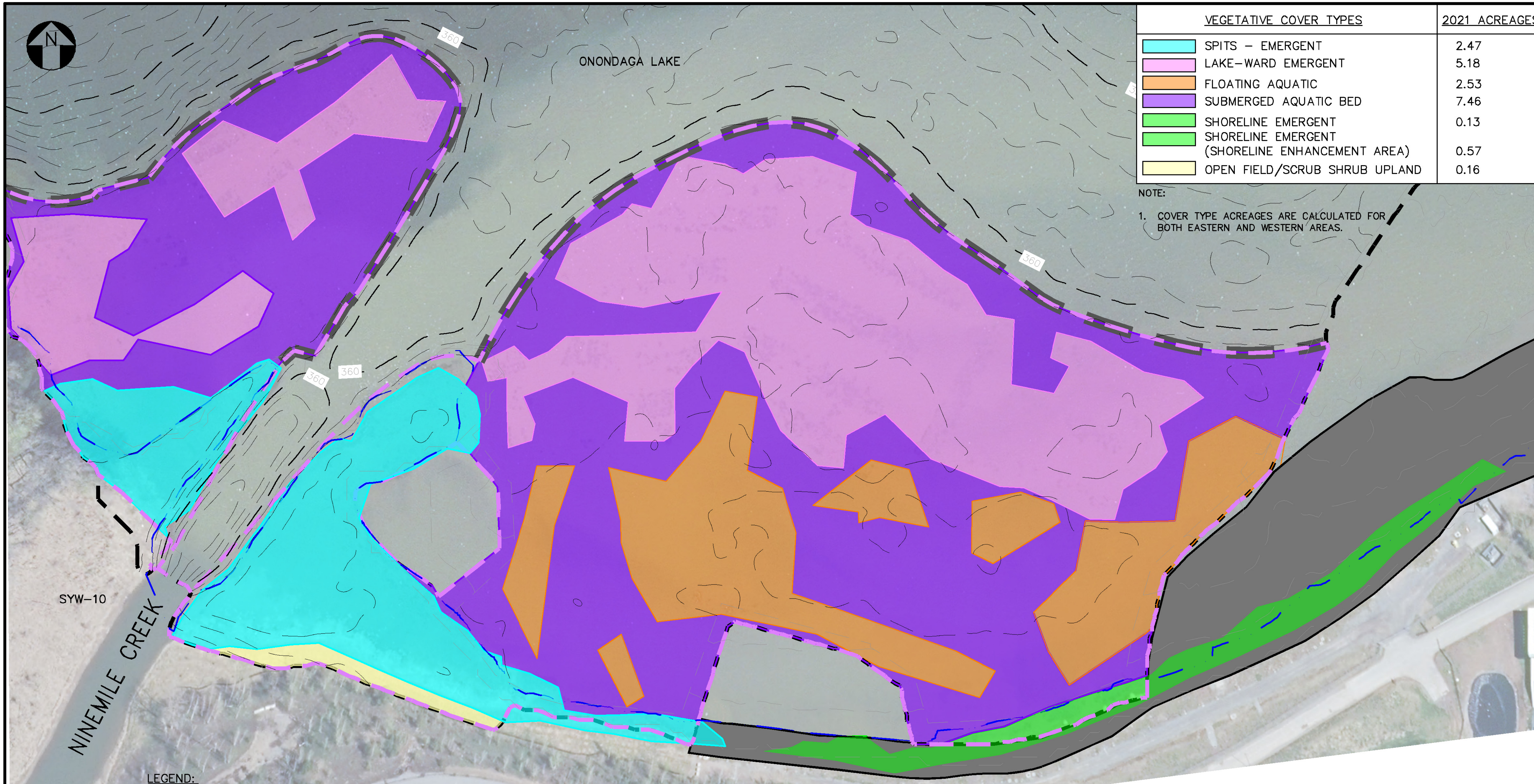
ONONDAGA LAKE
SYRACUSE, NEW YORK

MOUTH OF NINEMILE CREEK RESTORATION STUDY AREAS ON AERIAL PHOTOGRAPH

PARSONS

301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452669 2021 OL PVM\10 TECHNICAL CATEGORIES\CAD\FIGURES\452669-MONMC-05.DWG
PLOT DATE: 6/8/2022 11:16 AM PLOTTED BY: RUSSO, JILL [US-US]



VEGETATIVE COVER TYPES	2021 ACREAGES
SPITS – EMERGENT	2.47
LAKE-WARD EMERGENT	5.18
FLOATING AQUATIC	2.53
SUBMERGED AQUATIC BED	7.46
SHORELINE EMERGENT	0.13
SHORELINE EMERGENT (SHORELINE ENHANCEMENT AREA)	0.57
OPEN FIELD/SCRUB SHRUB UPLAND	0.16

NOTE:

1. COVER TYPE ACREAGES ARE CALCULATED FOR BOTH EASTERN AND WESTERN AREAS.

LEGEND:

- LAKE CONTOURS 1' INTERVAL (2018 AS-BUILT)
- PROTECTIVE EDGE
- REMEDIATION AREA A BOUNDARY (LIMITS OF CAPPING)
- SHORELINE (362.5')
- SHORELINE STABILIZATION AND ENHANCEMENT AREA

VEGETATIVE COVER TYPES

- SPITS – EMERGENT
- LAKE-WARD EMERGENT
- FLOATING AQUATIC
- SUBMERGED AQUATIC BED
- SHORELINE EMERGENT
- OPEN FIELD/SCRUB SHRUB UPLAND

- REMEDIATION AREA A PLANTING AREA

120 60 0 120 240

SCALE: 1"=120'

FIGURE 5

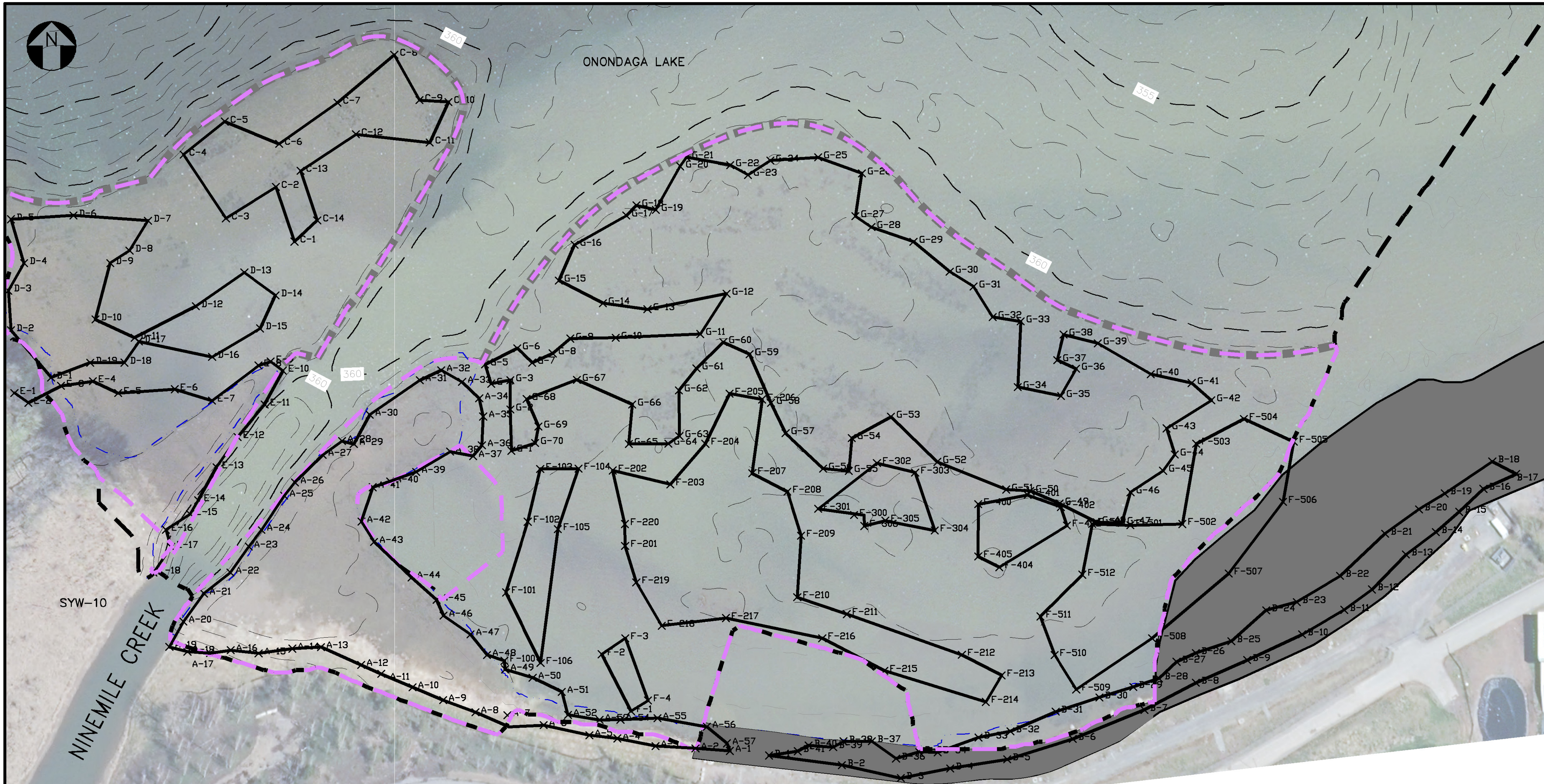
Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

VEGETATION/LAND USE COVER MAP
MOUTH OF NINEMILE CREEK

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452669 2021 OL PVM\10 TECHNICAL CATEGORIES\CAD\FIGURES\452669-MONMC-06-VEG-LAN-USE.DWG
PLOT DATE: 6/8/2022 12:18 PM PLOTTED BY: RUSSO, JILL [US-US]



LEGEND:

- LAKE CONTOURS 1' INTERVAL (2018 AS-BUILT)
- PROTECTIVE EDGE
- REMEDIATION AREA A BOUNDARY (LIMITS OF CAPPING)
- SHORELINE (362.5')
- SHORELINE STABILIZATION AND ENHANCEMENT AREA
- A-8 A-9 SURVEYED WETLAND BOUNDARY WITH FLAG POINT AND NUMBER
- REMEDIATION AREA A PLANTING AREA

120 60 0 120 240

SCALE: 1"=120'

FIGURE 6

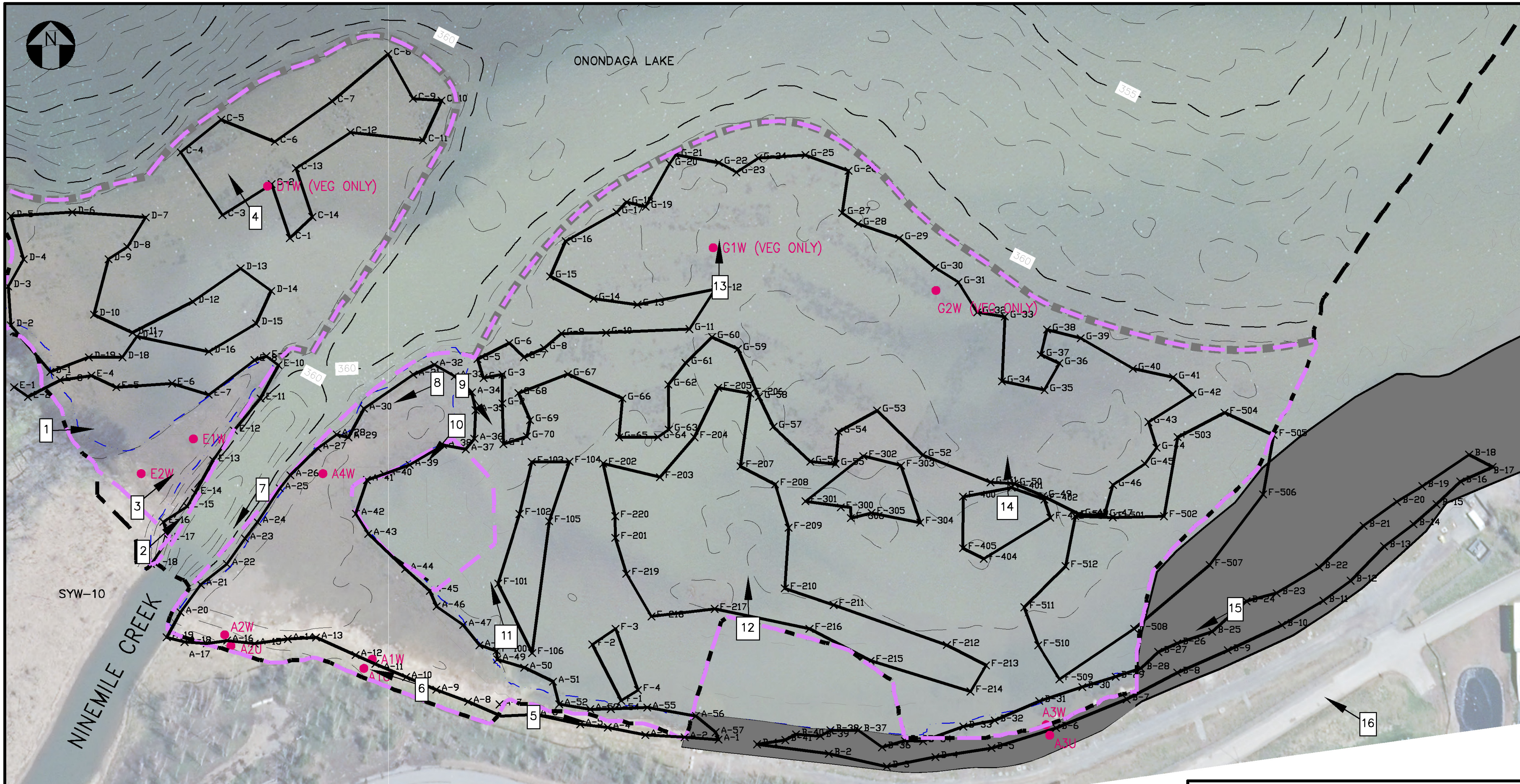
Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

WETLAND DELINEATION SURVEY MAP
MOUTH OF NINEMILE CREEK

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452669 2021 OL PVM\10 TECHNICAL CATEGORIES\CAD\FIGURES\452669-MONMC-04.DWG
PLOT DATE: 6/8/2022 12:28 PM PLOTTED BY: RUSSO, JILL [US-US]



LEGEND:

- LAKE CONTOURS 1' INTERVAL (2018 AS-BUILT)
- PROTECTIVE EDGE
- REMEDIATION AREA A BOUNDARY (LIMITS OF CAPPING)
- SHORELINE (362.5')
- SHORELINE STABILIZATION AND ENHANCEMENT AREA
- A-8 — A-9 SURVEYED WETLAND BOUNDARY WITH FLAG POINT AND NUMBER
- REMEDIATION AREA A PLANTING AREA
- WETLAND DELINEATION PLOT LOCATION
- 2 PHOTO NUMBER AND DIRECTION

120 60 0 120 240

SCALE: 1"=120'

FIGURE 7

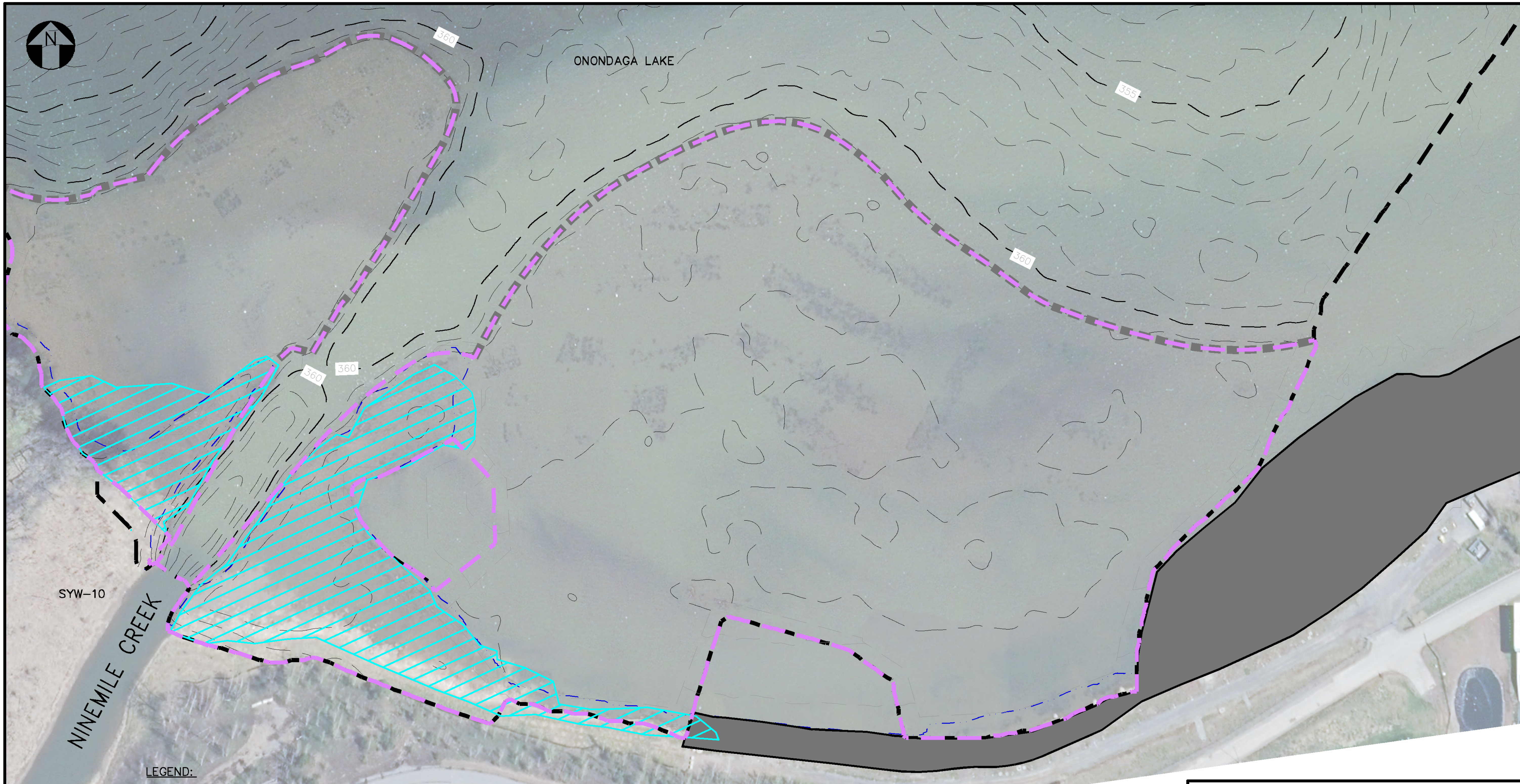
Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

SAMPLE PLOTS AND PHOTOGRAPH LOCATIONS

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452669 2021 OL PVM\10 TECHNICAL CATEGORIES\CAD\FIGURES\452669-MONMC-04.DWG
PLOT DATE: 6/8/2022 12:33 PM PLOTTED BY: RUSSO, JILL [US-US]



LEGEND:

- LAKE CONTOURS 1' INTERVAL (2018 AS-BUILT)
- PROTECTIVE EDGE
- REMEDIATION AREA A BOUNDARY (LIMITS OF CAPPING)
- SHORELINE (362.5')
- SHORELINE STABILIZATION AND ENHANCEMENT AREA
- WETLAND MITIGATION AREA
- REMEDIATION AREA A PLANTING AREA

120 60 0 120 240

SCALE: 1"=120'

FIGURE 8

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

YEAR FIVE NINEMILE CREEK SPIT WETLAND MITIGATION ACREAGE AREA

PARSONS

301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452669 2021 OL PVM\10 TECHNICAL CATEGORIES\CAD\FIGURES\452669-MONMC-07-YEAR 5 SPIT ACREAGE.DWG
PLOT DATE: 6/8/2022 12:36 PM PLOTTED BY: RUSSO, JILL [US-US]

APPENDIX A PHOTOGRAPHS

1. West side of west spit looking east.

2. East side of west spit looking northeast.

3. Looking north at plot E2W in west spit.

4. Looking northwest at plot D1W

5. Looking east at the upland edge on the east spit.

6. Looking west at plot A1U.

7. Looking southwest along west side of east spit towards Mouth of Ninemile.

8. West side of east spit looking towards Mouth of Ninemile.

9. Looking southeast at lakeward edge of east spit.

10. East side of east spit looking southwest.

11. Floating aquatics east of east spit looking northwest.

12. Floating aquatics looking north.

13. Looking north at plot G1W.

14. In-lake emergent wetland looking north.

15. Looking west along eastern shoreline wetland.

16. In-lake emergent wetland looking northwest from Amphitheater.

Wetland Wildlife


A brown snake on the upland portion of the eastern spit.


A great blue heron in the channel off the eastern spit.


A juvenile Bald Eagle perched in a tree overlooking the western spit.


A Pied-billed Grebe nest in the in-lake wetland area.

APPENDIX B FIELD PLOT DATA SHEETS

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Mouth of Ninemile Creek - Onondaga Lake City/County: Onondaga County Sampling Date: 8/31/2021
Applicant/Owner: Honeywell State: NY Sampling Point: A1U
Investigator(s): Joe McMullen, Kaity Moranz, Jim Molloy, Jesse Carr Section, Township, Range: Syracuse West Quad/Gedd
Landform (hillslope, terrace, etc.): Lake edge Local relief (concave, convex, none): ____
Slope (%): ____ Lat.: ____ Long.: ____ Datum: ____
Soil Map Unit Name NA NWI Classification: ____
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ____, soil ____, or hydrology ____ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Drainage Patterns (B10)
___ Saturation (A3)	___ Marl Deposits (B15)	___ Moss Trim Lines (B16)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Dry-Season Water Table (C2)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Crayfish Burrows (C8)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Saturation Visible on Aerial Imagery (C9)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Stunted or Stressed Plants (D1)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Geomorphic Position (D2)
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)	___ Shallow Aquitard (D3)
___ Sparsely Vegetated Concave Surface (B8)		___ FAC-Neutral Test (D5)
		___ Microtopographic Relief (D4)

Secondary Indicators (minimum of two required) — third column above.

Field Observations:

	Yes	No	Depth (inches):
Surface water present?		X	
Water table present?		X	
Saturation present? (includes capillary fringe)		X	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Flag A - 12.
Lake water levels high for this time of year.

VEGETATION - Use scientific names of plants

Sampling Point: A1U

Tree Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
	0	= Total Cover	

Sapling/Shrub Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
	0	= Total Cover	

Herb Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1 *Solidago altissima*	30	Y	FACU
2 *Desmodium canadense*	30	Y	FAC
3 *Lobelia siphilitica*	15	N	FACW
4 *Elymus virginicus*	10	N	FACW
5 *Panicum virgatum*	10	N	FAC
6 *Helenium autumnale*	5	N	FAC
7 *Lotus corniculatus*	5	N	FACU
8 *Verbena hastata*	2	N	FACW
9 *Oxalis stricta*	2	N	FACU
10 *Symphyotrichum sp.*	2	N	Unknown
11 *Erigeron annuus*	2	N	FACU
12			
13			
14			
15			
	113	= Total Cover	

Woody Vine Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	23	57
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	27	x 2 =	54
FAC species	45	x 3 =	135
FACU species	39	x 4 =	156
UPL species	0	x 5 =	0
Column totals	111 (A)		345 (B)

Prevalence Index = B/A = 3.11

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
___ Dominance test is >50%
___ Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

Flag A - 12

SOIL **Sampling Point:** A1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-12	10 YR 4/2	70	10 YR 6/6	30			Silt loam	5% gravel
12+							Gravel/cobble	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Gravel/cobble
Depth (inches): 12"

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Mouth of Ninemile Creek - Onondaga Lake City/County: Onondaga County Sampling Date: 8/31/2021
Applicant/Owner: Honeywell State: NY Sampling Point: A1W
Investigator(s): Joe McMullen, Kaity Moranz, Jim Molloy, Jesse Carr Section, Township, Range: Syracuse West Quad/Gedd
Landform (hillslope, terrace, etc.): Lake edge Local relief (concave, convex, none): ______
Slope (%): ______ Lat.: ______ Long.: ______ Datum: ______
Soil Map Unit Name NA NWI Classification: ______
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ______, soil ______, or hydrology ______ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ______, soil ______, or hydrology ______ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

	Yes	No	Depth (inches)
Surface water present?	X		1
Water table present?	X		4
Saturation present? (includes capillary fringe)	X		0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Flag A - 12.
Lake water levels high for this time of year.

VEGETATION - Use scientific names of plants

Sampling Point: A1W

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Alnus incana*	40	Y	FACW
2	*Salix discolor*	25	Y	FACW
3				
4				
5				
6				
7				
8				
9				
10				
		65	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Typha latifolia*	15	Y	OBL
2	*Galium album*	5	N	FACU
3	*Desmodium canadense*	5	N	FAC
4	*Helenium autumnale*	5	N	FACW
5	*Lobelia siphilitica*	2	N	FAC
6	*Lycopus americana*	2	N	FAC
7	*Lythrum salicaria*	2	N	FACU
8	*Lemna minor*	2	N	OBL
9	*Elymus virginicus*	2	N	FACW
10	*Persicaria maculosa*	2	N	FAC
11				
12				
13				
14				
15				
		42	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	13	33
Herb Stratum	8	21
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:			
OBL species	17	x 1 =	17
FACW species	72	x 2 =	144
FAC species	11	x 3 =	33
FACU species	7	x 4 =	28
UPL species	0	x 5 =	0
Column totals	107 (A)		222 (B)

Prevalence Index = B/A = 2.07

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
X Dominance test is >50%
X Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Flag A-12

SOIL

Sampling Point: A1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-12	10 YR 3/2	95	10YR 5/6	3			Gravelly silt loam	
			5YR 3/4	2				
12+							Gravel/cobble	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
_X_ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Gravel/cobble
Depth (inches): 12

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Mouth of Ninemile Creek - Onondaga Lake City/County: Onondaga County Sampling Date: 8/31/2021
Applicant/Owner: Honeywell State: NY Sampling Point: A2U
Investigator(s): Joe McMullen, Kaity Moranz, Jim Molloy, Jesse Carr Section, Township, Range: Syracuse West Quad/Gedd
Landform (hillslope, terrace, etc.): Lake edge Local relief (concave, convex, none): ____
Slope (%): ____ Lat.: ____ Long.: ____ Datum: ____
Soil Map Unit Name NA NWI Classification: ____
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ____, soil ____, or hydrology ____ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):
Water table present?	Yes		No	X	Depth (inches):
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Lake water levels high for this time of year.

VEGETATION - Use scientific names of plants

Sampling Point: A2U

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Alnus incana*	5	Y	FACW
2				
3				
4				
5				
6				
7				
8				
9				
10				
		5	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Desmodium canadense*	40	Y	FAC
2	*Solidago altissima*	15	N	FACU
3	*Panicum virgatum*	15	N	FAC
4	*Vicia cracca*	10	N	undefined
5	*Spartina pectinata*	10	N	FACW
6	*Daucus carota*	5	N	FAC
7	*Lysimachia nummularia*	5	N	FACW
8	*Euthamia graminifolia*	2	N	FAC
9	*Monarda fistulosa*	2	N	FACU
10	*Vernonia noveboracensis*	2	N	FACW
11	*Potentilla simplex*	2	N	FACU
12	*Plantago lanceolata*	2	N	FACU
13	*Juncus tenuis*	2	N	FAC
14	*Rudbeckia hirta*	2	N	FACU
15	*Rumex obtusifolius*	1	N	FAC
16	*Symphyotrichum pilosum*	1	N	FACU
17				
		116	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	1	3
Herb Stratum	23	58
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	22	x 2 =	44
FAC species	65	x 3 =	195
FACU species	24	x 4 =	96
UPL species	0	x 5 =	0
Column totals	111 (A)		335 (B)

Prevalence Index = B/A = 3.02

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
X Dominance test is >50%
___ Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** A2U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-6	10 YR 4/2	90	10 YR 4/6	10			Silt loam	5% gravel
6+							Gravel/cobble	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Gravel/cobble
Depth (inches): 6"

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Mouth of Ninemile Creek - Onondaga Lake City/County: Onondaga County Sampling Date: 8/31/2021
Applicant/Owner: Honeywell State: NY Sampling Point: A2W
Investigator(s): Joe McMullen, Kaity Moranz, Jim Molloy, Jesse Carr Section, Township, Range: Syracuse West Quad/Gedd
Landform (hillslope, terrace, etc.): Lake edge Local relief (concave, convex, none): ______
Slope (%): ______ Lat.: ______ Long.: ______ Datum: ______
Soil Map Unit Name NA NWI Classification: ______
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ___, soil ___, or hydrology ___ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ___, soil ___, or hydrology ___ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Y	**Is the sampled area within a wetland?** Y
Hydric soil present? Y	
Indicators of wetland hydrology present? Y	If yes, optional wetland site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

	Yes	No	Depth (inches)
Surface water present?	X		1.5
Water table present?	X		
Saturation present? (includes capillary fringe)	X		

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Flag A - 16.
Lake water levels high for this time of year.

VEGETATION - Use scientific names of plants

Sampling Point: A2W

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Alnus incana*	15	Y	FACW
2	*Salix discolor*	10	Y	FACW
3	*Salix interior*	5	N	FACW
4				
5				
6				
7				
8				
9				
10				
		30	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Typha latifolia*	40	Y	OBL
2	*Panicum virgatum*	15	N	FAC
3	*Andropogon gerardii*	10	N	FACU
4	*Phalaris arundinacea*	10	N	FACW
5	*Desmodium canadense*	5	N	FAC
6	*Vicia cracca*	5	N	Undefined
7	*Leersia oryzoides*	5	N	OBL
8	*Helenium autumnale*	2	N	FACW
9	*Lythrum salicaria*	2	N	OBL
10	*Carex lurida*	2	N	OBL
11	*Lycopus americanus*	2	N	OBL
12	*Symphyotrichum sp.*	2	N	Unknown
13	*Ambrosia artemisiifolia*	2	N	FACU
14	*Apocynum cannabinum*	2	N	FAC
15				
		104	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	6	15
Herb Stratum	21	52
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	51	x 1 =	51
FACW species	42	x 2 =	84
FAC species	22	x 3 =	66
FACU species	12	x 4 =	48
UPL species	0	x 5 =	0
Column totals	127 (A)		249 (B)

Prevalence Index = B/A = 1.96

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
X Dominance test is >50%
X Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Flag A-16

SOIL

Sampling Point: A2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-6	10YR 4/3	90	2.5YR 4/6	3			Silt loam	
	10YR 6/6	7						
6-10	10YR 4/3	90	2.5YR 4/6	3			Gravel silt loam	
	10YR 6/6	7						
10+								Gravel/cobble

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
_X_ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Gravel/cobble
Depth (inches): 10

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Mouth of Ninemile Creek - Onondaga Lake City/County: Onondaga County Sampling Date: 8/31/2021
Applicant/Owner: Honeywell State: NY Sampling Point: A3U
Investigator(s): Joe McMullen, Kaity Moranz, Jim Molloy, Jesse Carr Section, Township, Range: Syracuse West Quad/Gedd
Landform (hillslope, terrace, etc.): Lake edge Local relief (concave, convex, none): ______
Slope (%): ______ Lat.: ______ Long.: ______ Datum: ______
Soil Map Unit Name NA NWI Classification: ______
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ______ , soil ______ , or hydrology ______ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ______ , soil ______ , or hydrology ______ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	______

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

	Yes	No	Depth (inches):
Surface water present?		X	
Water table present?		X	
Saturation present? (includes capillary fringe)		X	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Lake water levels high for this time of year.

VEGETATION - Use scientific names of plants

Sampling Point: A3U

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Melilotus sp.*	30	Y	FACU
2	*Lotus corniculatus*	30	Y	FACU
3	*Sorghastrum nutans*	15	N	FACU
4	*Andropogon gerardii*	10	N	FACU
5	*Elymus canadensis*	5	N	FACU
6	*Centaurea nigra*	5	N	Undefined
7	*Monarda fistulosa*	5	N	FACU
8	*Ambrosia artemisiifolia*	5	N	FACU
9	*Coreopsis lanceolata*	5	N	FACU
10	*Argentina anserina*	5	N	FACW
11	*Panicum virgatum*	5	N	FAC
12	*Rumex obtusifolius*	2	N	FAC
13	*Penstemon digitalis*	2	N	FAC
14	*Xanthium strumarium*	2	N	FAC
15	*Asclepias syriaca*	2	N	UPL
16				
17				
		128	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	26	64
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:			
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	11	x 3 =	33
FACU species	105	x 4 =	420
UPL species	2	x 5 =	10
Column totals	123 (A)		473 (B)

Prevalence Index = B/A = 3.85

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
___ Dominance test is >50%
___ Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: A3U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-2	10 YR 3/3	100					Gravelly silt loam	
2-6	10yr 4/3	100					Clayey silt loam	
6+							Gravel/cobble	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Gravel/cobble
Depth (inches): 6"

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Mouth of Ninemile Creek - Onondaga Lake City/County: Onondaga County Sampling Date: 8/31/2021
Applicant/Owner: Honeywell State: NY Sampling Point: A3W
Investigator(s): Joe McMullen, Kaity Moranz, Jim Molloy, Jesse Carr Section, Township, Range: Syracuse West Quad/Gedd
Landform (hillslope, terrace, etc.): Lake edge Local relief (concave, convex, none): ______
Slope (%): ______ Lat.: ______ Long.: ______ Datum: ______
Soil Map Unit Name NA NWI Classification: ______
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ______, soil ______, or hydrology ______ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ______, soil ______, or hydrology ______ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	______

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	10
Water table present?	Yes	X	No		Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Flag B - 6.
Lake water levels high for this time of year.

VEGETATION - Use scientific names of plants

Sampling Point: A3W

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Typha latifolia*	60	Y	OBL
2	*Utricularia sp.*	40	Y	OBL
3	*Sparganium eurycarpum*	20	N	OBL
4	*Schoenoplectus tabernaemontani*	15	N	OBL
5	*Echinochloa sp.*	10	N	unknown
6	*Persicaria hydropiperoides*	5	N	OBL
7	*Leersia oryzoides*	5	N	OBL
8	*Lemna minor*	5	N	OBL
9	*Phalaris arundinacea*	5	N	FACW
10	*Pontederia cordata*	2	N	OBL
11	*Apocynum cannabinum*	2	N	FAC
12				
13				
14				
15				
		169	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	34	85
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	152	x 1 =	152
FACW species	5	x 2 =	10
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	159 (A)		168 (B)

Prevalence Index = B/A = 1.06

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

X Dominance test is >50%

X Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Flag B - 6

SOIL **Sampling Point:** A3W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-4	2.5Y 3/1	100					Sandy silt loam	
4+								Gravel/cobble

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
X Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Gravel/cobble
Depth (inches): 4

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Mouth of Ninemile Creek - Onondaga Lake City/County: Onondaga County Sampling Date: 8/31/2021
Applicant/Owner: Honeywell State: NY Sampling Point: A4W
Investigator(s): Joe McMullen, Kaity Moranz, Jim Molloy, Jesse Carr Section, Township, Range: Syracuse West Quad/Gedd
Landform (hillslope, terrace, etc.): Lake edge Local relief (concave, convex, none): ____
Slope (%): ____ Lat.: ____ Long.: ____ Datum: ____
Soil Map Unit Name NA NWI Classification: ____
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ____, soil ____, or hydrology ____ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9)
- __ Aquatic Fauna (B13)
- __ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres on Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Drainage Patterns (B10)
- __ Moss Trim Lines (B16)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- __ Stunted or Stressed Plants (D1)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)
- __ Microtopographic Relief (D4)

Field Observations:

	Yes	No	Depth (inches):
Surface water present?	X		18
Water table present?	X		
Saturation present? (includes capillary fringe)	X		

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Lake water levels high for this time of year.

VEGETATION - Use scientific names of plants

Sampling Point: A4W

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Schoenoplectus tabernaemontani*	50	Y	OBL
2	*Sparganium eurycarpum*	40	Y	OBL
3	*Pontederia cordata*	15	N	OBL
4	*Leersia oryzoides*	5	N	OBL
5	*Typha latifolia*	5	N	OBL
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		115	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	23	58
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:			
OBL species	115	x 1 =	115
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	115 (A)		115 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
X Dominance test is >50%
X Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: A4W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-12	7.5YR 4/1	100					Silt loam	5% gravel
12+								Gravel/cobble

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
X Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: Gravel/cobble
Depth (inches): 12

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Mouth of Ninemile Creek - Onondaga Lake City/County: Onondaga County Sampling Date: 8/31/2021
Applicant/Owner: Honeywell State: NY Sampling Point: D1W
Investigator(s): Joe McMullen, Kaity Moranz, Jim Molloy, Jesse Carr Section, Township, Range: Syracuse West Quad/Gedd
Landform (hillslope, terrace, etc.): Lake edge Local relief (concave, convex, none): ______
Slope (%): ______ Lat.: ______ Long.: ______ Datum: ______
Soil Map Unit Name NA NWI Classification: ______
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ___, soil ___, or hydrology ___ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ___, soil ___, or hydrology ___ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Due to water depth (2.5'), no soil description was performed.

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	30
Water table present?	Yes	X	No		Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Lake water levels high for this time of year.

VEGETATION - Use scientific names of plants

Sampling Point: D1W

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Pontederia cordata*	50	Y	OBL
2	*Schoenoplectus tabernaemontani*	40	Y	OBL
3	*Heteranthera dubia*	25	N	OBL
4	*Utricularia sp.*	10	N	OBL
5	*Stuckenia pectinata*	10	N	OBL
6	*Ceratophyllum demersum*	10	N	OBL
7	*Vallisneria americana*	5	N	OBL
8	*Myriophyllum spicatum*	5	N	OBL
9	*Elodea canadensis*	2	N	OBL
10				
11				
12				
13				
14				
15				
		157	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	31	79
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	157	x 1 =	157
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	157	(A)	157 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
X Dominance test is >50%
X Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** D1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: ________________
Depth (inches): ________________

Hydric soil present? Y

Remarks:
Due to water depth (2.5'), no soil description was performed.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Mouth of Ninemile Creek - Onondaga Lake City/County: Onondaga County Sampling Date: 8/31/2021
Applicant/Owner: Honeywell State: NY Sampling Point: E1W
Investigator(s): Joe McMullen, Kaity Moranz, Jim Molloy, Jesse Carr Section, Township, Range: Syracuse West Quad/Gedd
Landform (hillslope, terrace, etc.): Lake edge Local relief (concave, convex, none): ______
Slope (%): ______ Lat.: ______ Long.: ______ Datum: ______
Soil Map Unit Name: NA NWI Classification: ______
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ____, soil ____, or hydrology ____ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	Is the sampled area within a wetland?	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

X	Surface Water (A1)	X	Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
	High Water Table (A2)		Aquatic Fauna (B13)		Drainage Patterns (B10)
	Saturation (A3)		Marl Deposits (B15)		Moss Trim Lines (B16)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)	X	Saturation Visible on Aerial Imagery (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)	X	Stunted or Stressed Plants (D1)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
X	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
	Sparsely Vegetated Concave Surface (B8)				FAC-Neutral Test (D5)
					Microtopographic Relief (D4)

Secondary Indicators (minimum of two required) — right column.

Field Observations:

	Yes	No	Depth (inches)
Surface water present?	X		18
Water table present?	X		
Saturation present? (includes capillary fringe)	X		

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Lake water levels high for this time of year.

VEGETATION - Use scientific names of plants

Sampling Point: E1W

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Schoenoplectus tabernaemontani*	50	Y	OBL
2	*Pontederia cordata*	10	N	OBL
3	*Decodon verticillatus*	10	N	OBL
4	*Spirodela polyrhiza*	2	N	OBL
5	*Lemna minor*	2	N	OBL
6	*Hibiscus moscheutos*	2	N	OBL
7	*Leersia oryzoides*	2	N	OBL
8				
9				
10				
11				
12				
13				
14				
15				
		78	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	16	39
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:				
OBL species	78	x 1 =	78	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	78	(A)	78	(B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
X Dominance test is >50%
X Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** E1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-1	10YR 2/1	100					Sandy silt	Significant organic content
1-18	2.5Y 3/1	100					Silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

X Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
X Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
X Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: ____________
Depth (inches): ____________

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Mouth of Ninemile Creek - Onondaga Lake City/County: Onondaga County Sampling Date: 8/31/2021
Applicant/Owner: Honeywell State: NY Sampling Point: E2W
Investigator(s): Joe McMullen, Kaity Moranz, Jim Molloy, Jesse Carr Section, Township, Range: Syracuse West Quad/Gedd
Landform (hillslope, terrace, etc.): Lake edge Local relief (concave, convex, none): ______
Slope (%): ______ Lat.: ______ Long.: ______ Datum: ______
Soil Map Unit Name NA NWI Classification: ______
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ______, soil ______, or hydrology ______ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ______, soil ______, or hydrology ______ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	______

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

	Yes		No		Depth (inches):
Surface water present?	Yes	X	No		6
Water table present?	Yes	X	No		
Saturation present? (includes capillary fringe)	Yes	X	No		

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Lake water levels high for this time of year.

VEGETATION - Use scientific names of plants

Sampling Point: E2W

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Typha latifolia*	30	Y	OBL
2	*Spartina pectinata*	15	N	FACW
3	*Typha angustifolia*	10	N	OBL
4	*Typha x glauca*	10	N	OBL
5	*Leersia oryzoides*	10	N	OBL
6	*Lythrum salicaria*	5	N	OBL
7	*Leersia oryzoides*	2	N	OBL
8	*Persicaria maculosa*	2	N	FAC
9	*Echinochloa sp.*	2	N	Unknown
10	*Spirodela polyrhiza*	2	N	OBL
11	*Lemna minor*	2	N	OBL
12				
13				
14				
15				
		90	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	18	45
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	71	x 1 =	71	
FACW species	15	x 2 =	30	
FAC species	2	x 3 =	6	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	88	(A)	107	(B)

Prevalence Index = B/A = 1.22

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
X Dominance test is >50%
X Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** E2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-2	10YR 4/1	100					Silt	Significant organic content
2-6	2.5Y 4/2	50	7.5YR 4/6	10			Silty clay loam	
	10YR 3/2	40						
6-18	2.5Y 4/2	100					Silt loam	10% gravel

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
X Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Mouth of Ninemile Creek - Onondaga Lake City/County: Onondaga County Sampling Date: 8/31/2021
Applicant/Owner: Honeywell State: NY Sampling Point: G1W
Investigator(s): Joe McMullen, Kaity Moranz, Jim Molloy, Jesse Carr Section, Township, Range: Syracuse West Quad/Gedd
Landform (hillslope, terrace, etc.): Lake edge Local relief (concave, convex, none): ____
Slope (%): ____ Lat.: ____ Long.: ____ Datum: ____
Soil Map Unit Name NA NWI Classification: ____
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ____, soil ____, or hydrology ____ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Due to water depth (3'), no soil description was performed.

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	36
Water table present?	Yes	X	No		Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Flag G - 12.
Lake water levels high for this time of year.

VEGETATION - Use scientific names of plants

Sampling Point: G1W

Tree Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
	0	= Total Cover	

Sapling/Shrub Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
	0	= Total Cover	

Herb Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1 *Typha latifolia*	75	Y	OBL
2 *Typha x glauca*	25	Y	OBL
3 *Heteranthera dubia*	10	N	OBL
4 *Ceratophyllum demersum*	5	N	OBL
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
	115	= Total Cover	

Woody Vine Stratum Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	23	58
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:			
OBL species	115	x 1 =	115
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	115 (A)		115 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: G1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: ____________________
Depth (inches): ____________________

Hydric soil present? Y

Remarks:
Due to water depth (3'), no soil description was performed.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Mouth of Ninemile Creek - Onondaga Lake City/County: Onondaga County Sampling Date: 8/31/2021
Applicant/Owner: Honeywell State: NY Sampling Point: G2W
Investigator(s): Joe McMullen, Kaity Moranz, Jim Molloy, Jesse Carr Section, Township, Range: Syracuse West Quad/Gedd
Landform (hillslope, terrace, etc.): Lake edge Local relief (concave, convex, none): ______
Slope (%): ______ Lat.: ______ Long.: ______ Datum: ______
Soil Map Unit Name NA NWI Classification: ______
Are climatic/hydrologic conditions of the site typical for this time of the year? Yes (If no, explain in remarks)
Are vegetation ______, soil ______, or hydrology ______ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ______, soil ______, or hydrology ______ naturally problematic?
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Due to water depth (4'), no soil description was performed.

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

	Yes	No	Depth (inches):
Surface water present?	X		50
Water table present?	X		
Saturation present? (includes capillary fringe)	X		

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Flag G - 32.
Lake water levels high for this time of year.

VEGETATION - Use scientific names of plants

Sampling Point: G2W

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Typha x glauca*	80	Y	OBL
2	*Heteranthera dubia*	15	N	OBL
3	*Ceratophyllum demersum*	10	N	OBL
4	*Utricularia sp.*	5	N	OBL
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		110	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	22	55
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	110	x 1 =	110
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	110 (A)		110 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
X Dominance test is >50%
X Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** G2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric soil present? Y

Remarks:
Due to water depth (4'), no soil description was performed.

ATTACHMENT 1 - NYSDEC JURISDICTIONAL CONSIDERATIONS FOR WETLANDS AT THE MOUTH OF NINEMILE CREEK AREA

Prepared by:

JOSEPH MCMULLEN, PWS
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Liverpool, NY 13090

And

PARSONS
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Syracuse, New York 13212
315.451.9560

Honeywell

NYSDEC JURISDICTIONAL CONSIDERATIONS FOR WETLANDS AT THE MOUTH OF NINEMILE CREEK AREA

APRIL 2023

Introduction

As part of the monitoring requirements, wetlands created/restored at the Mouth of Ninemile Creek area were formally delineated five years after the restoration work was completed. The field portion of this delineation occurred in late summer 2021 and the results of the delineation were provided in a comprehensive wetland delineation report dated June 2022. It was prepared by Parsons and Joseph M. McMullen, Senior PWS, and submitted to the NYSDEC for review.

The detailed report includes: text descriptions of background information used, methods utilized, and results that includes the size and descriptions of each wetland cover type, plants species composition and soils and hydrology characteristics used to define the areas as wetlands, and a section on the functions and benefits provided by the wetland areas. Several figures were incorporated into the report, including background information maps, delineated wetland survey map, cover types of each wetland area, and the location of sample plots and photographs that were part of the report. Tables in the report provided acreage of each wetland area and primary cover type and lists of all plants and animals observed in the wetlands over a five-year period.

Following submission of the report, discussions occurred relative to which wetlands in the Mouth of Ninemile Creek Area could be considered part of a state-regulated wetland and used as part of the mitigation requirements for the lake projects. This supplemental summary is intended to answer questions that arose during this discussion and support inclusion of these wetlands in the mitigation requirements.

Background Information

A state-regulated wetland, Wetland SYW-10, is mapped in the Mouth of Ninemile Creek vicinity: it is protected and regulated under New York's Freshwater Wetlands Act (Article 24 of the New York Environmental Conservation Law) and associated regulations (Freshwater Wetlands Permit Requirements - 6NYCRR Part 663; and Freshwater Wetlands Maps and Classification – 6NYCRR Part 664). State wetlands maps are considered somewhat approximate, with the state recognizing an area within 500 feet of any mapped wetland as a check zone for wetlands assessment. Lands or waters that meet the definition of wetlands indicated in the Act can be added to an existing mapped wetland within or beyond this zone, if they function as a unit with the mapped wetland or are dependent upon each other in providing a benefit listed in the Act and begin no more than 50 meters from the mapped wetland (6NYCRR Part 664.7 (b)).

It should be noted that mapping and defining state wetlands are also covered in the original New York State Freshwater Wetlands Mapping Technical Methods Statement (NYSDEC 1984) and the New York State Freshwater Wetlands Delineation Manual (NYSDEC 1995).

Delineated Wetlands Within Mouth of Ninemile Creek Area

East and West Emergent Wetland Spits

Prior to remediation, there were two Phragmites-dominated emergent wetland areas that extended out from either side of the Ninemile Creek mouth and they were designated as the east and west spits. These spits were considered part of mapped Wetland SYW-10, which they abutted. The original area of the spits was 1.9 acres and was part of the mitigation acreage replacement requirements.

The created/restored area of contiguous wetlands in the east and west spits ended up being 2.47 acres. The wetland is dominated by a mix of native obligate emergent wetland plant species and is a much more diverse and higher habitat quality wetland than existed prior to remediation. It is an area of nearly permanent water inundation or saturation and has distinct hydric soils. As part of Wetland SYW-10, it would obviously be part of the mitigation wetland acreage requirements.

Lake-ward Emergent Wetlands

Emergent wetlands were created slightly lakeward of the east and west spits and total 5.18 acres. The largest block of these wetlands extends from just beyond the east spit into the eastern portion of the Mouth of Ninemile Creek study area; it is dominated primarily by cattails, which are obligate persistent emergent wetland species. Slightly west of the west spit, the lake-ward emergent wetlands are primarily dominated by a mix of persistent and non-persistent obligate emergent species. All areas are permanently inundated with lake water and have hydric soil in an aquic moisture regime.

The lake-ward emergent wetlands contain emergent wetland species that are recognized as defining wetlands under Part 24-0107-Definitions 1 (a) (3) in the Freshwater Wetlands Act. The eastern block of these wetlands begins about 25 feet (7.5 meters) from the eastern wetland spit (Figures 5 and 6). A large part of the western block of the lake-ward emergent wetland actually abuts the shoreline area mapped as Wetland SYW-10, with a smaller area beginning about 60 feet (18.1 meters) from the lakeward edge of this area. Because both areas have characteristic wetland vegetation as defined in the Act, function as a unit with Wetland SYW-10, and are well within 50 meters of the area considered part of Wetland SYW-10, these wetland areas of 5.18 acres should be included as part of the project's mitigation requirements for wetlands creation/restoration.

Floating Aquatic Wetlands

Several areas of floating aquatic wetlands occur in the central and eastern portions of the Mouth of Ninemile Creek Area. The closest of these floating aquatic wetland areas begins at about 25 feet (7.5 meters) from the eastern spit. Other areas actually abut the large block of lake-ward persistent emergent wetland, with no one block of these areas beyond about 50 feet (15.1 meters) of each other. They are dominated by water lilies and other obligate wetland floating aquatic plants that are rooted in the bottom substrate. Water depth in these areas generally ranges from 2 to 3 feet, with portions slightly shallower. Obviously, they are permanently inundated by the lake and they also contain fine material as a substrate in a hydric soil aquic moisture regime.

Under federal guidelines the demarcation between wetlands and deepwater habitat in lacustrine systems is recognized as a water depth of 2 meters (6.6 feet) (Cowardin et al. 1979). Under state guidelines this demarcation is generally followed, with a recognition of 6 feet mentioned for submerged areas in Part 24-0107-Definitions 1 (a) (7) of the Freshwater Wetlands Act. The state Technical Methods Statement and 1995 Wetlands Delineation Manual generally extend wetlands out to the lakeward limit of rooted wetland vegetation, which is generally recognized as 6 feet. This depth is also used in defining the littoral zone of a lake, beyond which rooted vegetation does not usually occur.

The floating aquatic wetlands are dominated by rooted floating aquatic wetland vegetation recognized as defining wetlands under Part 24-0107-Definitions 1(a) (4) in the Freshwater Wetlands Act. They function as a unit with the other wetlands in the area and are within 50 meters of wetlands, including the lake-ward persistent emergent wetlands and the east spit, which is considered part of Wetland SYW-10. The wetland areas are generally in water less than 3 feet deep. As a result, these areas of 2.53 acres should be considered as part of the project's mitigation requirements for wetlands creation/restoration.

Shoreline Persistent Emergent Wetlands

There is a strip of shoreline persistent emergent wetland that begins just beyond the eastern limit of the east spit and extends continuously easterly along the lake shoreline. As indicated on Figures 5 and 6 of the delineation report, although continuous, part of the wetland strip is within the area recognized as the Mouth of Ninemile Creek Area and part is not. Table 3 in the report indicates that the total area of the shoreline wetland strip is 0.7 acre, with 0.13 acre in the study area and 0.57 acre beyond the study area limits.

Obligate and facultative wet wetland plant species dominate this area, although the area was not planted as part of restoration activities. Hydrology varies, with the lakeward limit usually permanently inundated and the landward limit inundated or saturated for extended periods. Soils in this area are generally fine material in the upper layer, with a mix of coarse fragments below. The upper layer had a hydrogen sulfide odor, which is a strong indicator of hydric soils.

There was a question about whether the soil as described in one plot in this area would meet the definition of a wetland. In lacustrine systems, especially wetlands on the shoreline of lacustrine systems, coarse fragments are usually part of the soil profile, especially in newly created wetlands. It is understood that water activity in shoreline wetland areas affects the deposition and accumulation of fine material. Nonetheless, these areas would be recognized as meeting the definition of a wetland.

To further define the soils throughout the shoreline emergent wetland strip, additional soil samples were obtained during a mild weather period on February 14, 2023. The additional samples were taken at three locations spaced along the shoreline emergent wetlands, with the center location near the original plot A3W (Figure A). As indicated in the attached data sheets, these soil samples show that the soils have a much deeper (11+ inches) zone of fine material (silt loam, gravelly sandy loam, and mucky mineral) than originally indicated. The soils are primarily in an aquic moisture regime and have a hydrogen sulfide odor, with the sample at A3W actually having a gleyed layer. At the easternmost sample near wetland flag B-11, the substrate did have a predominantly coarse fragment (gravel and cobble) component below 2 inches, although a hydrogen sulfide odor was evident.

The shoreline persistent emergent wetland strip is a contiguous area of wetland dominated by obligate and facultative wet persistent emergent wetland species recognized under the Act as defining wetlands. It begins approximately 50 feet (15 meters) from the eastern edge of the eastern spit, which is recognized as part of state Wetland SYW-10.

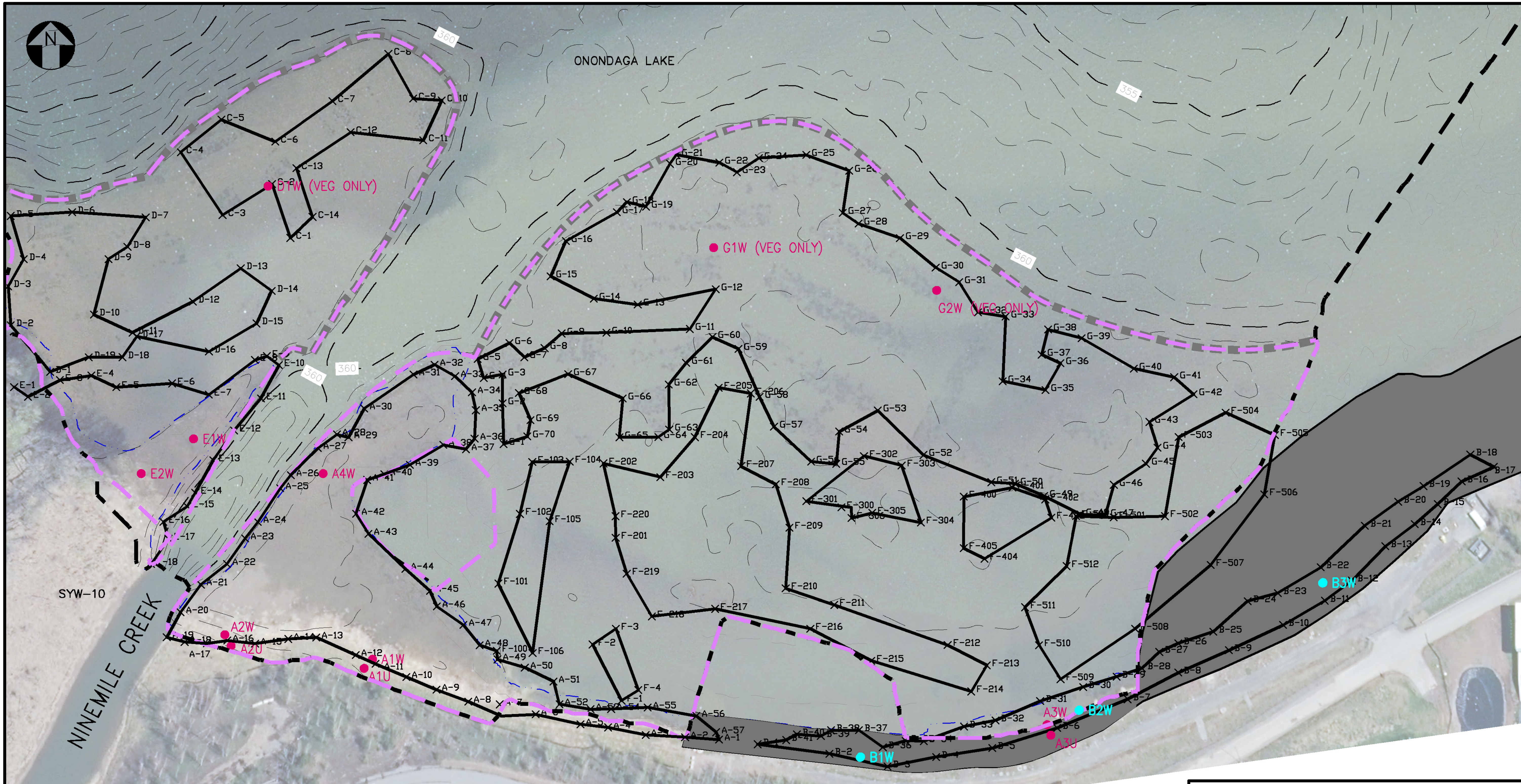
References

Cowardin, L., V. Carter, F. Golet, and E. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U. S. Department of the Interior, Fish and Wildlife Service. FWS/OBS-79/31, U. S. Government Printing Office, Washington, DC.

NYSDEC. July 1984. New York State Freshwater Wetlands Mapping Technical Methods Statement. New York State Department of Environmental Conservation, Albany, NY.

NYSDEC 1995. Freshwater Wetlands Delineation Manual. March 1995. New York State Department of Environmental Conservation, Division of Fish and Wildlife, Albany, NY.

FIGURES



LEGEND:

- LAKE CONTOURS 1' INTERVAL (2018 AS-BUILT)
- PROTECTIVE EDGE
- REMEDIATION AREA A BOUNDARY (LIMITS OF CAPPING)
- SHORELINE (362.5')
- SHORELINE STABILIZATION AND ENHANCEMENT AREA
- A-8 A-9 SURVEYED WETLAND BOUNDARY WITH FLAG POINT AND NUMBER
- REMEDIATION AREA A PLANTING AREA
- ORIGINAL WETLAND DELINEATION PLOT LOCATIONS (AUGUST 31, 2021)
- ADDITIONAL SAMPLE PLOT LOCATIONS (FEBRUARY 14, 2023)

120 60 0 120 240

SCALE: 1"=120'

FIGURE A

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

ADDITIONAL SAMPLE PLOT LOCATIONS

PARSONS

301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452669 2021 OL PVM\10 TECHNICAL CATEGORIES\CAD\FIGURES\452669-MONMC-04-ADDITIONAL.DWG
PLOT DATE: 4/4/2023 9:06 AM PLOTTED BY: RUSSO, JILL [US-US]

DATA SHEETS

SOIL

Sampling Point MoNMC B1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5YR 3/1	95	10YR 3/6	5			Silt loam	
5-9	10YR 2/1	100					Mucky Loam/Clay	Mucky silt loam. Organic matter (20%)
9-14	10YR 2/1	100					Mucky Loam/Clay	Mucky silt loam. Coarse material (10%)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- X Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)
- ___ Red Parent Material (F21) **(MLRA 145)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Red Parent Material (F21) **(outside MLRA 145)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Near Flag No. B-2

SOIL

Sampling Point MoNMC B2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5Y 2.5/1	100	10YR 3/6	5			Mucky Loam/Clay	Mucky loam
5-9	Gley 2 2.5/10G	100					Loamy/Clayey	Gravelly coarse sandy loam
9-11	Gley 1 5/10Y	100					Loamy/Clayey	Gravelly coarse sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- X Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)
- ___ Red Parent Material (F21) **(MLRA 145)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Red Parent Material (F21) **(outside MLRA 145)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

Near Flag No. B-6; by original Plot A3W.

SOIL

Sampling Point MoNMC B3W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/1	60					Loamy/Clayey	Mucky silt loam
0-2	10YR 3/2	40					Loamy/Clayey	Mucky silt loam
2+								Cobble/Gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
X Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)
___ Red Parent Material (F21) **(MLRA 145)**

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Red Parent Material (F21) **(outside MLRA 145)**
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ___

Remarks:
Near Flag No. B-11.

APPENDIX 2D – MACROPHYTE SURVEY DATA

TABLE 2D.1 2021 MACROPHYTE QUANTITATIVE SURVEY DATA

Point number	Remediation area	Water depth (m)	Biomass	Species														
				Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum sibiricum	Myriophyllum spicatum	Najas guadalupensis	Najas minor	Nitellopsis obtusa	Potamogeton crispus	Ranunculus longirostris	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana
1	N	2	3	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0
2	N	1.8	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
4	N	4.8	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
6	N	4.4	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
8	N	1.6	3	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0
9	N	2.6	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
11	N	6.2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	N	5.8	2	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
15	N	5.2	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
17	N	2.3	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
18	N	3.5	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
20	N	8.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	N	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	N	3.5	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
25	N	2.1	2	1	0	0	1	0	1	1	0	0	0	0	0	2	0	0
27	N	3.7	2	0	0	0	0	0	1	2	0	1	0	0	0	0	0	0
29	N	6.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	N	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	N	4.8	2	2	0	0	0	0	2	0	0	0	0	0	0	1	0	0
34	N	3.9	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
36	N	5.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	N	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	N	6.6	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
43	N	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	N	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	N	18	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
47	N	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	N	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 2D.1 2021 MACROPHYTE QUANTITATIVE SURVEY DATA (CONTINUED)

Point number	Remediation area	Water depth (m)	Biomass	Species														
				Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum sibiricum	Myriophyllum spicatum	Najas guadalupensis	Najas minor	Nitellopsis obtusa	Potamogeton crispus	Ranunculus longirostris	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana
49	N	2.6	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
50	N	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	N	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	N	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	N	4.4	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0
58	N	2	3	0	0	0	2	0	0	0	0	3	0	0	0	0	0	0
60	N	4.8	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0
63	N	2.5	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
64	N	9.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
66	N	2.6	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
68	N	2.2	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
70	N	2.7	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
72	N	2.8	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
75	Y	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
77	N	3.2	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
80	Y	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81	N	5	2	0	0	0	2	0	0	1	0	0	0	0	0	1	0	0
83	Y	2.9	1	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0
85	N	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
88	Y	2.3	2	1	0	1	1	0	0	0	0	0	0	0	0	2	0	0
90	Y	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	Y	4.5	3	2	0	1	2	0	0	0	0	0	0	0	0	0	0	0
98	N	2.3	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
100	Y	3.4	3	1	0	1	2	0	0	0	0	2	0	0	0	3	0	1
102	Y	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	N	4.4	2	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0
105	Y	1.7	3	1	0	0	1	0	0	0	0	3	0	0	0	0	0	1
107	Y	4.3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 2D.1 2021 MACROPHYTE QUANTITATIVE SURVEY DATA (CONTINUED)

Point number	Remediation area	Water depth (m)	Biomass	Species														
				Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum sibiricum	Myriophyllum spicatum	Najas guadalupensis	Najas minor	Nitellopsis obtusa	Potamogeton crispus	Ranunculus longirostris	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana
109	N	4	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
111	Y	3.2	2	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0
113	Y	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114	N	4.2	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
116	Y	4.6	3	0	0	0	1	0	0	0	0	3	0	0	0	0	0	1
118	N	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	N	3.5	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
122	Y	15	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0
123	N	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
126	N	2.9	3	0	0	0	2	0	1	0	1	1	0	0	0	0	0	2
131	N	3.3	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
132	N	3.1	3	1	0	0	2	0	0	0	1	2	0	0	0	0	0	0
134	N	4.8	2	1	0	0	0	0	0	0	0	2	1	0	0	0	1	0
135	N	4.4	3	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0
137	N	4.2	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
139	N	3.8	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
143	N	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
144	N	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	N	9.3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
147	N	4.1	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
149	N	5.3	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
150	Y	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
151	Y	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152	N	5.5	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
158	N	3.9	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
160	Y	6.9	3	0	0	0	2	0	0	0	0	3	0	0	0	0	0	0
161	Y	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162	N	4.1	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0

TABLE 2D.1 2021 MACROPHYTE QUANTITATIVE SURVEY DATA (CONTINUED)

Point number	Remediation area	Water depth (m)	Biomass	Species														
				Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum sibiricum	Myriophyllum spicatum	Najas guadalupensis	Najas minor	Nitellopsis obtusa	Potamogeton crispus	Ranunculus longirostris	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana
163	N	3.4	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
164	Y	2.3	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
165	Y	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
166	N	5	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
169	Y	2.1	3	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0
170	Y	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
173	N	8.7	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
174	Y	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
176	N	7.2	3	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0
179	N	1	2	0	0	0	1	0	0	0	0	0	0	1	0	2	0	0
181	N	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
182	N	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
184	N	3.3	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
185	N	1.5	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
187	N	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
191	N	5.4	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
192	Y	11	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
194	N	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
195	N	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
196	N	6.9	2	0	1	0	2	0	1	0	0	0	0	0	0	1	0	0
197	N	4.9	2	0	1	0	1	0	0	0	0	0	0	0	0	1	0	1
198	Y	2.2	3	1	0	1	2	0	0	1	0	2	0	0	0	0	0	0
199	Y	5.8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200	Y	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
201	N	8.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
204	Y	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
207	N	4.1	2	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0
208	Y	4.5	2	1	1	1	2	0	1	1	0	0	0	0	0	0	0	0

TABLE 2D.1 2021 MACROPHYTE QUANTITATIVE SURVEY DATA (CONTINUED)

Point number	Remediation area	Water depth (m)	Biomass	Species														
				Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum sibiricum	Myriophyllum spicatum	Najas guadalupensis	Najas minor	Nitellopsis obtusa	Potamogeton crispus	Ranunculus longirostris	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana
209	Y	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
210	N	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211	N	6	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
212	N	4.6	2	1	0	1	1	1	1	0	0	0	1	0	0	0	0	0
213	N	4.8	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
214	Y	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
218	Y	3.1	2	0	0	1	1	1	0	1	0	1	0	0	0	0	0	0
219	Y	8.2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220	N	7.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
221	N	5.9	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
222	N	4.9	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
223	Y	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
224	Y	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
228	Y	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
229	Y	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230	N	8.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
231	N	7.7	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
232	N	5.6	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
239	Y	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
240	N	7.3	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
241	N	6.9	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
242	Y	8.8	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
244	N	7.7	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
247	Y	12	1	1	0	1	0	0	0	0	1	0	0	0	0	1	0	0
251	N	4	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0
253	Y	8.4	1	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0
256	N	8.8	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
257	N	7.6	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0

TABLE 2D.1 2021 MACROPHYTE QUANTITATIVE SURVEY DATA (CONTINUED)

				Species														
Point number	Remediation area	Water depth (m)	Biomass	Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum sibiricum	Myriophyllum spicatum	Najas guadalupensis	Najas minor	Nitellopsis obtusa	Potamogeton crispus	Ranunculus longirostris	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana
258	Y	8.3	3	1	0	1	3	1	0	1	0	0	0	0	0	0	0	0
260	Y	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
262	N	7.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
263	Y	5.4	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
265	Y	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
268	N	4.9	2	0	0	0	1	0	0	0	2	0	0	0	0	1	0	0
269	Y	7.4	3	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0
271	Y	15	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
273	N	7.2	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
274	Y	5.8	2	1	0	1	2	1	0	0	0	1	0	0	0	0	0	0
276	Y	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
278	Y	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
279	N	6.9	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
282	Y	14	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
284	Y	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
289	Y	13	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
291	Y	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
293	Y	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
294	N	7.2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
297	Y	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
299	Y	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
302	N	9.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
305	Y	6	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
307	Y	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309	Y	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
311	Y	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
312	N	8.9	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0
316	Y	5.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 2D.1 2021 MACROPHYTE QUANTITATIVE SURVEY DATA (CONTINUED)

Point number	Remediation area	Water depth (m)	Biomass	Species														
				Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum sibiricum	Myriophyllum spicatum	Najas guadalupensis	Najas minor	Nitellopsis obtusa	Potamogeton crispus	Ranunculus longirostris	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana
317	Y	8.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
318	Y	8.9	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
320	Y	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
321	Y	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
322	Y	7.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
325	Y	3.4	2	1	0	1	2	0	0	1	1	0	0	0	0	1	0	0
327	Y	7.7	2	1	0	1	1	0	0	0	0	0	0	0	0	2	0	0
329	Y	7.1	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0
332	Y	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
334	Y	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
337	N	6.3	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
338	N	6	2	0	0	0	0	0	1	1	0	0	0	0	0	2	0	0
339	N	3.2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
341	Y	5.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
343	Y	7.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
344	Y	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
346	Y	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
348	Y	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
350	Y	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
353	Y	6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
354	N	6.9	2	0	0	0	0	0	0	1	0	2	0	2	0	0	0	0
355	N	6.1	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
357	N	2.6	2	1	0	1	1	0	0	0	0	0	0	0	0	2	0	1
359	Y	4.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
362	Y	5.6	3	0	0	2	2	1	0	0	1	0	1	0	0	0	0	0
364	Y	6.2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
366	Y	9.3	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
368	Y	9.8	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0

TABLE 2D.1 2021 MACROPHYTE QUANTITATIVE SURVEY DATA (CONTINUED)

				Species														
Point number	Remediation area	Water depth (m)	Biomass	Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum sibiricum	Myriophyllum spicatum	Najas guadalupensis	Najas minor	Nitellopsis obtusa	Potamogeton crispus	Ranunculus longirostris	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana
369	Y	5.2	3	2	0	1	3	0	1	2	0	1	0	0	0	2	0	0
373	N	4.1	3	1	0	2	2	0	0	0	0	0	0	0	0	0	0	0
374	Y	5	2	1	0	1	2	0	0	0	0	0	1	0	0	0	0	0
375	Y	3.7	3	0	0	2	3	0	1	1	0	1	0	0	0	1	0	0
377	Y	4.4	3	0	1	2	2	2	0	1	0	0	0	1	0	0	0	0
379	Y	4.4	2	1	0	1	2	0	0	0	1	0	0	0	0	0	0	0
381	Y	5.1	2	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0
384	N	5.2	3	0	0	0	0	1	0	3	2	3	0	0	0	0	0	0
385	N	4.2	2	2	0	1	0	0	0	1	0	0	0	0	0	1	0	0
387	Y	4.3	3	0	0	3	0	0	2	1	0	0	0	0	0	0	0	0
389	Y	1.8	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0
391	Y	4.6	3	1	0	1	2	1	1	0	0	1	0	0	0	0	0	0
393	N	3.5	3	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1
394	N	5.1	3	1	0	1	2	1	0	0	0	2	0	0	0	0	0	0
396	N	3.5	3	3	0	1	2	1	0	0	0	0	0	0	0	0	0	0
CSX-1	N	4.4	2	1	0	1	1	0	0	0	0	0	0	0	0	2	0	0
CSX-2	N	3.4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSX-3	N	3.4	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0
CSX-4	N	3.3	2	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0
CSX-5	N	3.7	1	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0
CSX-6	N	3.8	3	2	0	0	1	0	1	0	0	0	0	1	1	2	0	0
CSX-7	N	3.1	2	1	0	1	0	0	0	0	0	0	0	1	1	2	0	1
CSX-8	N	3.9	2	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0
CSX-9	N	3.7	3	1	0	2	0	0	0	0	0	0	1	0	0	0	0	0
CSX-10	N	3	2	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0
CSX-11	N	4.6	2	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0
CSX-12	N	4.2	3	0	0	3	0	0	1	1	0	0	0	0	0	2	0	0
CSX-13	N	4.6	2	0	0	2	1	1	0	0	0	0	0	0	0	1	0	0

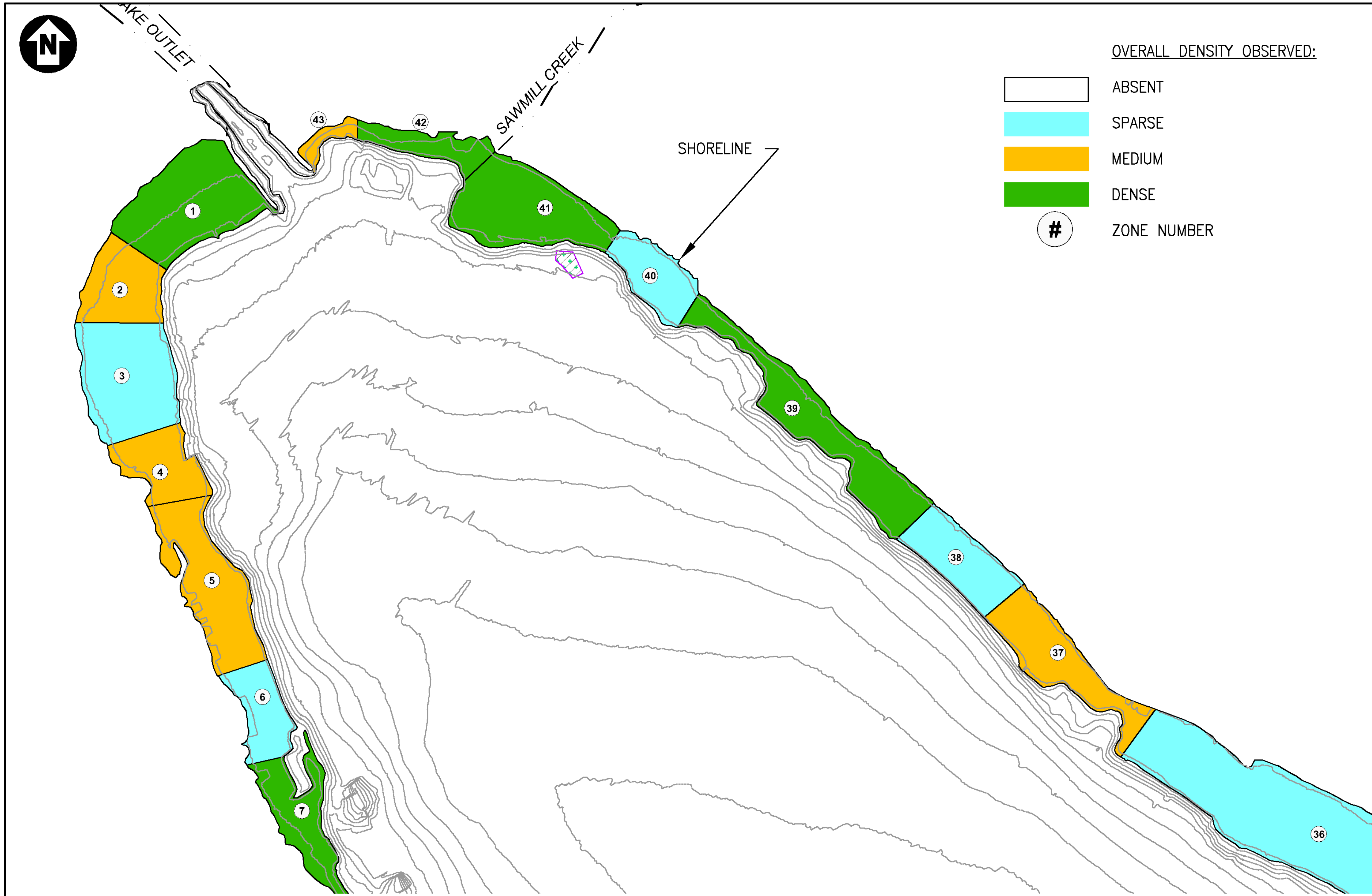
Honeywell PARSONS

TABLE 2D.1 2021 MACROPHYTE QUANTITATIVE SURVEY DATA (CONTINUED)

Point number	Remediation area	Water depth (m)	Biomass	Species														
				Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum sibiricum	Myriophyllum spicatum	Najas guadalupensis	Najas minor	Nitellopsis obtusa	Potamogeton crispus	Ranunculus longirostris	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana
CSX-14	N	4.2	3	1	0	0	0	0	2	0	0	0	1	0	0	3	0	0
CSX-15	N	3.7	3	0	0	1	3	1	0	1	0	0	1	0	1	3	0	0
CSX-16	N	4.2	3	1	0	1	3	0	0	0	0	0	1	0	0	3	0	0
CSX-17	N	3.8	3	1	0	1	2	0	0	1	0	2	0	0	0	3	0	0
CSX-18	N	4.1	3	1	0	1	2	1	0	0	0	0	1	0	0	3	0	0
NEW-1	Y	3.8	3	3	0	1	1	0	0	0	0	0	0	2	0	0	0	0
NEW-2	Y	7.3	3	1	0	0	3	0	0	0	0	0	0	0	0	1	0	0
NEW-3	Y	3.4	3	1	0	1	3	0	2	0	0	0	0	1	0	0	1	0
NEW-4	Y	1.8	3	0	0	1	3	0	2	0	0	0	0	0	0	0	0	0
NEW-5	Y	1.6	2	0	0	1	2	0	1	0	0	0	0	0	0	0	0	0
NEW-6	Y	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW-7	Y	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 2D.2 2021 QUANTITATIVE MACROPHYTE SURVEY SUMMARY

	Average Biomass per Species																
	Number of points	Average overall biomiass	Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum sibiricum	Myriophyllum spicatum	Najas guadalupensis	Najas minor	Nitellopsis obtusa	Potamogeton crispus	Ranunculus longirostris	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana
Unremediated	136	1.69	0.32	0.01	0.17	0.32	0.06	0.12	0.10	0.05	1.03	0.08	0.04	0.03	0.38	0.03	0.04
Remediated	100	1.04	0.42	0.02	0.35	0.66	0.09	0.13	0.12	0.05	0.23	0.03	0.04	0.00	0.16	0.01	0.03



Zone	Overall density	Ceratophyllum demersum	Elodea canadensis	Heteranthera dubia	Lemna minor	Myriophyllum spicatum	Nitellopsis obtusa	Nymphaea odorata	Nuphar lutea	Potamogeton crispus	Potamogeton illinoiensis	Stuckenia pectinata	Trapa natans	Utricularia sp.	Vallisneria americana	Zizania aquatica
1	D	D				S		S		S		M		S	S	S
2	M					S	M			S						S
3	S						S			S		S				
4	M						M			S		M				
5	M						M			S		S				
6	S											S				
7	D						D			S		M		S		
36	S											S				
37	M						M					M				
38	S											S				
39	D	S								S		M				
40	S	S										S				
41	D						D					M				
42	D	S		M			M			D		M			S	
43	M	S					S			S		M				

Blank = absent (0% cover), S = sparse (1-25% cover),
M = moderate (26-75% cover), D = dense (76-100% cover)

AREA OBSERVED

REMEDIATION AREA BOUNDARY

CAPPED AREAS (INCLUDES ALL ISOLATION, THIN LAYER, AND MODIFIED PROTECTIVE CAPS)

NOTES:

1. WATER DEPTH CONTOUR INTERVAL IS 5 FT. (POST-REMEDY CONTOURS SHOWN)
2. OBSERVATIONS ARE TO APPROXIMATELY 7FT DEPTH; SEE REPORT DETAILS.

800 400 0 800 1600

SCALE: 1"=800'

FIGURE 2D.1

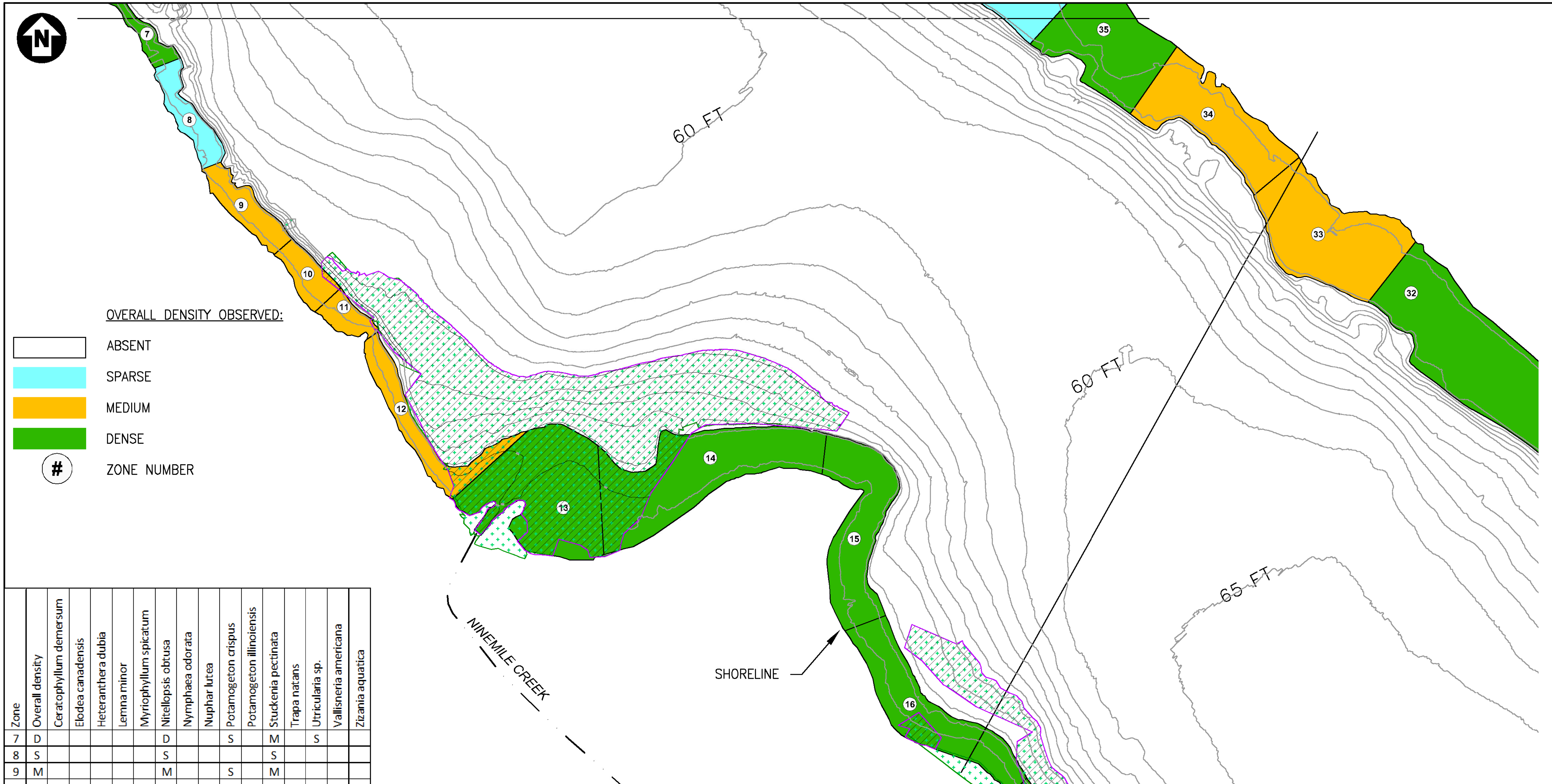
Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

QUALITATIVE MACROPHYTE SURVEY
NORTH END
JUNE 2021

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452284 2020 ONONDAGA LAKE PVM\10 TECHNICAL CATEGORIES\CAD\2021-MACROPHYTES\452284-M-PHYTE-JUNE-2021.DWG
PLOT DATE: 6/6/2025 4:04 PM PLOTTED BY: RUSSO, JILL [US-US]



Zone	Overall density	Ceratophyllum demersum	Elodea canadensis	Heteranthera dubia	Lemna minor	Myriophyllum spicatum	Nitellopsis obtusa	Nymphaea odorata	Nuphar lutea	Potamogeton crispus	Potamogeton illinoiensis	Stuckenia pectinata	Trapa natans	Utricularia sp.	Vallisneria americana	Zizania aquatica
7	D						D			S		M		S		
8	S						S					S				
9	M						M			S		M				
10	M					S	S			M		S				
11	M						M					S				
12	M					S	M			S		M				
13	D	M	S	M		M		S	S	M	M	M	S		S	S
14	D									S		D				
15	D					S	D			S		D				
16	D	S				S				M		D				
32	D					S	D					S				
33	M					S	M					M				
34	M					M				S		M				
35	D						D					S				

Blank = absent (0% cover), S = sparse (1-25% cover),
M = moderate (26-75% cover), D = dense (76-100% cover)

AREA OBSERVED

REMEDIATION AREA BOUNDARY

CAPPED AREAS (INCLUDES ALL ISOLATION, THIN LAYER, AND MODIFIED PROTECTIVE CAPS)

NOTES:

1. WATER DEPTH CONTOUR INTERVAL IS 5 FT. (POST–REMEDY CONTOURS SHOWN)
2. OBSERVATIONS ARE TO APPROXIMATELY 7FT DEPTH; SEE REPORT DETAILS.

800 400 0 800 1600

SCALE: 1"=800'

FIGURE 2D.2

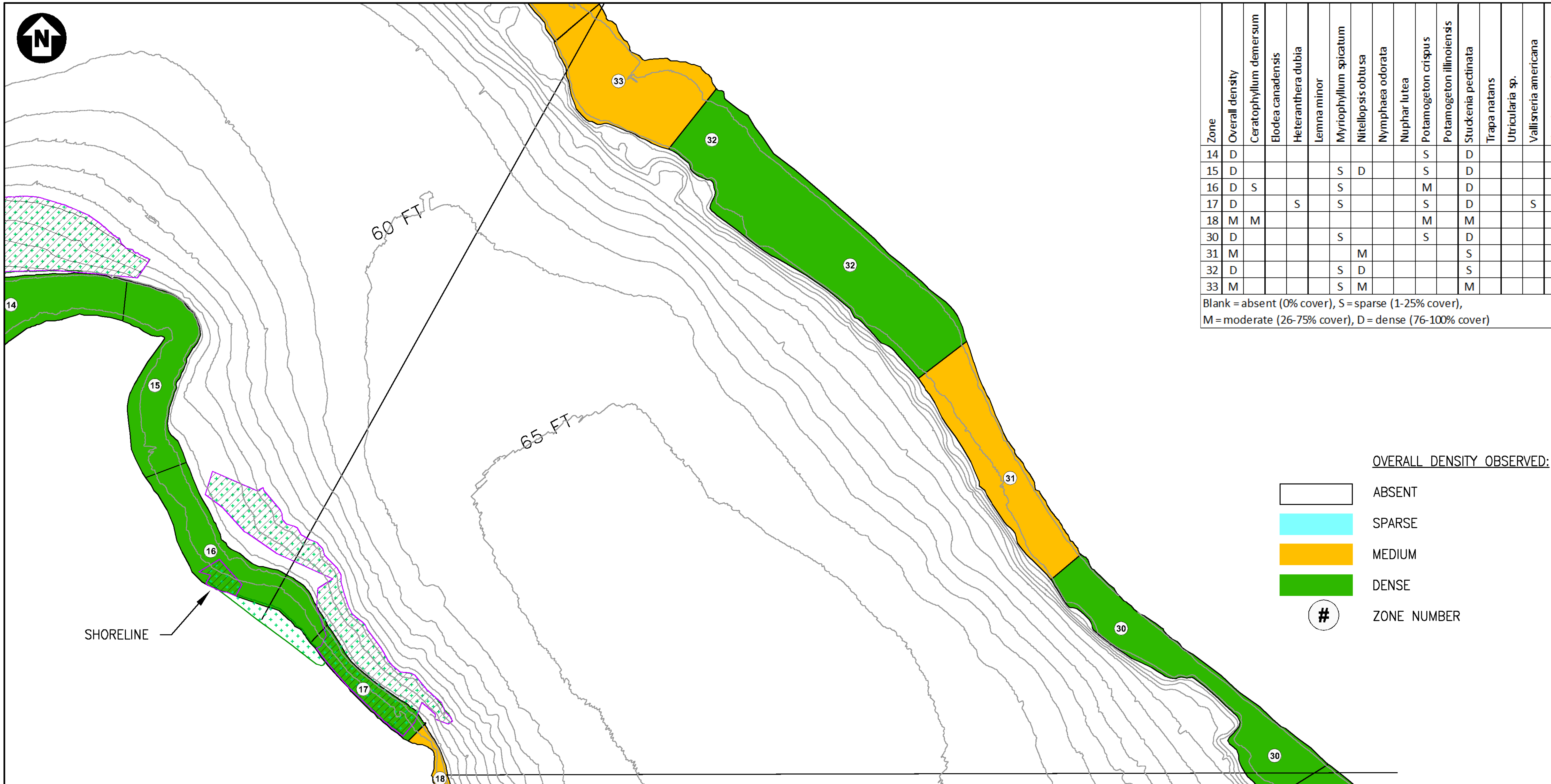
Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

QUALITATIVE MACROPHYTE SURVEY
NORTH MIDDLE
JUNE 2021

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452284 2020 ONONDAGA LAKE PVM\10 TECHNICAL CATEGORIES\CAD\2021-MACROPHYTES\452284-M-PHYTE-JUNE-2021.DWG
PLOT DATE: 6/6/2025 4:05 PM PLOTTED BY: RUSSO, JILL [US-US]



Zone	Overall density	Ceratophyllum demersum	Elodea canadensis	Heteranthera dubia	Lemna minor	Myriophyllum spicatum	Nitellopsis obtusa	Nymphaea odorata	Nuphar lutea	Potamogeton crispus	Potamogeton illinoiensis	Stuckenia pectinata	Trapa natans	Utricularia sp.	Vallisneria americana	Zizania aquatica
14	D									S		D				
15	D					S	D			S		D				
16	D	S				S				M		D				
17	D			S		S				S		D			S	
18	M	M								M		M				
30	D					S				S		D				
31	M						M					S				
32	D					S	D					S				
33	M					S	M					M				

Blank = absent (0% cover), S = sparse (1-25% cover),
M = moderate (26-75% cover), D = dense (76-100% cover)

AREA OBSERVED

REMEDIATION AREA BOUNDARY

CAPPED AREAS (INCLUDES ALL ISOLATION, THIN LAYER, AND MODIFIED PROTECTIVE CAPS)

NOTES:

1. WATER DEPTH CONTOUR INTERVAL IS 5 FT. (POST-REMEDY CONTOURS SHOWN)
2. OBSERVATIONS ARE TO APPROXIMATELY 7FT DEPTH; SEE REPORT DETAILS.

800 400 0 800 1600

SCALE: 1"=800'

FIGURE 2D.3

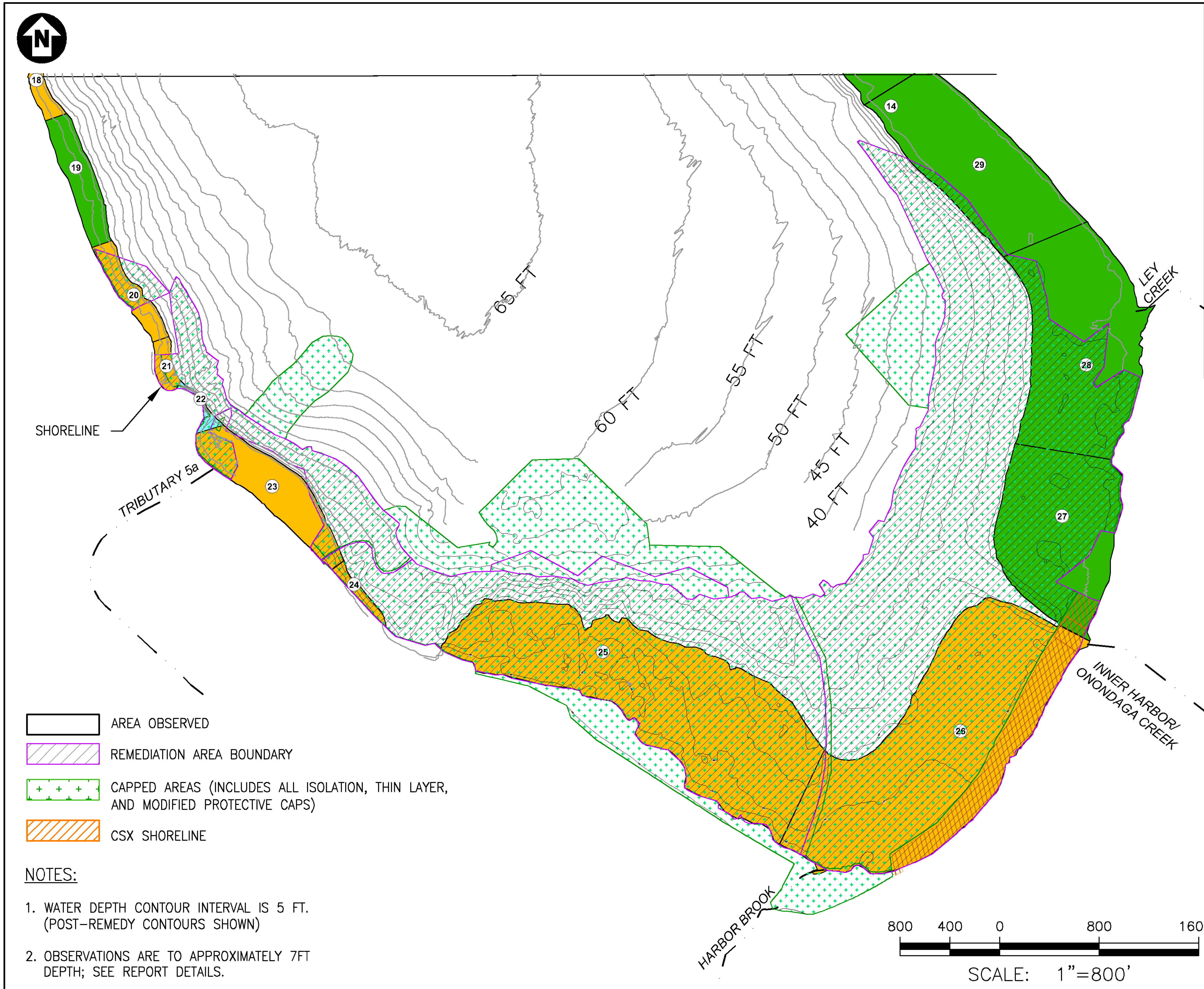
Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

QUALITATIVE MACROPHYTE SURVEY
SOUTH MIDDLE
JUNE 2021

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452284 2020 ONONDAGA LAKE PVM\10 TECHNICAL CATEGORIES\CAD\2021-MACROPHYTES\452284-M-PHYTE-JUNE-2021.DWG
PLOT DATE: 6/6/2025 4:06 PM PLOTTED BY: RUSSO, JILL [US-US]



Zone	Overall density	Ceratophyllum demersum	Elodea canadensis	Heteranthera dubia	Lemna minor	Myriophyllum spicatum	Nitellopsis obtusa	Nymphaea odorata	Nuphar lutea	Potamogeton crispus	Potamogeton illinoiensis	Stuckenia pectinata	Trapa natans	Utricularia sp.	Vallisneria americana	Zizania aquatica
18	M	M								M		M				
19	D			S		M						D				
20	M	S				S				S		M				
21	M					M				M		S				
22	S					S						S				
23	M	S		S						M		M				
24	M					S	M			S						
25	M			S		S	S			M		M				
26	M			S		S				M		M				
27	D	M	M			S				M		S				
28	D	M	M	S	S	S		S		S		S	S		S	
29	D					M	D			S		M				

Blank = absent (0% cover), S = sparse (1-25% cover), M = moderate (26-75% cover), D = dense (76-100% cover)

NOTES:

1. WATER DEPTH CONTOUR INTERVAL IS 5 FT. (POST-REMEDY CONTOURS SHOWN)
2. OBSERVATIONS ARE TO APPROXIMATELY 7FT DEPTH; SEE REPORT DETAILS.

FIGURE 2D.4

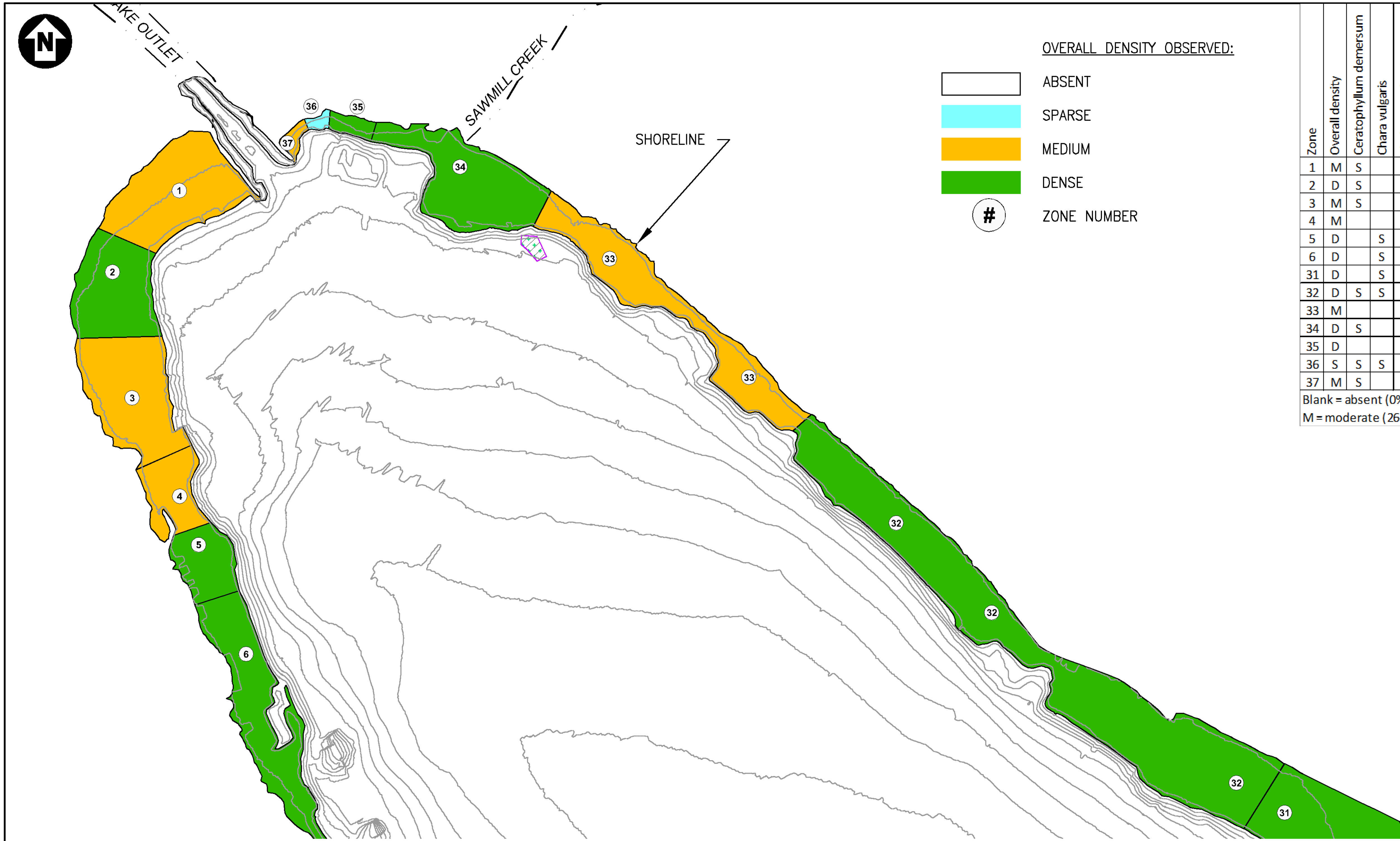
Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

QUALITATIVE MACROPHYTE SURVEY
SOUTH END
JUNE 2021

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452284 2020 ONONDAGA LAKE PVM\10 TECHNICAL CATEGORIES\CAD\2021-MACROPHYTES\452284-M-PHYTE-JUNE-2021.DWG
PLOT DATE: 6/6/2025 4:07 PM PLOTTED BY: RUSSO, JILL [US-US]



OVERALL DENSITY OBSERVED:

- ABSENT
- SPARSE
- MEDIUM
- DENSE
- # ZONE NUMBER

Zone	Overall density	Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum spicatum	Najas sp.	Najas guadalupensis	Nitellopsis obtusa	Nymphaea odorata	Potamogeton crispus	Potamogeton illinoiensis	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Zizania aquatica
1	M	S			S	S			M		S			S	S	S
2	D	S							M	S			S	S		
3	M	S							S	M						S
4	M				S				M							S
5	D		S		S	S			D		S			S	S	
6	D		S						D				S	S	S	
31	D		S			S			D		S		S	S	S	
32	D	S	S		S				D				M		S	
33	M								M				M		S	
34	D	S			S				D				S			
35	D				D	M								S		
36	S	S	S		S	S							S			
37	M	S							M						S	

Blank = absent (0% cover), S = sparse (1-25% cover),
M = moderate (26-75% cover), D = dense (76-100% cover)

- AREA OBSERVED
- REMEDIATION AREA BOUNDARY
- CAPPED AREAS (INCLUDES ALL ISOLATION, THIN LAYER, AND MODIFIED PROTECTIVE CAPS)

NOTES:

1. WATER DEPTH CONTOUR INTERVAL IS 5 FT. (POST-REMEDY CONTOURS SHOWN)
2. OBSERVATIONS ARE TO APPROXIMATELY 7FT DEPTH; SEE REPORT DETAILS.

800 400 0 800 1600

SCALE: 1"=800'

FIGURE 2D.5

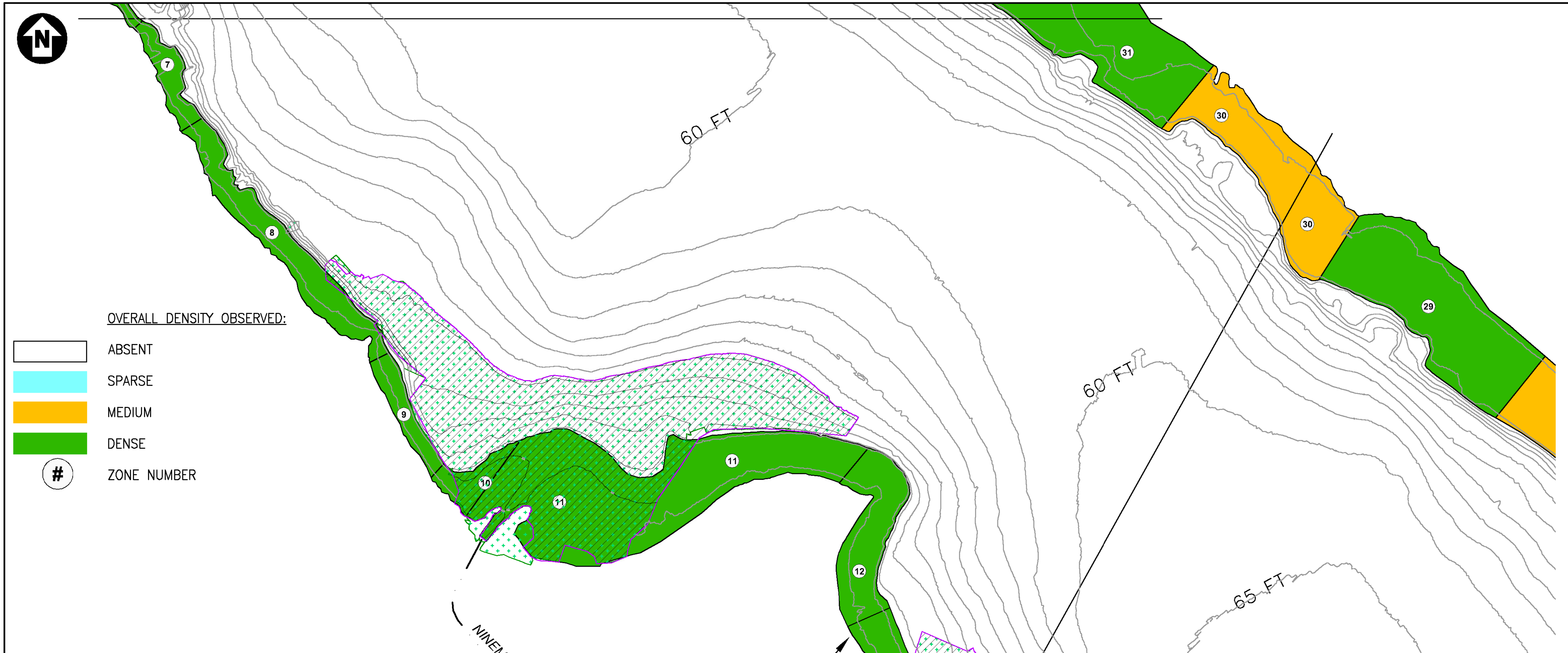
Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

QUALITATIVE MACROPHYTE SURVEY
NORTH END
AUGUST 2021

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452284 2020 ONONDAGA LAKE PVM\10 TECHNICAL CATEGORIES\CAD\2021-MACROPHYTES\452284-M-PHYTE-AUG-2021.DWG
PLOT DATE: 6/6/2025 4:11 PM PLOTTED BY: RUSSO, JILL [US-US]



Zone	Overall density	Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum spicatum	Najas sp.	Najas guadalupensis	Nitellopsis obtusa	Nymphaea odorata	Potamogeton crispus	Potamogeton illinoiensis	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Zizania aquatica
7	D		1		S				D				S			
8	D	S	M		S	S			S							
9	D		1		S				D					S	S	
10	D		M		M		S		M						S	
11	D	M		M	D	S						M		S	M	
12	D	S			M	S			D					S		
13	D	S			S	S			D						S	
29	D	S							D				M		S	
30	M	S			S	S			M		S		M		S	
31	D		S			S			D		S		S	S	S	

Blank = absent (0% cover), S = sparse (1-25% cover),
M = moderate (26-75% cover), D = dense (76-100% cover)

AREA OBSERVED

REMEDIATION AREA BOUNDARY

CAPPED AREAS (INCLUDES ALL ISOLATION, THIN LAYER, AND MODIFIED PROTECTIVE CAPS)

NOTES:

1. WATER DEPTH CONTOUR INTERVAL IS 5 FT. (POST-REMEDY CONTOURS SHOWN)
2. OBSERVATIONS ARE TO APPROXIMATELY 7FT DEPTH; SEE REPORT DETAILS.

800 400 0 800 1600

SCALE: 1"=800'

FIGURE 2D.6

Honeywell

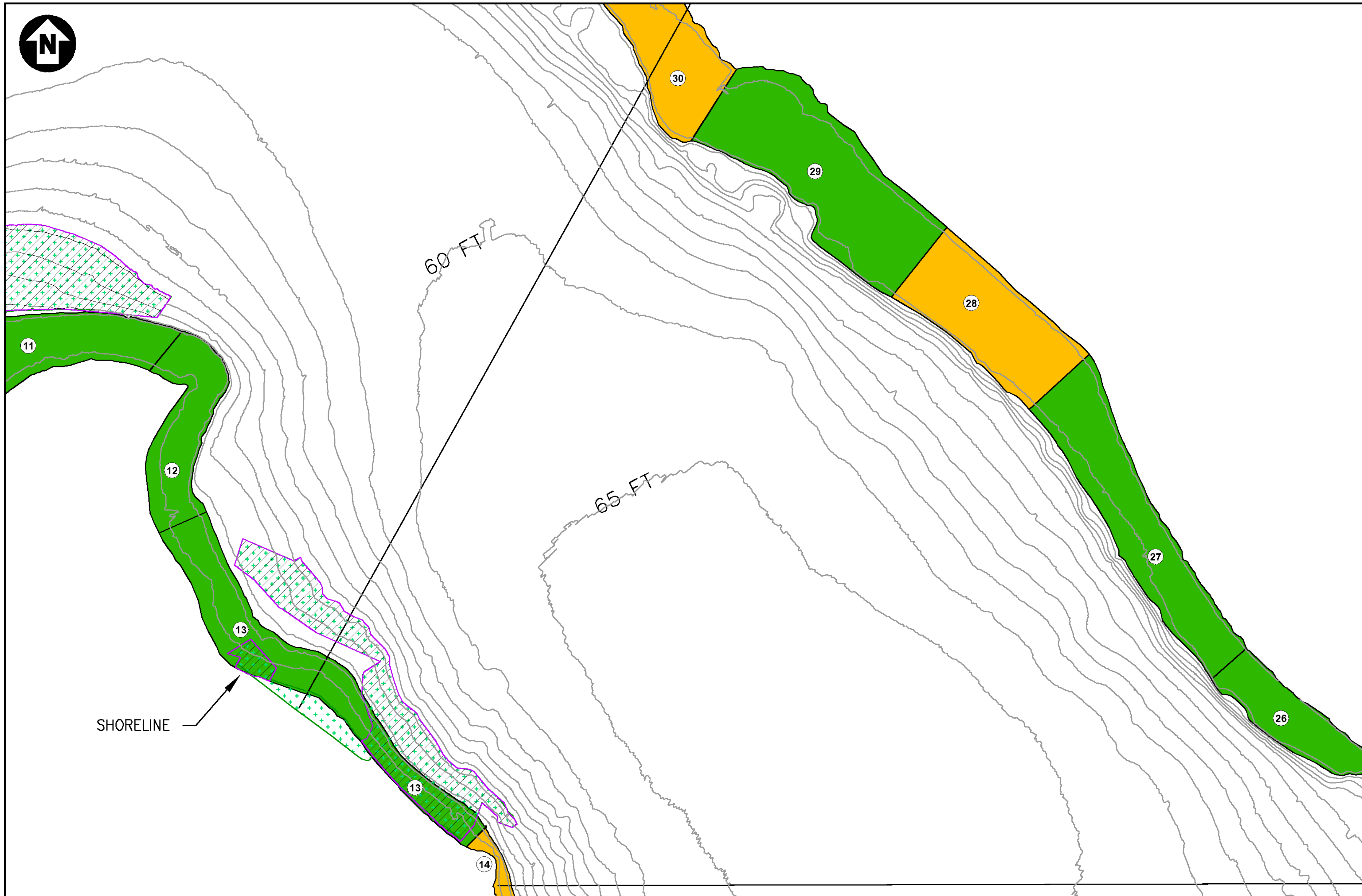
ONONDAGA LAKE
SYRACUSE, NEW YORK

QUALITATIVE MACROPHYTE SURVEY
NORTH MIDDLE
AUGUST 2021

PARSONS

301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452284 2020 ONONDAGA LAKE PVM\10 TECHNICAL CATEGORIES\CAD\2021-MACROPHYTES\452284-M-PHYTE-AUG-2021.DWG
PLOT DATE: 6/6/2025 4:10 PM PLOTTED BY: RUSSO, JILL [US-US]



Zone	Overall density	Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum spicatum	Najas sp.	Najas guadalupensis	Nitellopsis obtusa	Nymphaea odorata	Potamogeton crispus	Potamogeton illinoiensis	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Zizania aquatica
11	D	M		M	D	S						M		S	M	
12	D	S			M	S			D					S		
13	D	S			S	S			D						S	
14	M	M			M	S									M	
26	D					S	S		M				S			
27	D				S	S			D				S		S	
28	M				S				M				S		S	
29	D	S							D				M		S	
30	M	S			S	S			M		S		M		S	

Blank = absent (0% cover), S = sparse (1-25% cover),
M = moderate (26-75% cover), D = dense (76-100% cover)

OVERALL DENSITY OBSERVED:

- ABSENT
- SPARSE
- MEDIUM
- DENSE
- # ZONE NUMBER

- AREA OBSERVED
- REMEDIATION AREA BOUNDARY
- CAPPED AREAS (INCLUDES ALL ISOLATION, THIN LAYER, AND MODIFIED PROTECTIVE CAPS)

NOTES:

1. WATER DEPTH CONTOUR INTERVAL IS 5 FT. (POST-REMEDY CONTOURS SHOWN)
2. OBSERVATIONS ARE TO APPROXIMATELY 7FT DEPTH; SEE REPORT DETAILS.

800 400 0 800 1600

SCALE: 1"=800'

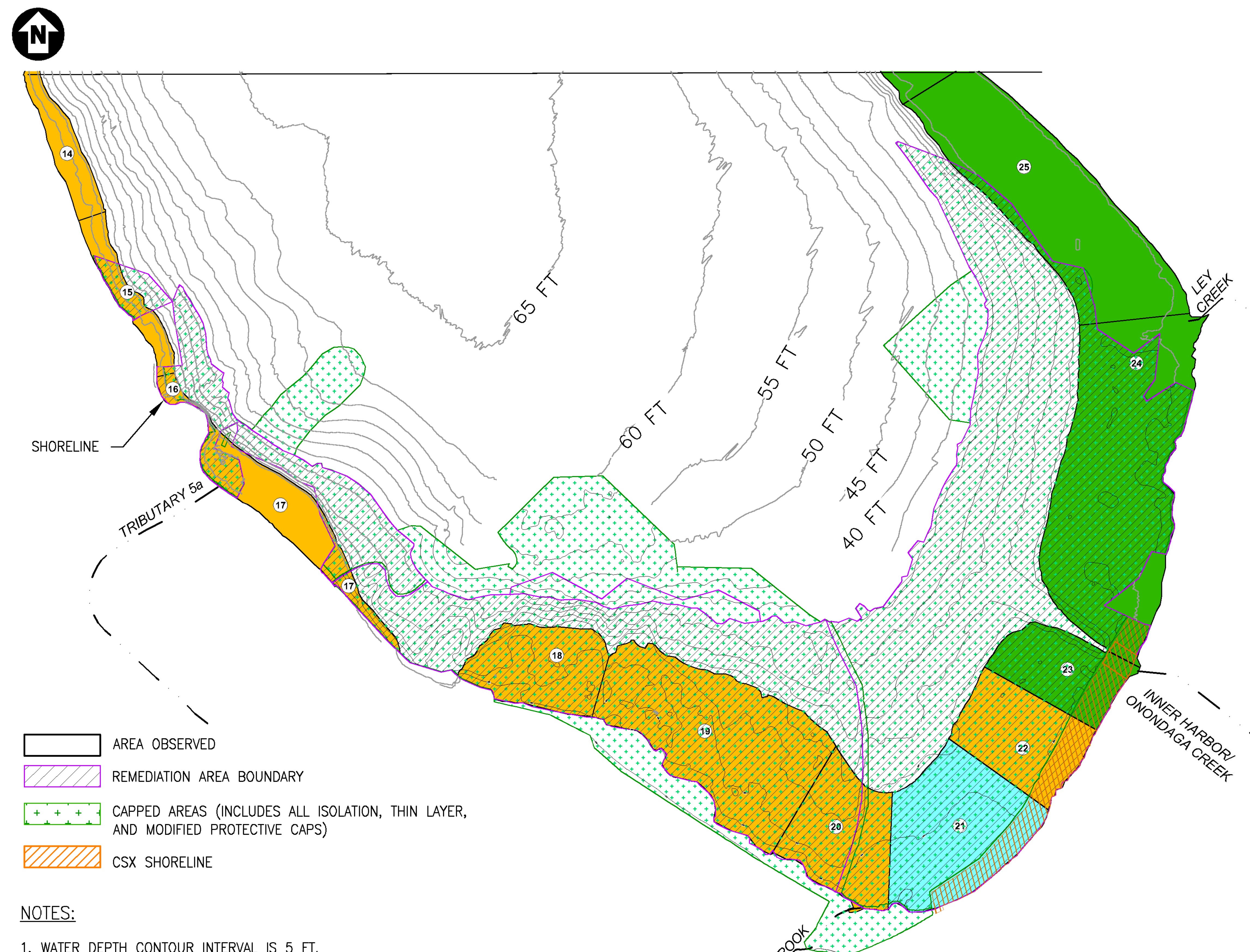
FIGURE 2D.7

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

QUALITATIVE MACROPHYTE SURVEY
SOUTH MIDDLE
AUGUST 2021

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560



Zone	Overall density	Ceratophyllum demersum	Chara vulgaris	Elodea canadensis	Heteranthera dubia	Myriophyllum spicatum	Najas sp.	Najas guadalupensis	Nitellopsis obtusa	Nymphaea odorata	Potamogeton crispus	Potamogeton illinoiensis	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Zizania aquatica
14	M	M			M	S									M	
15	M	S			M	S	S		M		S				S	
16	M	S			M	S			M				M		S	
17	M				M	S			M				M			
18	M	M		M	M	S							S		S	
19	M	S		M	M	S										
20	M	M		M	M	S			M			S			S	
21	S	S			S	S										
22	M					M					S		M			S
23	D				S	S					S		D			S
24	D	S		M	M	S					S				S	
25	D	M		S	M	M		M								

Blank = absent (0% cover), S = sparse (1-25% cover),
M = moderate (26-75% cover), D = dense (76-100% cover)

NOTES:

1. WATER DEPTH CONTOUR INTERVAL IS 5 FT. (POST-REMEDY CONTOURS SHOWN)
2. OBSERVATIONS ARE TO APPROXIMATELY 7FT DEPTH; SEE REPORT DETAILS.

FIGURE 2D.8

Honeywell — ONONDAGA LAKE SYRACUSE, NEW YORK

QUALITATIVE MACROPHYTE SURVEY
SOUTH END
AUGUST 2021

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\452284 2020 ONONDAGA LAKE PVM\10 TECHNICAL CATEGORIES\CAD\2021-MACROPHYTES\452284-M-PHYTE-AUG-2021.DWG
PLOT DATE: 6/6/2025 4:09 PM PLOTTED BY: RUSSO, JILL [US-US]

APPENDIX 2E – FISH AND WILDLIFE DATA

TABLE 2E.1 2021 FISH MONITORING USING GILL NETS[1]

Common Name	Scientific Name	690 Point	Harbor Brook	Hiawatha	Iron Bridge	Ley Creek	Marina	Metro	Ninemile	Outlet	Parsons	PHM	Wastebeds	Total
Brown Trout	*Salmo trutta*				4						2	2	1	**9**
Channel Catfish	*Ictalurus punctatus*	2	4		3	7		1	3	3	6	11		**40**
Common Carp	*Cyprinus carpio*	7	2	3	4	8	8	1	7	8	7		8	**63**
Common Rudd	*Scardinius erythrophthalmus*					2		1		1			1	**5**
Freshwater Drum	*Aplodinotus grunniens*	2	3	3	2	4	1	2	2	1			1	**21**
Gizzard Shad	*Dorosoma cepedianum*	20	11	7	9	12	2	16	33	10	8	4	20	**152**
Greater Redhorse	*Moxostoma valenciennesi*	4	2	1		1	1		1	2	3	1	4	**20**
Lake Sturgeon	*Acipenser fulvescens*											1		**1**
Largemouth Bass	*Micropterus salmoides*	1			1	2		3		6		2		**15**
Longnose Gar	*Lepisosteus osseus*					1				1				**2**
Northern Pike	*Esox lucius*		1	1	1			1	1	2		1		**8**
Quillback	*Carpiodes cyprinus*						1						1	**2**
Shorthead Redhorse	*Moxostoma macrolepidotum*	1		1			1			1		2		**6**
Smallmouth Bass	*Micropterus dolomieu*	5	7	7	6	3	1	1	4	11	4	2	4	**55**
Tiger Muskellunge	*Esox masquinongy x Esox lucius*							1						**1**
Walleye	*Sander vitreus*	17	61	19	32	15	25	21	17	61	16	42	15	**341**
White Perch	*Morone americana*		2		5				1			1		**9**
White Sucker	*Catostomus commersonii*		1		1	1	2					2	6	**13**
	Abundance	**59**	**94**	**42**	**68**	**56**	**42**	**48**	**69**	**107**	**46**	**71**	**61**	**763**
	Species Richness	**9**	**10**	**8**	**11**	**11**	**9**	**10**	**9**	**12**	**7**	**12**	**10**	**18**

[1]A map depicting fish sampling locations can be found in Figure 2.6

TABLE 2E.2 2021 FISH MONITORING USING TRAP NETS[1]

Common Name	Scientific Name	690 Point	Harbor Brook	Iron Bridge	Ley Creek	Maple Bay	Marina	Metro	Ninemile	Parsons	PHM	Willow Bay	Total
Alewife	*Alosa pseudoharengus*	79	1091	1109	71	21	630	48	38	36	55	47	3225
American Eel	*Anguilla rostrata*		1										1
Banded Killifish	*Fundulus diaphanus*	888	284	3057	5651	8334	4272	8468	11020	2863	2091	3947	50875
Black Crappie	*Pomoxis nigromaculatus*		2	2		2				6	3	9	24
Bluegill	*Lepomis macrochirus*	493	750	413	277	623	459	825	505	480	451	995	6271
Bluntnose Minnow	*Pimephales notatus*				2	63	17		14		43	50	189
Bowfin	*Amia calva*	2	6	1	6	2	2	4	2	4	10	7	46
Brook Silverside	*Labidesthes sicculus*				1	3							4
Brown Bullhead	*Ameiurus nebulosus*	11	38	44	42	16	17	59	242	33	40	27	569
Channel Catfish	*Ictalurus punctatus*		1	1							1		3
Common Carp	*Cyprinus carpio*	5	10	12	15	3	10	18	15	5	5	13	111
Common Rudd	*Scardinius erythrophthalmus*	10	11						2	2	1		26
Common Shiner	*Luxilus cornutus*	2		7	1	4		1		1	1		17
Emerald Shiner	*Notropis atherinoides*	3							1		4		8
Fathead Minnow	*Pimephales promelas*				5		4	1				3	13
Freshwater Drum	*Aplodinotus grunniens*		2	1			2						5
Gizzard Shad	*Dorosoma cepedianum*	9	75	38	97	4	27	429	9	3	39	34	764
Golden Shiner	*Notemigonus crysoleucas*	54	25	13	24	19	15	6	20	11	16	6	209
Green Sunfish	*Lempomis cyanellus*	5	10	31	243	15	52	108	22	45	3	23	557
Largemouth Bass	*Micropterus salmoides*	281	118	85	424	52	646	709	56	175	336	285	3167
Longnose Gar	*Lepisosteus osseus*		1	17	1	2	1		2	1	7	2	34
Northern Pike	*Esox lucius*							1				1	2
Pumpkinseed	*Lepomis gibbosus*	21	66	86	128	48	18	373	30	70	31	88	959
Rock Bass	*Ambloplites rupestris*	47	94	64	40	58	71	156	30	75	20	46	701
Round Goby	*Neogobius melanostomus*	168	79	179	315	72	272	488	70	273	337	271	2524
Sea Lamprey	*Petromyzon marinus*										1		1
Shorthead Redhorse	*Moxostoma macrolepidotum*	1		2		1		2					6
Smallmouth Bass	*Micropterus dolomieu*					1	2					2	5
Tadpole Madtom	*Noturus gyrinus*									1	1		2
Tiger Muskellunge	*Esox masquinongy x Esox lucius*							1					1
Walleye	*Sander vitreus*									1			1
White Perch	*Morone americana*	12	19	109	28	2	5	22	2	5	3	7	214
White Sucker	*Catostomus commersonii*	5	15	3	9	2	1	14	1	3	2	1	56
Yellow Bullhead	*Ameiurus natalis*		1		1	6		1	6			3	18
Yellow Perch	*Perca flavescens*	29	24	199	25	11	9	113	9	40	50	64	573
	Abundance	**2125**	**2723**	**5473**	**7406**	**9364**	**6532**	**11847**	**12096**	**4133**	**3551**	**5931**	**71181**
	Species Richness	**20**	**23**	**22**	**22**	**24**	**21**	**22**	**21**	**22**	**25**	**23**	**35**

[1]A map depicting fish sampling locations can be found in Figure 2.6

TABLE 2E.3 2021 FISH MONITORING USING SEINE NETS[1]

Common Name	Scientific Name	690 Point	Harbor Brook	Iron Bridge	Ley Creek	Maple Bay	Marina	Metro	Ninemile	Parsons	PHM	Willow Bay	Total
Banded Killifish	*Fundulus diaphanus*	313	66	273	408	633	242	195	272	354	749	234	3739
Bluegill	*Lepomis macrochirus*	4	1	1			1				3		10
Brown Bullhead	*Ameiurus nebulosus*	1	4	6	1			49	32	7	25	4	129
Common Carp	*Cyprinus carpio*				1			5	1	4			11
Emerald Shiner	*Notropis atherinoides*	1											1
Green Sunfish	*Lempomis cyanellus*	2		20			1	2	2			7	34
Largemouth Bass	*Micropterus salmoides*	103	60	90	153	53	107	119	77	108	90	12	972
Longnose Gar	*Lepisosteus osseus*									1		1	2
Rock Bass	*Ambloplites rupestris*	70	5	26	20	2		6	7	27	64	12	239
Round Goby	*Neogobius melanostomus*	167	17	62	46	186	51	14	491	155	825	374	2388
Smallmouth Bass	*Micropterus dolomieu*											1	1
Yellow Bullhead	*Ameiurus natalis*				1					4			5
Yellow Perch	*Perca flavescens*	9		1					1		13	7	31
Common Shiner	*Luxilus cornutus*	1											1
Fathead Minnow	*Notropis atherinoides*			2									2
Creek Chub	*Semotilus atromaculatus*			2									2
Golden Shiner	*Notemigonus crysoleucas*				3					6			9
Pumpkinseed	*Lepomis gibbosus*						3						3
Channel Catfish	*Ictalurus punctatus*									1			1
	Abundance	671	153	483	633	874	405	390	883	667	1769	652	7580
	Species Richness	10	6	10	8	4	6	7	8	10	7	9	19

[1]A map depicting fish sampling locations can be found in Figure 2.6

TABLE 2E.4 FISH MONITORING - RELATIVE ABUNDANCE BASELINE COMPARISON

Scientific Name	Common Name	Lakewide Baseline (2008-2011)	Lakewide Construction (2012-2016)	Lakewide 2017	Lakewide 2018	Lakewide 2019	Lakewide 2020	Change Lakewide	Lakewide 2021	Remediation Area Baseline (2008-2011)	Remediation Area Construction (2012-2016)	Remediation Area 2017	Remediation Area 2018	Remediation Area 2019	Remediation Area 2020
Acipenser fulvescens	Lake Sturgeon	0.03%	0.03%	0.02%	0.004%	-	-	+	0.001%	0.02%	0.03%	0.02%	0.004%	-	-
Alosa pseudoharengus	Alewife	5.2%	5.29%	1.9%	2.9%	0.31%	5.92%	-	4.06%	6.7%	6.19%	2.2%	0.3%	0.38%	4.28%
Ambloplites rupestris	Rock Bass	1.0%	1.08%	1.0%	1.1%	2.65%	4.90%	-	1.18%	1.0%	1.53%	0.9%	0.7%	2.59%	5.46%
Ameiurus natalis	Yellow Bullhead	0.08%	0.03%	0.03%	0.05%	0.24%	0.10%	-	0.03%	0.03%	0.01%	0.01%	0.01%	0.28%	0.02%
Ameiurus nebulosus	Brown Bullhead	2.4%	1.88%	4.3%	0.6%	4.08%	2.03%	-	0.88%	3.1%	2.26%	5.8%	0.5%	2.46%	3.30%
Amia calva	Bowfin	0.6%	0.41%	0.1%	0.06%	0.15%	0.12%	-	0.06%	0.7%	0.57%	0.1%	0.04%	0.16%	0.15%
Anguilla rostrata	American Eel	-	-	-	-	-	-	+	0.001%	-	-	-	-	-	-
Aplodinotus grunniens	Freshwater Drum	0.4%	0.38%	0.4%	0.2%	0.31%	0.51%	-	0.03%	0.5%	0.45%	0.4%	0.2%	0.18%	0.26%
Carassius auratus	Goldfish	0.4%	0.03%	0.01%	0.00%	-	-	-	-	0.7%	0.07%	0.01%	0.01%	-	-
Carpoides cyprinus	Quillback	0.02%	0.01%	0.01%	0.01%	0.02%	0.01%	-	0.003%	0.02%	0.00%	0.02%	0.01%	0.01%	-
Catostomus commersonii	White Sucker	0.7%	0.22%	0.1%	0.1%	0.04%	0.06%	+	0.09%	0.9%	0.36%	0.1%	0.1%	0.03%	0.08%
Culaea inconstans	Brook Stickleback	0.05%	0.08%	0.00%	-	0.01%	0.03%	-	-	0.02%	0.03%	0.01%	-	0.02%	0.05%
Cyprinus carpio	Common Carp	1.3%	0.99%	0.5%	0.6%	1.61%	0.85%	-	0.23%	1.3%	1.05%	0.4%	0.4%	0.84%	0.92%
Dorosoma cepedianum	Gizzard Shad	2.4%	1.1%	0.8%	27.0%	2.22%	4.25%	-	1.15%	4.3%	1.8%	1.1%	45.9%	3.63%	6.61%
Esox masquinongy x Esox lucius	Tiger Muskellunge	0.03%	0.05%	0.01%	-	0.01%	-	+	0.003%	0.01%	0.06%	0.01%	-	0.01%	-
Esox niger	Chain Pickerel	0.002%	-	0.00%	-	-	-	-	-	0.02%	0.03%	-	-	-	-
Esox lucius	Northern Pike	0.1%	0.07%	0.03%	0.02%	0.02%	0.03%	-	0.01%	0.1%	-	0.01%	0.02%	0.02%	0.01%
Etheostoma olmstedi	Tesselated Darter	0.3%	0.09%	0.00%	0.002%	0.004%	-	-	-	0.1%	0.07%	0.01%	0.004%	-	-
Fundulus diaphanus	Banded Killifish	32.4%	44.1%	36.5%	36.6%	37.11%	34.04%	+	68.68%	24.0%	34.28%	29.5%	30.3%	40.90%	33.60%
Ictalurus punctatus	Channel Catfish	0.7%	0.31%	0.1%	0.1%	0.16%	0.29%	-	0.06%	0.9%	0.45%	0.1%	0.1%	0.21%	0.37%
Labidesthes sicculus	Brook Silverside	0.2%	0.07%	0.05%	0.009%	0.01%	0.04%	-	0.01%	0.3%	0.07%	0.02%	0.004%	0.01%	-
Lepisosteus osseus	Longnose Gar	0.4%	0.18%	0.01%	0.02%	0.06%	0.03%	+	0.05%	0.6%	0.31%	0.02%	0.01%	0.05%	0.02%
Lepomis cyanellus	Green Sunfish	0.2%	0.37%	1.5%	0.4%	1.54%	1.33%	-	0.74%	0.1%	0.25%	1.7%	0.4%	2.14%	1.62%
Lepomis gibbosus	Pumpkinseed	8.8%	2.57%	1.0%	0.6%	0.38%	0.67%	+	1.21%	8.8%	1.92%	0.6%	0.4%	0.40%	0.43%
Lepomis macrochirus	Bluegill	13.9%	12.12%	12.3%	7.9%	20.32%	9.04%	-	7.90%	12.5%	13.49%	7.5%	2.8%	17.86%	9.02%
Micropterus dolomieu	Smallmouth Bass	0.3%	0.26%	0.1%	0.2%	0.11%	0.27%	-	0.08%	0.3%	0.25%	0.1%	0.1%	0.11%	0.28%
Micropterus salmoides	Largemouth Bass	13.1%	14.29%	22.5%	14.3%	15.35%	9.02%	-	5.22%	15.0%	16.55%	31.1%	12.3%	16.01%	10.20%
Morone americana	White Perch	1.7%	1.02%	0.2%	0.4%	0.17%	0.17%	+	0.28%	2.8%	3.14%	0.2%	0.6%	0.26%	0.19%
Moxostoma anisurum	Silver Redhorse	0.03%	0.01%	0.01%	-	0.004%	-	-	-	0.02%	0.01%	0.02%	-	-	-
Moxostoma macrolepidotum	Shorthead Redhorse	0.1%	0.08%	0.1%	0.02%	0.03%	0.05%	-	0.02%	0.2%	0.07%	0.1%	0.01%	0.03%	0.03%
Neogobius melanostomus	Round Goby	3.3%	6.29%	12.3%	4.3%	10.99%	23.37%	-	6.18%	2.6%	6.15%	14.2%	3.1%	9.55%	20.94%
Notemigonus crysoleucas	Golden Shiner	1.8%	0.72%	0.3%	0.2%	0.18%	0.09%	+	0.27%	2.2%	0.66%	0.3%	0.2%	0.30%	0.09%
Notropis atherinoides	Emerald Shiner	0.1%	0.24%	0.1%	0.6%	0.09%	0.11%	-	0.01%	0.2%	0.32%	0.1%	0.4%	0.13%	0.18%
Noturus gyrinus	Tadpole Madtom	0.1%	0.10%	0.09%	0.01%	0.05%	0.04%	-	0.003%	0.1%	0.17%	0.03%	0.01%	0.08%	0.06%
Noturus insignis	Margined Madtom	-	-	0.00%	0.01%	0.01%	-	-	-	-	-	0.01%	-	-	-
Perca flavescens	Yellow Perch	1.6%	1.26%	2.5%	1.0%	0.53%	0.17%	+	0.76%	1.5%	1.38%	1.8%	0.5%	0.17%	0.11%
Petromyzon marinus	Sea Lamprey	-	-	-	-	-	-	+	0.001%	-	-	-	-	-	-
Pimephales notatus	Bluntnose Minnow	0.2%	0.36%	0.7%	0.11%	0.03%	0.39%	-	0.24%	0.3%	0.46%	0.8%	0.05%	0.01%	-
Pomoxis nigromaculatus	Black Crappie	0.16%	0.04%	0.02%	0.0%	0.02%	-	+	0.03%	0.04%	0.01%	0.01%	-	0.03%	-
Salmo trutta	Brown Trout	0.1%	0.05%	0.0%	0.01%	0.01%	0.03%	-	0.01%	0.1%	0.07%	-	0.01%	0.01%	0.02%
Sander vitreus	Walleye	1.2%	0.96%	0.6%	0.5%	0.87%	1.78%	-	0.43%	1.1%	0.95%	0.6%	0.3%	0.60%	1.44%
Scardinius erythrophthalmus	Common Rudd	0.8%	1.09%	0.08%	0.1%	0.20%	0.07%	-	0.04%	1.3%	2.28%	0.04%	0.1%	0.33%	0.10%
Semotilus atromaculatus	Creek Chub	0.01%	0.02%	0.01%	-	0.01%	0.01%	-	0.003%	0.02%	0.05%	0.02%	-	0.02%	0.01%
Cyprinella spiloptera	Spotfin Shiner	0.003%	0.005%	-	0.00%	-	-	-	-	0.004%	0.01%	-	0.01%	-	-
Hypentelium nigricans	Northern Hogsucker	-	-	-	0.01%	-	-	-	-	-	-	-	0.01%	-	-
Luxilus cornutus	Common Shiner	0.02%	0.02%	-	0.00%	0.00%	0.03%	-	0.02%	0.03%	0.03%	-	0.01%	0.01%	0.05%
Moxostoma valenciennesi	Greater Redhorse	-	-	-	0.05%	0.06%	0.10%	-	0.03%	-	-	-	0.07%	0.07%	0.06%
Percina caprodes	Common Logperch	0.05%	-	-	0.002%	0.004%	-	-	-	0.20%	-	-	0.01%	0.01%	-
Pimephales promelas	Fathead Minnow	0.01%	0.01%	-	0.01%	0.05%	0.06%	-	0.02%	0.02%	0.02%	-	-	0.07%	0.05%
Exoglossum maxillingua	Cutlips Minnow	-	-	-	-	0.004%	-	-	-	-	-	-	-	-	-
Oncorhynchus mykiss	Rainbow Trout	0.00%	-	-	-	0.004%	-	-	-	0.01%	-	-	-	-	-
Rhinichthys atratulus	Blacknose Dace	-	-	-	-	0.004%	-	-	-	-	-	-	-	0.01%	-

TABLE 2E.4 FISH MONITORING - RELATIVE ABUNDANCE BASELINE COMPARISON

Scientific Name	Common Name	Change Remediation Area	Remediation Area 2021	Unremediated Baseline (2008-2011)	Unremediated Construction (2012-2016)	Unremediated Area 2017	Unremediated Area 2018	Unremediated Area 2019	Unremediated Area 2020	Unremediated Area Change	Unremediated Area 2021
Acipenser fulvescens	Lake Sturgeon	-	-	0.03%	0.03%	0.03%	0.01%	-	-	+	0.003%
Alosa pseudoharengus	Alewife	-	3.09%	3.6%	0.03%	1.4%	6.4%	0.22%	8.07%	-	5.26%
Ambloplites rupestris	Rock Bass	-	1.31%	1.3%	0.83%	1.0%	1.8%	2.72%	4.16%	-	1.02%
Ameiurus natalis	Yellow Bullhead	+	0.03%	0.1%	0.04%	0.1%	0.1%	0.19%	0.21%	-	0.03%
Ameiurus nebulosus	Brown Bullhead	-	1.18%	1.8%	1.67%	2.1%	0.7%	6.09%	0.37%	+	0.51%
Amia calva	Bowfin	-	0.05%	0.6%	0.33%	0.2%	0.1%	0.13%	0.09%	-	0.06%
Anguilla rostrata	American Eel	+	0.002%	-	-	-	-	-	-	-	-
Aplodinotus grunniens	Freshwater Drum	-	0.03%	0.3%	0.34%	0.3%	0.3%	0.47%	0.84%	-	0.03%
Carassius auratus	Goldfish	-	-	0.5%	0.02%	-	0.0%	-	-	-	-
Carpoides cyprinus	Quillback	-	-	0.01%	0.01%	0.01%	0.01%	0.02%	0.03%	-	0.01%
Catostomus commersonii	White Sucker	+	0.11%	0.5%	0.19%	0.1%	0.0%	0.04%	0.04%	+	0.06%
Culaea inconstans	Brook Stickleback	-	-	0.07%	0.11%	-	-	-	-	-	-
Cyprinus carpio	Common Carp	-	0.25%	1.4%	0.95%	0.5%	0.8%	2.58%	0.75%	-	0.21%
Dorosoma cepedianum	Gizzard Shad	-	1.64%	0.7%	0.6%	0.3%	1.2%	0.46%	1.18%	-	0.55%
Esox masquinongy x Esox lucius	Tiger Muskellunge	+	0.005%	0.04%	0.08%	-	-	0.01%	-	-	-
Esox niger	Chain Pickerel	-	-	0.004%	0.06%	0.01%	-	-	-	-	-
Esox lucius	Northern Pike	-	0.01%	0.1%	-	0.1%	0.0%	0.01%	0.04%	-	0.02%
Etheostoma olmstedi	Tesselated Darter	-	-	0.4%	0.11%	-	-	0.01%	-	-	-
Fundulus diaphanus	Banded Killifish	+	69.80%	37.8%	49.62%	46.8%	45.2%	32.37%	34.63%	+	67.28%
Ictalurus punctatus	Channel Catfish	-	0.06%	0.5%	0.22%	0.1%	0.2%	0.10%	0.19%	-	0.05%
Labidesthes sicculus	Brook Silverside	+	0.002%	0.1%	0.06%	0.1%	0.02%	0.01%	0.09%	-	0.01%
Lepisosteus osseus	Longnose Gar	-	0.02%	0.3%	0.11%	0.01%	0.02%	0.06%	0.03%	+	0.09%
Lepomis cyanellus	Green Sunfish	-	1.00%	0.3%	0.45%	1.2%	0.5%	0.79%	0.94%	-	0.43%
Lepomis gibbosus	Pumpkinseed	+	1.56%	9.3%	2.95%	1.6%	0.8%	0.35%	0.98%	-	0.77%
Lepomis macrochirus	Bluegill	-	7.57%	13.8%	11.20%	19.4%	14.8%	23.40%	9.08%	-	8.31%
Micropterus dolomieu	Smallmouth Bass	-	0.05%	0.5%	0.24%	0.1%	0.2%	0.11%	0.26%	-	0.10%
Micropterus salmoides	Largemouth Bass	-	5.42%	10.9%	12.78%	9.8%	16.9%	14.53%	7.48%	-	4.98%
Morone americana	White Perch	+	0.21%	1.3%	0.29%	0.2%	0.1%	0.06%	0.15%	+	0.37%
Moxostoma anisurum	Silver Redhorse	-	-	0.03%	0.02%	-	-	0.01%	-	-	-
Moxostoma macrolepidotum	Shorthead Redhorse	-	0.01%	0.1%	0.08%	0.04%	0.02%	0.03%	0.07%	-	0.02%
Neogobius melanostomus	Round Goby	-	5.18%	3.7%	6.32%	9.6%	6.0%	12.79%	26.55%	-	7.42%
Notemigonus crysoleucas	Golden Shiner	+	0.34%	1.4%	0.79%	0.3%	0.2%	0.03%	0.09%	+	0.19%
Notropis atherinoides	Emerald Shiner	-	0.01%	0.1%	0.19%	0.1%	0.8%	0.03%	0.01%	+	0.02%
Noturus gyrinus	Tadpole Madtom	-	0.002%	0.04%	0.05%	0.2%	0.0%	0.02%	0.01%	-	0.003%
Noturus insignis	Margined Madtom	-	-	-	-	-	0.02%	0.02%	-	-	-
Perca flavescens	Yellow Perch	+	0.57%	1.8%	1.22%	3.4%	1.6%	0.99%	0.25%	+	1.00%
Petromyzon marinus	Sea Lamprey	-	-	-	-	-	-	-	-	+	0.003%
Pimephales notatus	Bluntnose Minnow	+	0.04%	0.2%	0.30%	0.4%	0.2%	0.06%	0.90%	-	0.49%
Pomoxis nigromaculatus	Black Crappie	+	0.02%	0.3%	0.06%	0.03%	0.02%	-	-	+	0.05%
Salmo trutta	Brown Trout	-	0.005%	0.04%	0.03%	0.02%	0.01%	0.01%	0.03%	-	0.02%
Sander vitreus	Walleye	-	0.34%	1.3%	0.96%	0.5%	0.8%	1.20%	2.22%	-	0.55%
Scardinius erythrophthalmus	Common Rudd	-	0.06%	0.3%	0.36%	0.1%	0.0%	0.03%	0.03%	-	0.01%
Semotilus atromaculatus	Creek Chub	-	-	0.003%	0.003%	-	-	-	-	+	0.01%
Cyprinella spiloptera	Spotfin Shiner	-	-	0.001%	0.003%	-	0.01%	-	-	-	-
Hypentelium nigricans	Northern Hogsucker	-	-	-	-	-	0.01%	-	-	-	-
Luxilus cornutus	Common Shiner	-	0.01%	0.003%	0.003%	-	0.01%	0.01%	-	+	0.03%
Moxostoma valenciennesi	Greater Redhorse	-	0.02%	-	-	-	0.07%	0.04%	0.16%	-	0.03%
Percina caprodes	Common Logperch	-	-	0.02%	-	-	0.01%	-	-	-	-
Pimephales promelas	Fathead Minnow	-	0.01%	0.007%	0.01%	-	-	0.02%	0.09%	-	0.02%
Exoglossum maxillingua	Cutlips Minnow	-	-	-	-	-	-	0.01%	-	-	-
Oncorhynchus mykiss	Rainbow Trout	-	-	-	-	-	-	-	-	-	-
Rhinichthys atratulus	Blacknose Dace	-	-	-	-	-	-	-	-	-	-

Table 2E.5 FISH OBSERVED DURING MONITORING FOR ADULT NORTHERN PIKE AND WETLAND SPAWNING SPECIES[1]

Location[1]	Date	Banded Killifish	Bluegill	Bluntnose Minnow	Brown Bullhead	Brown Trout	Common Carp	Creek Chub	Emerald Shiner	Gizzard Shad	Golden Shiner	Green Sunfish	Large-mouth Bass	Pumpkin-seed	Rock Bass	Round Goby	White Perch	White Sucker	Yellow Perch
Location 3	3/18/2021	15	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	0
Location 3	3/19/2021	10	35	0	2	0	0	0	0	0	0	2	2	3	6	3	0	0	2
Location 1	3/23/2021	40	30	0	1	0	0	1	12	1	0	4	1	1	9	37	0	0	0
Location 3	3/23/2021	104	28	0	6	0	0	1	0	0	5	9	1	2	16	21	0	0	1
Location 1	3/24/2021	89	26	0	2	1	0	0	4	1	0	4	1	3	12	36	0	1	0
Location 3	3/24/2021	81	21	1	17	0	0	0	0	0	1	3	2	2	21	15	0	0	3
Location 1	3/31/2021	166	56	0	0	0	0	0	0	0	0	0	2	2	28	69	0	3	0
Location 3	3/31/2021	0	1	0	0	0	0	0	0	0	0	0	1	0	1	5	0	0	0
Location 2	4/8/2021	1	67	0	5	0	1	0	1	0	0	4	4	1	15	123	0	0	0
Location 2	4/9/2021	1	10	0	10	0	0	0	0	0	0	3	1	2	15	22	1	0	0
Location 3	4/9/2021	9	17	1	1	0	0	0	1	0	0	2	4	0	18	36	1	0	2
Location 2	4/13/2021	4	11	0	0	0	0	0	0	0	0	0	0	2	16	29	0	0	0
Location 3	4/13/2021	0	8	0	0	0	0	0	0	0	0	0	2	1	17	15	0	0	0
Location 2	4/14/2021	0	30	0	1	0	0	0	0	1	0	2	2	1	7	46	1	0	0
Location 3	4/14/2021	0	18	0	0	0	0	0	0	0	0	0	1	1	8	36	1	0	1
Location 2	4/20/2021	1	1	0	0	0	0	0	0	0	0	0	1	0	3	6	0	0	0
Location 3	4/20/2021	1	7	0	2	0	1	0	1	0	1	6	1	4	10	12	0	0	0

[1]A map depicting fish sampling locations can be found in Figure 2.7

Table 2E.6 FISH OBSERVED DURING MONITORING FOR JUVENILE NORTHERN PIKE AND WETLAND SPAWNING SPECIES[1]

Collection Method	Green Sunfish	Banded Killifish	Largemouth Bass	Brown Bullhead	Bluegill
Minnow Trap	26	19	2	2	4
Visual Observations	0	0	1	0	0

[1]A map depicting fish sampling locations can be found in Figure 2.7

TABLE 2E.7 2021 WILDLIFE OBSERVATIONS

Scientific Name	Common Name	Type of Observation	Habitat Use	Habitat Plan Representative Species[1]	Remediation Area A	Remediation Area B	Remediation Area C	Remediation Area D	Remediation Area E
Birds									
Empidonax alnorum	Alder Flycatcher	Visual	General					X	
Anas rubripes	American Black Duck	Visual	General					X	
Fulica americana	American Coot	Visual	General		X				
Corvus brachyrhynchos	American Crow	Visual	General					X	
Spinus tristis	American goldfinch	Visual	General		X			X	X
Turdus migratorius	American Robin	Visual	General					X	X
Haliaeetus leucocephalus	Bald Eagle	Visual	General, Hunting		X	X		X	X
Hirundo rustica	Barn Swallow	Visual	General		X	X		X	X
Megaceryle alcyon	Belted Kingfisher	Visual	General, Hunting	X	X				
Chlidonias niger	Black Tern	Visual	General, Feeding						X
Nycticorax nycticorax	Black-crowned Night Heron	Visual	General, Hunting		X			X	
Branta bernicla	Brant	Visual	General				X		
Branta canadensis	Canada Goose	Visual	General, Nesting, Feeding					X	X
Hydroprogne caspia	Caspian Tern	Visual	General		X	X		X	X
Quiscalus quiscula	Common Grackle	Visual	General					X	
Gavia immer	Common Loon	Visual	General, Feeding				X		
Mergus merganser	Common Merganser	Visual	General					X	
Sterna hirundo	Common Tern	Visual	General	X					X
Geothlypis trichas	Common Yellowthroat	Visual	General		X			X	
Phalacrocorax auritus	Double-crested Cormorant	Visual	General, Feeding		X		X	X	X
Sturnus vulgaris	European Starling	Visual	General, Feeding					X	
Passerella iliaca	Fox Sparrow	Visual	General					X	
Larus marinus	Great Black-backed Gull	Visual	General					X	
Ardea herodias	Great Blue Heron	Visual	General, Hunting	X	X	X		X	X
Ardea alba	Great Egret	Visual	General, Hunting		X		X	X	X
Butorides virescens	Green Heron	Visual	General, Hunting	X	X			X	X
Larus argentatus	Herring Gull	Visual	General						X
Charadrius vociferus	Killdeer	Visual	General			X			X
Anas platyrhynchos	Mallard	Visual	General, Nesting	X	X	X	X	X	X
Zenaida macroura	Mourning Dove	Visual	General					X	
Cygnus olor	Mute Swan	Visual	General		X		X	X	
Cardinalis cardinalis	Northern Cardinal	Visual	General		X				
Pandion haliaetus	Osprey	Visual	General, Hunting	X	X	X		X	X
Podilymbus podiceps	Pied-billed Grebe	Visual	General, Nesting		X				
Aythya americana	Redhead	Visual	General, Feeding					X	
Buteo jamaicensis	Red-tailed Hawk	Visual	General		X				
Agelaius phoeniceus	Red-winged Blackbird	Visual	General	X	X	X		X	X
Larus delawarensis	Ring-billed Gull	Visual	General		X	X		X	X
Bubo scandiacus	Snowy Owl	Visual	General				X		
Melospiza melodia	Song Sparrow	Visual	General		X			X	X
Actitis macularius	Spotted Sandpiper	Visual	General	X				X	
Tachycineta bicolor	Tree Swallow	Visual	General		X	X		X	X
Cathartes aura	Turkey Vulture	Visual	General, Feeding					X	
Rallus limicola	Virginia Rail	Visual	General		X				
Setophaga petechia	Yellow Warbler	Visual	General					X	
Tringa sp.	Yellowlegs	Visual	General					X	

TABLE 2E.7 2021 WILDLIFE OBSERVATIONS

Scientific Name	Common Name	Type of Observation	Habitat Use	Habitat Plan Representative Species[1]	Remediation Area A	Remediation Area B	Remediation Area C	Remediation Area D	Remediation Area E
Fish[2]									
Alosa pseudoharengus	Alewife	Visual	General		X	X	X	X	X
Anguilla rostrata	American Eel	Visual	General					X	
Fundulus diaphanus	Banded Killifish	Visual	General		X	X	X	X	X
Pomoxis nigromaculatus	Black Crappie	Visual	General				X	X	
Lepomis macrochirus	Bluegill	Visual	General		X	X	X	X	X
Pimephales notatus	Bluntnose Minnow	Visual	General		X			X	X
Amia calva	Bowfin	Visual	General		X	X	X	X	X
Labidesthes sicculus	Brook Silverside	Visual	General						X
Ameiurus nebulosus	Brown Bullhead	Visual	General		X	X	X	X	X
Salmo trutta	Brown Trout	Visual	General	X			X		
Ictalurus punctatus	Channel Catfish	Visual	General		X	X	X	X	X
Cyprinus carpio	Common Carp	Visual	General		X	X	X	X	X
Scardinius erythrophthalmus	Common Rudd	Visual	General		X	X	X	X	X
Luxilus cornutus	Common Shiner	Visual	General			X	X		X
Semotilus atromaculatus	Creek Chub	Visual	General					X	
Notropis atherinoides	Emerald Shiner	Visual	General	X	X	X		X	
Pimephales promelas	Fathead Minnow	Visual	General						X
Aplodinotus grunniens	Freshwater Drum	Visual	General		X	X		X	X
Dorosoma cepedianum	Gizzard Shad	Visual	General		X	X	X	X	X
Notemigonus crysoleucas	Golden Shiner	Visual	General	X	X	X	X	X	X
Carassius sp.	Goldfish	Visual	General, Feeding		X				
Moxostoma valenciennesi	Greater Redhorse	Visual	General		X	X	X	X	X
Lepomis cyanellus	Green Sunfish	Visual	General		X	X	X	X	X
Acipenser fulvescens	Lake Sturgeon	Visual	General	X		X			
Micropterus salmoides	Largemouth Bass	Visual	General	X	X	X	X	X	X
Lepisosteus osseus	Longnose Gar	Visual	General		X		X	X	X
Esox lucius	Northern Pike	Visual	General	X	X			X	X
Lepomis gibbosus	Pumpkinseed	Visual	General	X	X	X	X	X	X
Ambloplites rupestris	Rock Bass	Visual	General		X	X	X	X	X
Neogobius melanostomus	Round Goby	Visual	General		X	X	X	X	X
Moxostoma macrolepidotum	Shorthead Redhorse	Visual	General			X			X
Micropterus dolomieu	Smallmouth Bass	Visual	General, nesting	X	X	X	X	X	X
Noturus gyrinus	Tadpole Madtom	Visual	General				X		
Esox masquinongy x Esox lucius	Tiger Muskellunge	Visual	General						X
Sander vitreus	Walleye	Visual	General	X	X	X	X	X	X
Morone americana	White Perch	Visual	General		X	X	X	X	X
Catostomus commersonii	White Sucker	Visual	General		X	X	X	X	X
Ameiurus natalis	Yellow Bullhead	Visual	General		X			X	X
Perca flavescens	Yellow Perch	Visual	General		X	X	X	X	X

TABLE 2E.7 2021 WILDLIFE OBSERVATIONS

Scientific Name	Common Name	Type of Observation	Habitat Use	Habitat Plan Representative Species[1]	Remediation Area A	Remediation Area B	Remediation Area C	Remediation Area D	Remediation Area E
Macroinvertebrates									
Succineidae	Amber snail	Visual	General					X	
Bombus sp.	Bumblebee	Visual	General		X			X	X
Pieris rapae	Cabbage White Butterfly	Visual	General		X	X		X	X
Chilopoda	Centipede	Visual	General						X
Colias philodice	Clouded Sulphur	Visual	General					X	
Decapoda	Crayfish	Visual	General	X				X	
Grylloidea	Cricket	Visual	General					X	X
Zygoptera	Damselfly	Visual	General		X				
Odonata	Dragonfly	Visual	General	X	X	X		X	X
Orthoptera	Grasshopper	Visual	General		X			X	
Halictidae	Halictid bee	Visual	General		X				
Apis mellifera	Honeybee	Visual	General					X	X
Muscidae	Housefly	Visual	General	X	X				
Tettigoniidae	Katydid	Visual	General		X				
Coccinellidae	Ladybug	Visual	General		X			X	
Danaus plexippus	Monarch Butterfly	Visual	General					X	
Mantodea	Praying Mantis	Visual	General						X
Gastropoda	Slug	Visual	General					X	
Hymenoptera	Small wasp	Visual	General		X				
Tachinidae	Tachinid fly	Visual	General					X	
Lepidoptera	White fuzzy caterpillar	Visual	General					X	X
Pyrrhartctia isabella	Woolly bear	Visual	General					X	
Argiope aurantia	Yellow Garden Spider	Visual	General		X				
Mammals									
Blarina brevicauda	Northern Short-tailed Shrew	Visual	General					X	
Ondatra zibethicus	Muskrat	Lodge	Denning	X				X	
Odocoileus virginianus	Whitetail Deer	Visual	Feeding, General		X			X	
Canis latrans	Coyote	Sign	General					X	
Sylvilagus floridanus	Eastern cottontail	Visual	General		X			X	
Castor canadensis	Beaver	Visual	Feeding, Denning	X			X	X	
Vulpes vulpes	Red fox	Sign	General					X	
Reptile/Amphibian									
Bufo americanus	American Toad	Call	General					X	
Chelydra serpentina	Common Snapping Turtle	Visual	General	X				X	
Lithobates pipiens	Leopard Frog	Visual, Call	General	X				X	X
Chrysemys picta	Painted Turtle	Visual	General, Basking	X				X	
Pseudacris crucifer	Spring peeper	Call	General		X				
Nerodia sipedon	Northern Watersnake	Visual	General	X	X				
Storeria dekayi	Brown snake	Visual	General, Basking		X			X	

[1]The Habitat Plan established the design for unique habitat modules throughout the remediation areas of Onondaga Lake (Parsons 2021). The habitat modules were designed to satisfy the habitat requirements of representative plant communities and wildlife species. The Habitat Plan lists 41 representative species that were used to guide the design of the habitat modules.

[2] Due to the fact that aquatic wildlife is difficult to visually observe, the majority of fish species were observed using trap, gill and seine nets associated with community fish monitoring performed by the SUNY ESF sampling team.

TABLE 2E.8 BENTHIC MACROINVERTEBRATE METRIC SCORES

Station	Location	Sampling Method	Richness	Diversity	HBI[1]	EPT[2,5]	Dominance-3[3,5]	PMA[4,5]
OL-BMI-GA01	OL-BMI-GA01-21-01	Multiplate	5.45	0.35	7.4	0	-	-
OL-BMI-GA02	OL-BMI-GA02-21-01	Multiplate	1.43	4.64	6.17	0	-	-
OL-BMI-GA03	OL-BMI-GA03-21-01	Multiplate	0.71	0	4.93	0	-	-
OL-BMI-GA03	OL-BMI-GA03-21-Archive[6]	Multiplate	2.14	0	5.12	1.5	-	-
OL-BMI-GB01	OL-BMI-GB01-21-01	Multiplate	6.36	4.66	6.07	1.5	-	-
OL-BMI-GB02	OL-BMI-GB02-21-01	Multiplate	3.86	7.32	7.6	3.5	-	-
OL-BMI-GB03	OL-BMI-GB03-21-01	Multiplate	4.77	2.03	6.05	4.5	-	-
OL-BMI-GC01	OL-BMI-GC01-21-01	Multiplate	2.14	0	5.45	1.5	-	-
OL-BMI-GC02	OL-BMI-GC02-21-01	Multiplate	5.45	0	5.18	3.5	-	-
OL-BMI-GC03	OL-BMI-GC03-21-01	Multiplate	3.86	0	5.6	3.5	-	-
OL-BMI-GD01	OL-BMI-GD01-21-01	Multiplate	0.71	0.01	5.25	1.5	-	-
OL-BMI-GD01	OL-BMI-GD01-21-Archive[6]	Multiplate	4.32	2.78	5.3	3.5	-	
OL-BMI-GD02	OL-BMI-GD02-21-01	Multiplate	2.95	4.85	5.45	1.5	-	-
OL-BMI-GD03	OL-BMI-GD03-21-01	Multiplate	5.45	6.93	3.25	1.5	-	-
OL-BMI-CE01	OL-BMI-CE01-21-01	Multiplate	3.41	6.07	9.18	1.5	-	-
OL-BMI-CE02	OL-BMI-CE02-21-01	Multiplate	4.77	5.26	7.1	1.5	-	-
OL-BMI-CE03	OL-BMI-CE03-21-01	Multiplate	6.82	9.19	7.52	3.5	-	-
OL-BMI-GE01	OL-BMI-GE01-21-01	Multiplate	2.14	1.3	4.78	0	-	-
OL-BMI-GE02	OL-BMI-GE02-21-01	Multiplate	3.41	1.07	5.05	1.5	-	-
OL-BMI-GE03	OL-BMI-GE03-21-01	Multiplate	3.41	3.3	7.58	0	-	-
OL-BMI-SA01	OL-BMI-SA01-21-01	Ponar	1.82	6.28	4.82	-	6.39	2.4
OL-BMI-SA01	OL-BMI-SA01-21-02	Ponar	4.72	7.21	3.68	-	6.48	3
OL-BMI-SA02	OL-BMI-SA02-21-01	Ponar	2.27	5.39	4.5	-	5.38	2.6
OL-BMI-SA02	OL-BMI-SA02-21-02	Ponar	3.06	0.08	5.15	-	3.17	1.8
OL-BMI-SA03	OL-BMI-SA03-21-01	Ponar	1.82	6.7	4	-	7.92	1
OL-BMI-SA03	OL-BMI-SA03-21-02	Ponar	0	0.52	0.67	-	2.27	2.6
OL-BMI-SA03	OL-BMI-SA03-21-Archive[6]	Ponar	0	1.73	2.85	-	2.5	5
OL-BMI-TA01	OL-BMI-TA01-21-01	Ponar	6.36	5.67	2.17	-	4.67	3.6
OL-BMI-TA01	OL-BMI-TA01-21-02	Ponar	6.82	9.05	4.8	-	10	7.8
OL-BMI-TA01	OL-BMI-TA01-21-Archive[6]	Ponar	5.45	8	4.25	-	8.22	4.2
OL-BMI-TA02	OL-BMI-TA02-21-01	Ponar	2.27	1.89	5.53	-	3	4
OL-BMI-TA02	OL-BMI-TA02-21-02	Ponar	0.45	0	4.4	-	1.62	0
OL-BMI-TA02	OL-BMI-TA02-21-Archive[6]	Ponar	3.61	5.02	4.62	-	4.61	6
OL-BMI-TA03	OL-BMI-TA03-21-01	Ponar	6.36	8.23	5.1	-	8.67	9.2
OL-BMI-TA03	OL-BMI-TA03-21-02	Ponar	6.36	8.45	5.72	-	8.68	10
OL-BMI-SB01	OL-BMI-SB01-21-01	Ponar	0	0.79	2.77	-	2.68	2.4
OL-BMI-SB01	OL-BMI-SB01-21-02	Ponar	0	2.03	1.55	-	2.92	4.4
OL-BMI-SB02	OL-BMI-SB02-21-01	Ponar	1.82	6.44	1.85	-	7.24	7
OL-BMI-SB02	OL-BMI-SB02-21-02	Ponar	0	3.53	0.67	-	4.76	5.8
OL-BMI-SB02	OL-BMI-SB02-21-Archive[6]	Ponar	0	3.17	1.15	-	4.68	5
OL-BMI-SB03	OL-BMI-SB03-21-01	Ponar	0	0	4.87	-	0.25	0
OL-BMI-SB03	OL-BMI-SB03-21-02	Ponar	0	0	4.85	-	0.25	0
OL-BMI-TB01	OL-BMI-TB01-21-01	Ponar	0	2.11	1.5	-	4.17	2
OL-BMI-TB01	OL-BMI-TB01-21-02	Ponar	0.91	4.51	3.22	-	5	6.6
OL-BMI-TB01	OL-BMI-TB01-21-Archive[6]	Ponar	0	0	1.67	-	0	4.4
OL-BMI-TB02	OL-BMI-TB02-21-01	Ponar	3.61	2.03	6.07	-	3	4
OL-BMI-TB02	OL-BMI-TB02-21-02	Ponar	7.27	8.14	4.95	-	7.17	9.4
OL-BMI-TB02	OL-BMI-TB02-21-Archive[6]	Ponar	1.36	3.39	6.7	-	4.58	6.4
OL-BMI-TB03	OL-BMI-TB03-21-01	Ponar	5.91	7.64	6.75	-	6.56	7.8
OL-BMI-TB03	OL-BMI-TB03-21-02	Ponar	4.17	4.64	5.82	-	4.83	6.2
OL-BMI-TB03	OL-BMI-TB03-21-Archive[6]	Ponar	6.36	3.84	5.85	-	4.56	4
OL-BMI-SC01	OL-BMI-SC01-21-01	Ponar	0	0	4.95	-	0.5	0
OL-BMI-SC01	OL-BMI-SC01-21-02	Ponar	0.45	0	4.55	-	1	0
OL-BMI-SC02	OL-BMI-SC02-21-01	Ponar	1.36	1.09	4.38	-	2.5	0.4
OL-BMI-SC02	OL-BMI-SC02-21-02	Ponar	0	0	4.9	-	0.25	0
OL-BMI-SC03	OL-BMI-SC03-21-01	Ponar	2.27	4.43	3.88	-	3.86	2.2
OL-BMI-SC03	OL-BMI-SC03-21-02	Ponar	1.36	5.57	2.4	-	5.91	5
OL-BMI-SD01	OL-BMI-SD01-21-01	Ponar	0.45	3.3	2.05	-	4.76	5
OL-BMI-SD01	OL-BMI-SD01-21-02	Ponar	1.36	3.7	0.95	-	4.83	3.6
OL-BMI-SD02	OL-BMI-SD02-21-01	Ponar	0	0	0.5	-	0	4
OL-BMI-SD02	OL-BMI-SD02-21-02	Ponar	0	0	0	-	0	0
OL-BMI-SD03	OL-BMI-SD03-21-01	Ponar	0	0	4.15	-	0.77	0.4
OL-BMI-SD03	OL-BMI-SD03-21-02	Ponar	0	0	2	-	0	0
OL-BMI-TD01	OL-BMI-TD01-21-01	Ponar	7.88	9.06	6.47	-	9.17	9.2
OL-BMI-TD01	OL-BMI-TD01-21-02	Ponar	7.88	8.91	7.25	-	9.17	6.8
OL-BMI-TD02	OL-BMI-TD02-21-01	Ponar	6.36	5.51	9.4	-	5.17	4.2
OL-BMI-TD02	OL-BMI-TD02-21-02	Ponar	6.82	5.24	6	-	5.5	5.6
OL-BMI-TD03	OL-BMI-TD03-21-01	Ponar	0.91	5.25	4.78	-	6.89	6.4
OL-BMI-TD03	OL-BMI-TD03-21-02	Ponar	1.36	5.78	3.03	-	6.1	4.2
OL-BMI-SE01	OL-BMI-SE01-21-01	Ponar	3.06	2.82	0.33	-	3.17	0.8
OL-BMI-SE01	OL-BMI-SE01-21-02	Ponar	0	0	0	-	1.09	0
OL-BMI-SE01	OL-BMI-SE01-21-Archive[6]	Ponar	0	0	0	-	0.66	0
OL-BMI-SE02	OL-BMI-SE02-21-01	Ponar	0	0	1	-	0	0
OL-BMI-SE02	OL-BMI-SE02-21-02	Ponar	0	3.36	4.18	-	4.54	1
OL-BMI-SE02	OL-BMI-SE02-21-Archive[6]	Ponar	0.91	5.11	5.75	-	7.5	3
OL-BMI-SE03	OL-BMI-SE03-21-01	Ponar	0.45	3.3	6.25	-	5.83	5

TABLE 2E.8 BENTHIC MACROINVERTEBRATE METRIC SCORES

Station	Location	Sampling Method	Richness	Diversity	HBI[1]	EPT[2,5]	Dominance-3[3,5]	PMA[4,5]
OL-BMI-SE03	OL-BMI-SE03-21-02	Ponar	0	2.82	0.3	-	3.78	1.6
OL-BMI-SE03	OL-BMI-SE03-21-Archive[6]	Ponar	0	2.15	0.67	-	3.05	2
OL-BMI-CSX01	OL-BMI-CSX01-21-01	Ponar	0.91	0.73	3.1	-	1	1.2
OL-BMI-CSX01	OL-BMI-CSX01-21-02	Ponar	3.61	4.31	4.47	-	4.67	3.4
OL-BMI-CSX01	OL-BMI-CSX01-21-Archive[6]	Ponar	0.91	3.62	2.08	-	3.96	4.4
OL-BMI-CSX02	OL-BMI-CSX02-21-01	Ponar	4.17	8	2.92	-	8.38	5
OL-BMI-CSX02	OL-BMI-CSX02-21-02	Ponar	5.91	8.62	4.42	-	8.87	5.2
OL-BMI-CSX03	OL-BMI-CSX03-21-01	Ponar	1.82	3	1.63	-	3.73	2
OL-BMI-CSX03	OL-BMI-CSX03-21-02	Ponar	2.27	0.41	0.72	-	2.83	0.4
OL-BMI-RR01A	OL-BMI-RR01A-21-01	Ponar	1.82	4.11	4.5	-	4.12	6
OL-BMI-RR01A	OL-BMI-RR01A-21-02	Ponar	0.91	0	4.45	-	1.3	1.4
OL-BMI-RR01A	OL-BMI-RR01A-21-Archive[6]	Ponar	1.36	4.84	5.77	-	5.93	4.8
OL-BMI-RR01B	OL-BMI-RR01B-21-01	Ponar	0.45	0	5.15	-	0.75	0
OL-BMI-RR01B	OL-BMI-RR01B-21-02	Ponar	0	0	4.82	-	0.5	0
OL-BMI-RR01C	OL-BMI-RR01C-21-01	Ponar	2.27	0.59	4.58	-	1.75	0.2
OL-BMI-RR01C	OL-BMI-RR01C-21-02	Ponar	0	1.79	0.9	-	3.86	4.6
OL-BMI-RR02A	OL-BMI-RR02A-21-01	Ponar	7.27	7.91	3.55	-	7.17	4
OL-BMI-RR02A	OL-BMI-RR02A-21-02	Ponar	5.91	7.88	3.85	-	7.85	4.6
OL-BMI-RR02B	OL-BMI-RR02B-21-01	Ponar	4.72	2.91	6.07	-	4.33	2.6
OL-BMI-RR02B	OL-BMI-RR02B-21-02	Ponar	4.17	4.51	5.28	-	4.83	3.8
OL-BMI-RR02C	OL-BMI-RR02C-21-01	Ponar	0.45	4.14	2.8	-	4.76	5
OL-BMI-RR02C	OL-BMI-RR02C-21-02	Ponar	0	0	0	-	0	2
OL-BMI-RR02C	OL-BMI-RR02C-21-Archive[6]	Ponar	0	0	1.2	-	1.52	4
OL-BMI-RR03A	OL-BMI-RR03A-21-01	Ponar	5.45	8.02	4.95	-	7.89	7.4
OL-BMI-RR03A	OL-BMI-RR03A-21-02	Ponar	2.27	6.43	4.4	-	7.14	6.6
OL-BMI-RR03B	OL-BMI-RR03B-21-01	Ponar	5.45	7.28	4.82	-	7.17	7.2
OL-BMI-RR03B	OL-BMI-RR03B-21-02	Ponar	4.17	7.24	3.6	-	6.99	7.6
OL-BMI-RR03C	OL-BMI-RR03C-21-01	Ponar	1.82	3.38	4.5	-	3.67	4.6
OL-BMI-RR03C	OL-BMI-RR03C-21-02	Ponar	1.82	3.68	5.7	-	3.83	4.8

1. HBI stands for Hilsenhoff's Biotic Index value and is found using number of individuals within a taxa and a specified tolerance value for that taxa.
2. EPT stands for Ephemeroptera, Plecoptera, and Trichoptera Richness and is the number of species that are in these taxa.
3. Dominance-3 is the percent of the total sample that the three most abundant taxa make up.
4. PMA is the Percent Model Affinity for taxanomic composition and is calculated using percent abundance for major taxa and comparing that with a given model.
5. Some metrics are only used for specific sampling methods.
6. Metrics for Biological Assesment Profile Scores (BAP) calcualted for two of three replicates where samples were collected via ponar. Where samples were collected via multiplate, one of two replicates was identified. Due to high variability in a subset of samples, metrics for BAP scores were calcualted for archive samples for two multiplate locations and 13 ponar locations.

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Gammarus sp.	19	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Amnicola sp.	162	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Valvata lewisi	5	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Undet. Tubificidae w/o cap. setae	2	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Undetermined Planorbidae	1	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Gyraulus sp.	1	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Dreissena polymorpha	323	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Placobdella sp.	1	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Undetermined Glossiphoniidae	2	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Chironomus sp.	5	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Procladius sp.	4	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Polypedilum halterale gr.	1	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Paratendipes sp.	1	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Dicrotendipes sp.	1	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Caecidotea sp.	5	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Undetermined Turbellaria	1	L	535		4.00		1	
650.5-001	OL-BMI-GA01		OL-BMI-GA01-21-01		8/24/2021	Multiplate		Physella sp.	1	L	535		4.00		1	
650.5-002	OL-BMI-GA02		OL-BMI-GA02-21-01		8/20/2021	Multiplate		Undetermined Planorbidae	3	L	59		4.00		1	
650.5-002	OL-BMI-GA02		OL-BMI-GA02-21-01		8/20/2021	Multiplate		Dicrotendipes sp.	4	L	59		4.00		1	
650.5-002	OL-BMI-GA02		OL-BMI-GA02-21-01		8/20/2021	Multiplate		Undetermined Turbellaria	1	L	59		4.00		1	
650.5-002	OL-BMI-GA02		OL-BMI-GA02-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	1	L	59		4.00		1	
650.5-002	OL-BMI-GA02		OL-BMI-GA02-21-01		8/20/2021	Multiplate		Pseudochironomus sp.	1	L	59		4.00		1	
650.5-002	OL-BMI-GA02		OL-BMI-GA02-21-01		8/20/2021	Multiplate		Dreissena polymorpha	29	L	59		4.00		1	
650.5-002	OL-BMI-GA02		OL-BMI-GA02-21-01		8/20/2021	Multiplate		Undetermined Hydrobiidae	4	L	59		4.00		1	
650.5-002	OL-BMI-GA02		OL-BMI-GA02-21-01		8/20/2021	Multiplate		Physella sp.	9	L	59		4.00		1	
650.5-002	OL-BMI-GA02		OL-BMI-GA02-21-01		8/20/2021	Multiplate		Hyalella sp.	2	L	59		4.00		1	
650.5-002	OL-BMI-GA02		OL-BMI-GA02-21-01		8/20/2021	Multiplate		Amnicola sp.	5	L	59		4.00		1	
650.5-003	OL-BMI-GA03		OL-BMI-GA03-21-01		8/20/2021	Multiplate		Hyalella sp.	2	L	294		4.00		1	
650.5-003	OL-BMI-GA03		OL-BMI-GA03-21-01		8/20/2021	Multiplate		Caecidotea sp.	1	L	294		4.00		1	
650.5-003	OL-BMI-GA03		OL-BMI-GA03-21-01		8/20/2021	Multiplate		Cricotopus/Orthocladius Complex	1	L	294		4.00		1	
650.5-003	OL-BMI-GA03		OL-BMI-GA03-21-01		8/20/2021	Multiplate		Tanytarsus sp.	3	L	294		4.00		1	
650.5-003	OL-BMI-GA03		OL-BMI-GA03-21-01		8/20/2021	Multiplate		Chironomus sp.	10	L	294		4.00		1	
650.5-003	OL-BMI-GA03		OL-BMI-GA03-21-01		8/20/2021	Multiplate		Dreissena polymorpha	273	L	294		4.00		1	
650.5-003	OL-BMI-GA03		OL-BMI-GA03-21-01		8/20/2021	Multiplate		Undetermined Hydrobiidae	1	L	294		4.00		1	
650.5-003	OL-BMI-GA03		OL-BMI-GA03-21-01		8/20/2021	Multiplate		Amnicola sp.	2	L	294		4.00		1	
650.5-003	OL-BMI-GA03		OL-BMI-GA03-21-01		8/20/2021	Multiplate		Undet. Tubificidae w/o cap. setae	1	L	294		4.00		1	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Paratanytarsus sp.	14	L	163		2.00	5.00	1	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	10	L	163		2.00	5.00	1	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Hyalella sp.	2	L	163		2.00	5.00	1	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Undetermined Planorbidae	1	L	163		2.00	5.00	1	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Dreissena polymorpha	63	L	163		2.00	5.00	1	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Dicrotendipes sp.	3	L	163		2.00	5.00	1	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Cricotopus sylvestris gr.	3	L	163		2.00	5.00	1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Undetermined Turbellaria	2	L	163		2.00	5.00	1	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Tanytarsus sp.	1	L	163		2.00	5.00	1	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Dubiraphia sp.	1	L	163		2.00	5.00	1	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Undetermined Turbellaria	2	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	17	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Hyalella sp.	1	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Ochrotrichia sp.	1	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Dicrotendipes sp.	9	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Cricotopus sylvestris gr.	2	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Paratanytarsus sp.	17	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Ischnura sp.	2	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Gammarus sp.	3	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Parakiefferiella sp.	1	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Procladius sp.	4	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Undetermined Glossiphoniidae	1	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Undetermined Ceratopogonidae	1	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Amnicola sp.	1	L	163		2.00	5.00	2	
650.5-004	OL-BMI-TA02		OL-BMI-TA02-21-01		8/12/2021	Ponar		Hydroptila sp.	1	L	163		2.00	5.00	2	
650.5-005	OL-BMI-TA02		OL-BMI-TA02-21-02		8/12/2021	Ponar		Undetermined Bivalvia	1	L	77		30.00		1	
650.5-005	OL-BMI-TA02		OL-BMI-TA02-21-02		8/12/2021	Ponar		Dreissena polymorpha	58	L	77		30.00		1	
650.5-005	OL-BMI-TA02		OL-BMI-TA02-21-02		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	3	L	77		30.00		1	
650.5-005	OL-BMI-TA02		OL-BMI-TA02-21-02		8/12/2021	Ponar		Limnodrilus sp.	5	L	77		30.00		1	
650.5-005	OL-BMI-TA02		OL-BMI-TA02-21-02		8/12/2021	Ponar		Chironomus sp.	1	L	77		30.00		1	
650.5-005	OL-BMI-TA02		OL-BMI-TA02-21-02		8/12/2021	Ponar		Dreissena bugensis	9	L	77		30.00		1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Caenis sp.	15	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Physella sp.	5	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Gyraulus sp.	1	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Gammarus sp.	5	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Hyalella sp.	9	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Limnodrilus sp.	3	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Rhyacodrilus sp.	11	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	11	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Dreissena polymorpha	27	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Ischnura sp.	1	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Paratanytarsus sp.	6	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Dicrotendipes sp.	1	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Ablabesmyia sp.	1	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Amnicola sp.	1	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Caecidotea sp.	1	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Undetermined Turbellaria	1	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Chironomus sp.	1	L	127		18.00	30.00	1	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Caecidotea sp.	1	L	127		18.00	30.00	2	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Caenis sp.	12	L	127		18.00	30.00	2	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Chironomus sp.	2	L	127		18.00	30.00	2	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Tanytarsus sp.	2	L	127		18.00	30.00	2	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Paratanytarsus sp.	3	L	127		18.00	30.00	2	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Hyalella sp.	3	L	127		18.00	30.00	2	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Rhyacodrilus sp.	1	L	127		18.00	30.00	2	
650.5-006	OL-BMI-TA03		OL-BMI-TA03-21-01		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	3	L	127		18.00	30.00	2	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Chironomus sp.	2	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Undetermined Glossiphoniidae	1	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Rhyacodrilus sp.	1	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Hyalella sp.	9	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Paratanytarsus sp.	1	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Physella sp.	1	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	13	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Dreissena polymorpha	13	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Pseudochironomus sp.	6	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Tanytarsus sp.	2	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Cricotopus sylvestris gr.	1	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Corynoneura sp.	1	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Caenis sp.	10	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Caecidotea sp.	3	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Undetermined Turbellaria	2	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Procladius sp.	1	L	68		30.00		1	
650.5-007	OL-BMI-TA03		OL-BMI-TA03-21-02		8/12/2021	Ponar		Gyraulus sp.	1	L	68		30.00		1	
650.5-008	OL-BMI-SA01		OL-BMI-SA01-21-01		8/11/2021	Ponar		Undet. Tubificidae w/o cap. setae	5	L	27		30.00		1	
650.5-008	OL-BMI-SA01		OL-BMI-SA01-21-01		8/11/2021	Ponar		Procladius sp.	1	L	27		30.00		1	
650.5-008	OL-BMI-SA01		OL-BMI-SA01-21-01		8/11/2021	Ponar		Corbicula fluminea	2	L	27		30.00		1	
650.5-008	OL-BMI-SA01		OL-BMI-SA01-21-01		8/11/2021	Ponar		Dreissena bugensis	1	L	27		30.00		1	
650.5-008	OL-BMI-SA01		OL-BMI-SA01-21-01		8/11/2021	Ponar		Dreissena polymorpha	1	L	27		30.00		1	
650.5-008	OL-BMI-SA01		OL-BMI-SA01-21-01		8/11/2021	Ponar		Undetermined Naididae	3	L	27		30.00		1	
650.5-008	OL-BMI-SA01		OL-BMI-SA01-21-01		8/11/2021	Ponar		Limnodrilus sp.	5	L	27		30.00		1	
650.5-008	OL-BMI-SA01		OL-BMI-SA01-21-01		8/11/2021	Ponar		Cladopelma sp.	1	L	27		30.00		1	
650.5-008	OL-BMI-SA01		OL-BMI-SA01-21-01		8/11/2021	Ponar		Pisidium sp.	8	L	27		30.00		1	
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Paratanytarsus sp.	1	L	59		30.00		1	
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Undet. Tubificidae w/o cap. setae	15	L	59		30.00		1	
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Cladopelma sp.	1	L	59		30.00		1	
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Cryptochironomus sp.	1	L	59		30.00		1	
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Procladius sp.	1	L	59		30.00		1	
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Tanytarsus sp.	1	L	59		30.00		1	
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Dreissena bugensis	3	L	59		30.00		1	
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Dreissena polymorpha	8	L	59		30.00		1	
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Undetermined Naididae	1	L	59		30.00		1	
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Sphaerium sp.	1	L	59		30.00		1	
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Pisidium sp.	11	L	59		30.00		1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Tanypus sp.	1	L	59		30.00		1	
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Limnodrilus sp.	13	L	59		30.00		1	
650.5-009	OL-BMI-SA01		OL-BMI-SA01-21-02		8/11/2021	Ponar		Aulodrilus sp.	1	L	59		30.00		1	
650.5-010	OL-BMI-SA02		OL-BMI-SA02-21-01		8/11/2021	Ponar		Dreissena bugensis	6	L	66		30.00		1	
650.5-010	OL-BMI-SA02		OL-BMI-SA02-21-01		8/11/2021	Ponar		Cryptochironomus sp.	1	L	66		30.00		1	
650.5-010	OL-BMI-SA02		OL-BMI-SA02-21-01		8/11/2021	Ponar		Cladopelma sp.	4	L	66		30.00		1	
650.5-010	OL-BMI-SA02		OL-BMI-SA02-21-01		8/11/2021	Ponar		Dreissena polymorpha	4	L	66		30.00		1	
650.5-010	OL-BMI-SA02		OL-BMI-SA02-21-01		8/11/2021	Ponar		Amnicola sp.	1	L	66		30.00		1	
650.5-010	OL-BMI-SA02		OL-BMI-SA02-21-01		8/11/2021	Ponar		Pisidium sp.	21	L	66		30.00		1	
650.5-010	OL-BMI-SA02		OL-BMI-SA02-21-01		8/11/2021	Ponar		Rhyacodrilus sp.	3	L	66		30.00		1	
650.5-010	OL-BMI-SA02		OL-BMI-SA02-21-01		8/11/2021	Ponar		Undet. Tubificidae w/o cap. setae	21	L	66		30.00		1	
650.5-010	OL-BMI-SA02		OL-BMI-SA02-21-01		8/11/2021	Ponar		Limnodrilus sp.	4	L	66		30.00		1	
650.5-010	OL-BMI-SA02		OL-BMI-SA02-21-01		8/11/2021	Ponar		Corbicula fluminea	1	L	66		30.00		1	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Hydroptila sp.	1	L	176		8.00	25.00	1	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Ischnura sp.	2	L	176		8.00	25.00	1	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Hyalella sp.	3	L	176		8.00	25.00	1	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Dreissena polymorpha	76	L	176		8.00	25.00	1	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Limnodrilus sp.	3	L	176		8.00	25.00	1	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Caenis sp.	1	L	176		8.00	25.00	1	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Cricotopus sylvestris gr.	1	L	176		8.00	25.00	1	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Procladius sp.	1	L	176		8.00	25.00	1	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Dicrotendipes sp.	3	L	176		8.00	25.00	1	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Paratanytarsus sp.	7	L	176		8.00	25.00	1	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Undet. Tubificidae w/o cap. setae	2	L	176		8.00	25.00	1	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Corbicula fluminea	1	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Rhyacodrilus sp.	4	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Hyalella sp.	4	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Ochrotrichia sp.	1	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Amnicola sp.	4	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Caenis sp.	1	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Ablabesmyia sp.	1	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Parakiefferiella sp.	1	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Paratanytarsus sp.	13	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Dicrotendipes sp.	9	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Cricotopus sylvestris gr.	4	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Chironomus sp.	2	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Corynoneura sp.	1	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Limnodrilus sp.	8	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Undet. Tubificidae w/o cap. setae	21	L	176		8.00	25.00	2	
650.5-011	OL-BMI-SA02		OL-BMI-SA02-21-02		8/11/2021	Ponar		Gammarus sp.	1	L	176		8.00	25.00	2	
650.5-012	OL-BMI-SA03		OL-BMI-SA03-21-01		8/11/2021	Ponar		Limnodrilus sp.	3	L	40		30.00		1	
650.5-012	OL-BMI-SA03		OL-BMI-SA03-21-01		8/11/2021	Ponar		Dreissena bugensis	5	L	40		30.00		1	
650.5-012	OL-BMI-SA03		OL-BMI-SA03-21-01		8/11/2021	Ponar		Undetermined Naididae	5	L	40		30.00		1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-012	OL-BMI-SA03		OL-BMI-SA03-21-01		8/11/2021	Ponar		Dreissena polymorpha	5	L	40		30.00		1	
650.5-012	OL-BMI-SA03		OL-BMI-SA03-21-01		8/11/2021	Ponar		Pisidium sp.	7	L	40		30.00		1	
650.5-012	OL-BMI-SA03		OL-BMI-SA03-21-01		8/11/2021	Ponar		Rhyacodrilus sp.	2	L	40		30.00		1	
650.5-012	OL-BMI-SA03		OL-BMI-SA03-21-01		8/11/2021	Ponar		Undet. Tubificidae w/o cap. setae	11	L	40		30.00		1	
650.5-012	OL-BMI-SA03		OL-BMI-SA03-21-01		8/11/2021	Ponar		Gyraulus sp.	1	L	40		30.00		1	
650.5-012	OL-BMI-SA03		OL-BMI-SA03-21-01		8/11/2021	Ponar		Corbicula fluminea	1	L	40		30.00		1	
650.5-013	OL-BMI-SA03		OL-BMI-SA03-21-02		8/11/2021	Ponar		Sphaerium sp.	1	L	22		30.00		1	
650.5-013	OL-BMI-SA03		OL-BMI-SA03-21-02		8/11/2021	Ponar		Limnodrilus sp.	3	L	22		30.00		1	
650.5-013	OL-BMI-SA03		OL-BMI-SA03-21-02		8/11/2021	Ponar		Undet. Tubificidae w/o cap. setae	14	L	22		30.00		1	
650.5-013	OL-BMI-SA03		OL-BMI-SA03-21-02		8/11/2021	Ponar		Chironomus sp.	3	L	22		30.00		1	
650.5-013	OL-BMI-SA03		OL-BMI-SA03-21-02		8/11/2021	Ponar		Cryptochironomus sp.	1	L	22		30.00		1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Amnicola sp.	1	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Limnodrilus sp.	26	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Gammarus sp.	1	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Procladius sp.	1	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Dubiraphia sp.	1	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Dreissena polymorpha	3	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Paratanytarsus sp.	4	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Tanytarsus sp.	2	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Rhyacodrilus sp.	3	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Physella sp.	2	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Undet. Tubificidae w/o cap. setae	43	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Dicrotendipes sp.	1	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Cricotopus sylvestris gr.	1	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Cladopelma sp.	1	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Chironomus sp.	1	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Caenis sp.	8	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Undetermined Bivalvia	1	L	103		12.00	13.00	1	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Caenis sp.	1	L	103		12.00	13.00	2	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Paratanytarsus sp.	1	L	103		12.00	13.00	2	
650.5-014	OL-BMI-TA01		OL-BMI-TA01-21-01		8/11/2021	Ponar		Undet. Tubificidae w/o cap. setae	1	L	103		12.00	13.00	2	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Chironomus sp.	4	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Cladotanytarsus sp.	1	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Tanytarsus sp.	1	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Procladius sp.	4	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Tanypus sp.	1	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Stictochironomus sp.	1	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Cricotopus sylvestris gr.	5	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Clinotanypus sp.	1	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Limnodrilus sp.	6	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Caenis sp.	9	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Polypedilum halterale gr.	1	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Dicrotendipes sp.	8	L	72		30.00		1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Dreissena polymorpha	10	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Gammarus sp.	1	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Physella sp.	1	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Undet. Tubificidae w/o cap. setae	12	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Amnicola sp.	1	L	72		30.00		1	
650.5-015	OL-BMI-TA01		OL-BMI-TA01-21-02		8/11/2021	Ponar		Paratanytarsus sp.	5	L	72		30.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Chironomus sp.	1	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Tanytarsus sp.	3	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Ablabesmyia mallochi	2	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Psectrocladius sp.	1	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Procladius sp.	1	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Corynoneura sp.	4	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Cricotopus/Orthocladius Complex	1	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Undetermined Hydrobiidae	2	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Undetermined Turbellaria	1	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	1	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Parachironomus sp.	4	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Dicrotendipes sp.	9	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Gammarus sp.	10	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Ochrotrichia sp.	1	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Hydroptila sp.	8	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Nais sp.	2	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Gyraulus sp.	2	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Undetermined Planorbidae	5	L	146		4.00		1	
650.5-016	OL-BMI-GB01		OL-BMI-GB01-21-01		8/20/2021	Multiplate		Dreissena polymorpha	88	L	146		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Nais sp.	4	L	85		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Undetermined Naididae	2	L	85		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Caenis sp.	1	L	85		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Pseudochironomus sp.	1	L	85		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Dicrotendipes sp.	2	L	85		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Corynoneura sp.	3	L	85		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Cricotopus sylvestris gr.	5	L	85		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	10	L	85		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Tanytarsus sp.	14	L	85		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Dreissena polymorpha	32	L	85		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Undet. Tubificidae w/o cap. setae	1	L	85		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Hydroptila sp.	4	L	85		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Undetermined Planorbidae	2	L	85		4.00		1	
650.5-017	OL-BMI-GB02		OL-BMI-GB02-21-01		8/20/2021	Multiplate		Gammarus sp.	4	L	85		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Gyraulus sp.	1	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Dicrotendipes sp.	5	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Ischnura sp.	1	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Dreissena polymorpha	92	L	128		4.00		1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Gammarus sp.	4	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Hydroptila sp.	2	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Nectopsyche sp.	4	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Undetermined Naididae	3	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Caenis sp.	2	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	3	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Undetermined Planorbidae	3	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Undetermined Turbellaria	2	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Cricotopus/Orthocladius Complex	1	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Nanocladius sp.	1	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Nilothauma sp.	2	L	128		4.00		1	
650.5-018	OL-BMI-GB03		OL-BMI-GB03-21-01		8/20/2021	Multiplate		Parachironomus sp.	2	L	128		4.00		1	
650.5-019	OL-BMI-TB01		OL-BMI-TB01-21-01		8/19/2021	Ponar		Aulodrilus sp.	1	L	5		30.00		1	
650.5-019	OL-BMI-TB01		OL-BMI-TB01-21-01		8/19/2021	Ponar		Rhyacodrilus sp.	1	L	5		30.00		1	
650.5-019	OL-BMI-TB01		OL-BMI-TB01-21-01		8/19/2021	Ponar		Undet. Tubificidae w/o cap. setae	2	L	5		30.00		1	
650.5-019	OL-BMI-TB01		OL-BMI-TB01-21-01		8/19/2021	Ponar		Chironomus sp.	1	L	5		30.00		1	
650.5-020	OL-BMI-TB01		OL-BMI-TB01-21-02		8/19/2021	Ponar		Oxyethira sp.	1	L	24		30.00		1	
650.5-020	OL-BMI-TB01		OL-BMI-TB01-21-02		8/19/2021	Ponar		Rhyacodrilus sp.	2	L	24		30.00		1	
650.5-020	OL-BMI-TB01		OL-BMI-TB01-21-02		8/19/2021	Ponar		Undet. Tubificidae w/o cap. setae	3	L	24		30.00		1	
650.5-020	OL-BMI-TB01		OL-BMI-TB01-21-02		8/19/2021	Ponar		Nais sp.	2	L	24		30.00		1	
650.5-020	OL-BMI-TB01		OL-BMI-TB01-21-02		8/19/2021	Ponar		Caenis sp.	1	L	24		30.00		1	
650.5-020	OL-BMI-TB01		OL-BMI-TB01-21-02		8/19/2021	Ponar		Chironomus sp.	7	L	24		30.00		1	
650.5-020	OL-BMI-TB01		OL-BMI-TB01-21-02		8/19/2021	Ponar		Hyalella sp.	8	L	24		30.00		1	
650.5-021	OL-BMI-TB02		OL-BMI-TB02-21-01		8/19/2021	Ponar		Chironomus sp.	1	L	100		9.00		1	
650.5-021	OL-BMI-TB02		OL-BMI-TB02-21-01		8/19/2021	Ponar		Limnodrilus sp.	1	L	100		9.00		1	
650.5-021	OL-BMI-TB02		OL-BMI-TB02-21-01		8/19/2021	Ponar		Hyalella sp.	64	L	100		9.00		1	
650.5-021	OL-BMI-TB02		OL-BMI-TB02-21-01		8/19/2021	Ponar		Paratanytarsus sp.	12	L	100		9.00		1	
650.5-021	OL-BMI-TB02		OL-BMI-TB02-21-01		8/19/2021	Ponar		Polypedilum halterale gr.	3	L	100		9.00		1	
650.5-021	OL-BMI-TB02		OL-BMI-TB02-21-01		8/19/2021	Ponar		Cladopelma sp.	2	L	100		9.00		1	
650.5-021	OL-BMI-TB02		OL-BMI-TB02-21-01		8/19/2021	Ponar		Dicrotendipes sp.	1	L	100		9.00		1	
650.5-021	OL-BMI-TB02		OL-BMI-TB02-21-01		8/19/2021	Ponar		Ablabesmyia sp.	1	L	100		9.00		1	
650.5-021	OL-BMI-TB02		OL-BMI-TB02-21-01		8/19/2021	Ponar		Caenis sp.	11	L	100		9.00		1	
650.5-021	OL-BMI-TB02		OL-BMI-TB02-21-01		8/19/2021	Ponar		Undetermined Turbellaria	1	L	100		9.00		1	
650.5-021	OL-BMI-TB02		OL-BMI-TB02-21-01		8/19/2021	Ponar		Undet. Tubificidae w/o cap. setae	2	L	100		9.00		1	
650.5-021	OL-BMI-TB02		OL-BMI-TB02-21-01		8/19/2021	Ponar		Procladius sp.	1	L	100		9.00		1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Undetermined Ceratopogonidae	1	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Dreissena bugensis	2	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Undetermined Turbellaria	1	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Branchiobdella sp.	1	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Undet. Tubificidae w/o cap. setae	30	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Limnodrilus sp.	3	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Oxyethira sp.	1	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Dreissena polymorpha	1	L	103		8.00	9.00	1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Paratanytarsus sp.	9	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Chironomus sp.	1	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Hyalella sp.	17	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Caenis sp.	15	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Cladopelma sp.	5	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Cricotopus sp.	1	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Labrundinia sp.	1	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Procladius sp.	2	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Pseudochironomus sp.	2	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Polypedilum halterale gr.	3	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Ablabesmyia sp.	4	L	103		8.00	9.00	1	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Hyalella sp.	1	L	103		8.00	9.00	2	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Procladius sp.	1	L	103		8.00	9.00	2	
650.5-022	OL-BMI-TB02		OL-BMI-TB02-21-02		8/19/2021	Ponar		Dicrotendipes sp.	1	L	103		8.00	9.00	2	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Cladopelma sp.	4	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Paratanytarsus sp.	6	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Limnodrilus sp.	2	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Hyalella sp.	22	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Gyraulus sp.	1	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Ochrotrichia sp.	1	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Undetermined Hydrobiidae	1	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Gammarus sp.	1	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Dreissena bugensis	1	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Undet. Tubificidae w/o cap. setae	1	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Ablabesmyia sp.	2	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Undetermined Enchytraeidae	1	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Ferrissia sp.	1	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Caenis sp.	14	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Polypedilum halterale gr.	3	L	64		30.00		1	
650.5-023	OL-BMI-TB03		OL-BMI-TB03-21-01		8/19/2021	Ponar		Tanytarsus sp.	3	L	64		30.00		1	
650.5-024	OL-BMI-TB03		OL-BMI-TB03-21-02		8/19/2021	Ponar		Enallagma sp.	1	L	100		21.00		1	
650.5-024	OL-BMI-TB03		OL-BMI-TB03-21-02		8/19/2021	Ponar		Tanytarsus sp.	2	L	100		21.00		1	
650.5-024	OL-BMI-TB03		OL-BMI-TB03-21-02		8/19/2021	Ponar		Cladopelma sp.	2	L	100		21.00		1	
650.5-024	OL-BMI-TB03		OL-BMI-TB03-21-02		8/19/2021	Ponar		Ablabesmyia sp.	2	L	100		21.00		1	
650.5-024	OL-BMI-TB03		OL-BMI-TB03-21-02		8/19/2021	Ponar		Cricotopus sp.	1	L	100		21.00		1	
650.5-024	OL-BMI-TB03		OL-BMI-TB03-21-02		8/19/2021	Ponar		Undetermined Ceratopogonidae	2	L	100		21.00		1	
650.5-024	OL-BMI-TB03		OL-BMI-TB03-21-02		8/19/2021	Ponar		Limnodrilus sp.	1	L	100		21.00		1	
650.5-024	OL-BMI-TB03		OL-BMI-TB03-21-02		8/19/2021	Ponar		Caenis sp.	16	L	100		21.00		1	
650.5-024	OL-BMI-TB03		OL-BMI-TB03-21-02		8/19/2021	Ponar		Undet. Tubificidae w/o cap. setae	8	L	100		21.00		1	
650.5-024	OL-BMI-TB03		OL-BMI-TB03-21-02		8/19/2021	Ponar		Hyalella sp.	52	L	100		21.00		1	
650.5-024	OL-BMI-TB03		OL-BMI-TB03-21-02		8/19/2021	Ponar		Polypedilum halterale gr.	7	L	100		21.00		1	
650.5-024	OL-BMI-TB03		OL-BMI-TB03-21-02		8/19/2021	Ponar		Ochrotrichia sp.	3	L	100		21.00		1	
650.5-024	OL-BMI-TB03		OL-BMI-TB03-21-02		8/19/2021	Ponar		Ischnura sp.	3	L	100		21.00		1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-025	OL-BMI-SB01		OL-BMI-SB01-21-01		8/13/2021	Ponar		Undetermined Ceratopogonidae	1	L	9		30.00		1	
650.5-025	OL-BMI-SB01		OL-BMI-SB01-21-01		8/13/2021	Ponar		Cryptochironomus sp.	2	L	9		30.00		1	
650.5-025	OL-BMI-SB01		OL-BMI-SB01-21-01		8/13/2021	Ponar		Dreissena bugensis	1	L	9		30.00		1	
650.5-025	OL-BMI-SB01		OL-BMI-SB01-21-01		8/13/2021	Ponar		Chironomus sp.	5	L	9		30.00		1	
650.5-026	OL-BMI-SB01		OL-BMI-SB01-21-02		8/13/2021	Ponar		Cladopelma sp.	3	L	8		30.00	30.00	1	
650.5-026	OL-BMI-SB01		OL-BMI-SB01-21-02		8/13/2021	Ponar		Dreissena polymorpha	1	L	8		30.00	30.00	1	
650.5-026	OL-BMI-SB01		OL-BMI-SB01-21-02		8/13/2021	Ponar		Chironomus sp.	2	L	8		30.00	30.00	1	
650.5-026	OL-BMI-SB01		OL-BMI-SB01-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	2	L	8		30.00	30.00	1	
650.5-027	OL-BMI-SB02		OL-BMI-SB02-21-01		8/13/2021	Ponar		Cryptochironomus sp.	1	L	52		30.00	30.00	1	
650.5-027	OL-BMI-SB02		OL-BMI-SB02-21-01		8/13/2021	Ponar		Dreissena bugensis	2	L	52		30.00	30.00	1	
650.5-027	OL-BMI-SB02		OL-BMI-SB02-21-01		8/13/2021	Ponar		Chironomus sp.	8	L	52		30.00	30.00	1	
650.5-027	OL-BMI-SB02		OL-BMI-SB02-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	13	L	52		30.00	30.00	1	
650.5-027	OL-BMI-SB02		OL-BMI-SB02-21-01		8/13/2021	Ponar		Dreissena polymorpha	11	L	52		30.00	30.00	1	
650.5-027	OL-BMI-SB02		OL-BMI-SB02-21-01		8/13/2021	Ponar		Cladopelma sp.	7	L	52		30.00	30.00	1	
650.5-027	OL-BMI-SB02		OL-BMI-SB02-21-01		8/13/2021	Ponar		Undetermined Bivalvia	5	L	52		30.00	30.00	1	
650.5-027	OL-BMI-SB02		OL-BMI-SB02-21-01		8/13/2021	Ponar		Limnodrilus sp.	4	L	52		30.00	30.00	1	
650.5-027	OL-BMI-SB02		OL-BMI-SB02-21-01		8/13/2021	Ponar		Dero sp.	1	L	52		30.00	30.00	1	
650.5-028	OL-BMI-SB02		OL-BMI-SB02-21-02		8/13/2021	Ponar		Undetermined Bivalvia	2	L	17		30.00	30.00	1	
650.5-028	OL-BMI-SB02		OL-BMI-SB02-21-02		8/13/2021	Ponar		Dreissena polymorpha	2	L	17		30.00	30.00	1	
650.5-028	OL-BMI-SB02		OL-BMI-SB02-21-02		8/13/2021	Ponar		Chironomus sp.	3	L	17		30.00	30.00	1	
650.5-028	OL-BMI-SB02		OL-BMI-SB02-21-02		8/13/2021	Ponar		Limnodrilus sp.	5	L	17		30.00	30.00	1	
650.5-028	OL-BMI-SB02		OL-BMI-SB02-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	5	L	17		30.00	30.00	1	
650.5-029	OL-BMI-SB03		OL-BMI-SB03-21-01		8/13/2021	Ponar		Cladopelma sp.	1	L	138		1.00	30.00	1	
650.5-029	OL-BMI-SB03		OL-BMI-SB03-21-01		8/13/2021	Ponar		Dreissena polymorpha	97	L	138		1.00	30.00	1	
650.5-029	OL-BMI-SB03		OL-BMI-SB03-21-01		8/13/2021	Ponar		Chironomus sp.	1	L	138		1.00	30.00	1	
650.5-029	OL-BMI-SB03		OL-BMI-SB03-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	1	L	138		1.00	30.00	1	
650.5-029	OL-BMI-SB03		OL-BMI-SB03-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	12	L	138		1.00	30.00	2	
650.5-029	OL-BMI-SB03		OL-BMI-SB03-21-01		8/13/2021	Ponar		Undetermined Turbellaria	6	L	138		1.00	30.00	2	
650.5-029	OL-BMI-SB03		OL-BMI-SB03-21-01		8/13/2021	Ponar		Limnodrilus sp.	11	L	138		1.00	30.00	2	
650.5-029	OL-BMI-SB03		OL-BMI-SB03-21-01		8/13/2021	Ponar		Valvata lewisi	1	L	138		1.00	30.00	2	
650.5-029	OL-BMI-SB03		OL-BMI-SB03-21-01		8/13/2021	Ponar		Gammarus sp.	8	L	138		1.00	30.00	2	
650.5-030	OL-BMI-SB03		OL-BMI-SB03-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	2	L	137		3.00	30.00	1	
650.5-030	OL-BMI-SB03		OL-BMI-SB03-21-02		8/13/2021	Ponar		Limnodrilus sp.	1	L	137		3.00	30.00	1	
650.5-030	OL-BMI-SB03		OL-BMI-SB03-21-02		8/13/2021	Ponar		Hyalella sp.	1	L	137		3.00	30.00	1	
650.5-030	OL-BMI-SB03		OL-BMI-SB03-21-02		8/13/2021	Ponar		Dreissena polymorpha	96	L	137		3.00	30.00	1	
650.5-030	OL-BMI-SB03		OL-BMI-SB03-21-02		8/13/2021	Ponar		Limnodrilus sp.	7	L	137		3.00	30.00	2	
650.5-030	OL-BMI-SB03		OL-BMI-SB03-21-02		8/13/2021	Ponar		Undetermined Turbellaria	11	L	137		3.00	30.00	2	
650.5-030	OL-BMI-SB03		OL-BMI-SB03-21-02		8/13/2021	Ponar		Gammarus sp.	11	L	137		3.00	30.00	2	
650.5-030	OL-BMI-SB03		OL-BMI-SB03-21-02		8/13/2021	Ponar		Rhyacodrilus sp.	1	L	137		3.00	30.00	2	
650.5-030	OL-BMI-SB03		OL-BMI-SB03-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	6	L	137		3.00	30.00	2	
650.5-030	OL-BMI-SB03		OL-BMI-SB03-21-02		8/13/2021	Ponar		Valvata lewisi	1	L	137		3.00	30.00	2	
650.5-031	OL-BMI-GC01		OL-BMI-GC01-21-01		8/20/2021	Multiplate		Hyalella sp.	1	L	252		4.00		1	
650.5-031	OL-BMI-GC01		OL-BMI-GC01-21-01		8/20/2021	Multiplate		Gyraulus sp.	6	L	252		4.00		1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-031	OL-BMI-GC01		OL-BMI-GC01-21-01		8/20/2021	Multiplate		Undetermined Glossiphoniidae	2	L	252		4.00		1	
650.5-031	OL-BMI-GC01		OL-BMI-GC01-21-01		8/20/2021	Multiplate		Gammarus sp.	15	L	252		4.00		1	
650.5-031	OL-BMI-GC01		OL-BMI-GC01-21-01		8/20/2021	Multiplate		Dreissena polymorpha	191	L	252		4.00		1	
650.5-031	OL-BMI-GC01		OL-BMI-GC01-21-01		8/20/2021	Multiplate		Undetermined Turbellaria	4	L	252		4.00		1	
650.5-031	OL-BMI-GC01		OL-BMI-GC01-21-01		8/20/2021	Multiplate		Oecetis sp.	1	L	252		4.00		1	
650.5-031	OL-BMI-GC01		OL-BMI-GC01-21-01		8/20/2021	Multiplate		Ablabesmyia sp.	1	L	252		4.00		1	
650.5-031	OL-BMI-GC01		OL-BMI-GC01-21-01		8/20/2021	Multiplate		Dicrotendipes sp.	29	L	252		4.00		1	
650.5-031	OL-BMI-GC01		OL-BMI-GC01-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	1	L	252		4.00		1	
650.5-031	OL-BMI-GC01		OL-BMI-GC01-21-01		8/20/2021	Multiplate		Cricotopus/Orthocladius Complex	1	L	252		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Oecetis sp.	1	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Tanytarsus sp.	1	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Dicrotendipes sp.	2	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Parachironomus sp.	1	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Gyraulus sp.	3	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Physella sp.	1	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Gammarus sp.	3	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Dreissena polymorpha	264	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Dreissena bugensis	1	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Chironomus sp.	6	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	2	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Undetermined Planorbidae	6	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Hyalella sp.	2	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Cladopelma sp.	1	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Undetermined Turbellaria	4	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Caecidotea sp.	1	L	300		4.00		1	
650.5-032	OL-BMI-GC02		OL-BMI-GC02-21-01		8/20/2021	Multiplate		Caenis sp.	1	L	300		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Hyalella sp.	5	L	298		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Physella sp.	1	L	298		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Oxyethira sp.	1	L	298		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Gyraulus sp.	29	L	298		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Parachironomus sp.	1	L	298		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Undetermined Glossiphoniidae	1	L	298		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Gammarus sp.	19	L	298		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Dreissena polymorpha	225	L	298		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Dicrotendipes sp.	2	L	298		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	1	L	298		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Amnicola sp.	8	L	298		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Caenis sp.	1	L	298		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Undetermined Turbellaria	3	L	298		4.00		1	
650.5-033	OL-BMI-GC03		OL-BMI-GC03-21-01		8/20/2021	Multiplate		Chironomus sp.	1	L	298		4.00		1	
650.5-034	OL-BMI-SC01		OL-BMI-SC01-21-01		8/13/2021	Ponar		Gammarus sp.	1	L	136		1.00	30.00	1	
650.5-034	OL-BMI-SC01		OL-BMI-SC01-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	1	L	136		1.00	30.00	1	
650.5-034	OL-BMI-SC01		OL-BMI-SC01-21-01		8/13/2021	Ponar		Dreissena polymorpha	94	L	136		1.00	30.00	1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-034	OL-BMI-SC01		OL-BMI-SC01-21-01		8/13/2021	Ponar		Dreissena bugensis	3	L	136		1.00	30.00	1	
650.5-034	OL-BMI-SC01		OL-BMI-SC01-21-01		8/13/2021	Ponar		Parachironomus sp.	1	L	136		1.00	30.00	1	
650.5-034	OL-BMI-SC01		OL-BMI-SC01-21-01		8/13/2021	Ponar		Gammarus sp.	6	L	136		1.00	30.00	2	
650.5-034	OL-BMI-SC01		OL-BMI-SC01-21-01		8/13/2021	Ponar		Chironomus sp.	6	L	136		1.00	30.00	2	
650.5-034	OL-BMI-SC01		OL-BMI-SC01-21-01		8/13/2021	Ponar		Procladius sp.	1	L	136		1.00	30.00	2	
650.5-034	OL-BMI-SC01		OL-BMI-SC01-21-01		8/13/2021	Ponar		Paratanytarsus sp.	1	L	136		1.00	30.00	2	
650.5-034	OL-BMI-SC01		OL-BMI-SC01-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	18	L	136		1.00	30.00	2	
650.5-034	OL-BMI-SC01		OL-BMI-SC01-21-01		8/13/2021	Ponar		Limnodrilus sp.	4	L	136		1.00	30.00	2	
650.5-035	OL-BMI-SC01		OL-BMI-SC01-21-02		8/13/2021	Ponar		Limnodrilus sp.	2	L	114		4.00	30.00	1	
650.5-035	OL-BMI-SC01		OL-BMI-SC01-21-02		8/13/2021	Ponar		Chironomus sp.	1	L	114		4.00	30.00	1	
650.5-035	OL-BMI-SC01		OL-BMI-SC01-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	7	L	114		4.00	30.00	1	
650.5-035	OL-BMI-SC01		OL-BMI-SC01-21-02		8/13/2021	Ponar		Dreissena polymorpha	82	L	114		4.00	30.00	1	
650.5-035	OL-BMI-SC01		OL-BMI-SC01-21-02		8/13/2021	Ponar		Dreissena bugensis	7	L	114		4.00	30.00	1	
650.5-035	OL-BMI-SC01		OL-BMI-SC01-21-02		8/13/2021	Ponar		Tanytarsus sp.	1	L	114		4.00	30.00	1	
650.5-035	OL-BMI-SC01		OL-BMI-SC01-21-02		8/13/2021	Ponar		Limnodrilus sp.	4	L	114		4.00	30.00	2	
650.5-035	OL-BMI-SC01		OL-BMI-SC01-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	3	L	114		4.00	30.00	2	
650.5-035	OL-BMI-SC01		OL-BMI-SC01-21-02		8/13/2021	Ponar		Pisidium sp.	1	L	114		4.00	30.00	2	
650.5-035	OL-BMI-SC01		OL-BMI-SC01-21-02		8/13/2021	Ponar		Amnicola sp.	1	L	114		4.00	30.00	2	
650.5-035	OL-BMI-SC01		OL-BMI-SC01-21-02		8/13/2021	Ponar		Chironomus sp.	4	L	114		4.00	30.00	2	
650.5-035	OL-BMI-SC01		OL-BMI-SC01-21-02		8/13/2021	Ponar		Dicrotendipes sp.	1	L	114		4.00	30.00	2	
650.5-036	OL-BMI-SC02		OL-BMI-SC02-21-01		8/13/2021	Ponar		Dreissena polymorpha	62	L	115		5.00	30.00	1	
650.5-036	OL-BMI-SC02		OL-BMI-SC02-21-01		8/13/2021	Ponar		Dreissena bugensis	21	L	115		5.00	30.00	1	
650.5-036	OL-BMI-SC02		OL-BMI-SC02-21-01		8/13/2021	Ponar		Undetermined Bivalvia	1	L	115		5.00	30.00	1	
650.5-036	OL-BMI-SC02		OL-BMI-SC02-21-01		8/13/2021	Ponar		Limnodrilus sp.	2	L	115		5.00	30.00	1	
650.5-036	OL-BMI-SC02		OL-BMI-SC02-21-01		8/13/2021	Ponar		Cladopelma sp.	3	L	115		5.00	30.00	1	
650.5-036	OL-BMI-SC02		OL-BMI-SC02-21-01		8/13/2021	Ponar		Tanytarsus sp.	1	L	115		5.00	30.00	1	
650.5-036	OL-BMI-SC02		OL-BMI-SC02-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	7	L	115		5.00	30.00	1	
650.5-036	OL-BMI-SC02		OL-BMI-SC02-21-01		8/13/2021	Ponar		Chironomus sp.	3	L	115		5.00	30.00	1	
650.5-036	OL-BMI-SC02		OL-BMI-SC02-21-01		8/13/2021	Ponar		Pisidium sp.	3	L	115		5.00	30.00	2	
650.5-036	OL-BMI-SC02		OL-BMI-SC02-21-01		8/13/2021	Ponar		Tanytarsus sp.	1	L	115		5.00	30.00	2	
650.5-036	OL-BMI-SC02		OL-BMI-SC02-21-01		8/13/2021	Ponar		Valvata lewisi	6	L	115		5.00	30.00	2	
650.5-036	OL-BMI-SC02		OL-BMI-SC02-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	4	L	115		5.00	30.00	2	
650.5-036	OL-BMI-SC02		OL-BMI-SC02-21-01		8/13/2021	Ponar		Limnodrilus sp.	1	L	115		5.00	30.00	2	
650.5-037	OL-BMI-SC02		OL-BMI-SC02-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	1	L	116		5.00	30.00	1	
650.5-037	OL-BMI-SC02		OL-BMI-SC02-21-02		8/13/2021	Ponar		Cladopelma sp.	2	L	116		5.00	30.00	1	
650.5-037	OL-BMI-SC02		OL-BMI-SC02-21-02		8/13/2021	Ponar		Dreissena polymorpha	32	L	116		5.00	30.00	1	
650.5-037	OL-BMI-SC02		OL-BMI-SC02-21-02		8/13/2021	Ponar		Dreissena bugensis	65	L	116		5.00	30.00	1	
650.5-037	OL-BMI-SC02		OL-BMI-SC02-21-02		8/13/2021	Ponar		Cladopelma sp.	2	L	116		5.00	30.00	2	
650.5-037	OL-BMI-SC02		OL-BMI-SC02-21-02		8/13/2021	Ponar		tra Co	1	L	116		5.00	30.00	2	
650.5-037	OL-BMI-SC02		OL-BMI-SC02-21-02		8/13/2021	Ponar		Valvata sp.	3	L	116		5.00	30.00	2	
650.5-037	OL-BMI-SC02		OL-BMI-SC02-21-02		8/13/2021	Ponar		Pisidium sp.	5	L	116		5.00	30.00	2	
650.5-037	OL-BMI-SC02		OL-BMI-SC02-21-02		8/13/2021	Ponar		Dicrotendipes sp.	1	L	116		5.00	30.00	2	
650.5-037	OL-BMI-SC02		OL-BMI-SC02-21-02		8/13/2021	Ponar		Chironomus sp.	4	L	116		5.00	30.00	2	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-038	OL-BMI-SC03		OL-BMI-SC03-21-01		8/13/2021	Ponar		Rhyacodrilus sp.	1	L	66		30.00		1	
650.5-038	OL-BMI-SC03		OL-BMI-SC03-21-01		8/13/2021	Ponar		Pisidium sp.	3	L	66		30.00		1	
650.5-038	OL-BMI-SC03		OL-BMI-SC03-21-01		8/13/2021	Ponar		Dreissena polymorpha	27	L	66		30.00		1	
650.5-038	OL-BMI-SC03		OL-BMI-SC03-21-01		8/13/2021	Ponar		Dreissena bugensis	15	L	66		30.00		1	
650.5-038	OL-BMI-SC03		OL-BMI-SC03-21-01		8/13/2021	Ponar		Cladopelma sp.	2	L	66		30.00		1	
650.5-038	OL-BMI-SC03		OL-BMI-SC03-21-01		8/13/2021	Ponar		Cryptochironomus sp.	1	L	66		30.00		1	
650.5-038	OL-BMI-SC03		OL-BMI-SC03-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	12	L	66		30.00		1	
650.5-038	OL-BMI-SC03		OL-BMI-SC03-21-01		8/13/2021	Ponar		Valvata lewisi	1	L	66		30.00		1	
650.5-038	OL-BMI-SC03		OL-BMI-SC03-21-01		8/13/2021	Ponar		Limnodrilus sp.	3	L	66		30.00		1	
650.5-038	OL-BMI-SC03		OL-BMI-SC03-21-01		8/13/2021	Ponar		Chironomus sp.	1	L	66		30.00		1	
650.5-039	OL-BMI-SC03		OL-BMI-SC03-21-02		8/13/2021	Ponar		Cladopelma sp.	7	L	23		30.00		1	
650.5-039	OL-BMI-SC03		OL-BMI-SC03-21-02		8/13/2021	Ponar		Limnodrilus sp.	6	L	23		30.00		1	
650.5-039	OL-BMI-SC03		OL-BMI-SC03-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	3	L	23		30.00		1	
650.5-039	OL-BMI-SC03		OL-BMI-SC03-21-02		8/13/2021	Ponar		Pisidium sp.	2	L	23		30.00		1	
650.5-039	OL-BMI-SC03		OL-BMI-SC03-21-02		8/13/2021	Ponar		Undetermined Hydrobiidae	1	L	23		30.00		1	
650.5-039	OL-BMI-SC03		OL-BMI-SC03-21-02		8/13/2021	Ponar		Dreissena bugensis	2	L	23		30.00		1	
650.5-039	OL-BMI-SC03		OL-BMI-SC03-21-02		8/13/2021	Ponar		Procladius sp.	1	L	23		30.00		1	
650.5-039	OL-BMI-SC03		OL-BMI-SC03-21-02		8/13/2021	Ponar		Chironomus sp.	1	L	23		30.00		1	
650.5-040	OL-BMI-GD01		OL-BMI-GD01-21-01		8/20/2021	Multiplate		Chironomus sp.	1	L	70		4.00		1	
650.5-040	OL-BMI-GD01		OL-BMI-GD01-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	1	L	70		4.00		1	
650.5-040	OL-BMI-GD01		OL-BMI-GD01-21-01		8/20/2021	Multiplate		Dreissena polymorpha	52	L	70		4.00		1	
650.5-040	OL-BMI-GD01		OL-BMI-GD01-21-01		8/20/2021	Multiplate		Undetermined Glossiphoniidae	1	L	70		4.00		1	
650.5-040	OL-BMI-GD01		OL-BMI-GD01-21-01		8/20/2021	Multiplate		Amnicola sp.	1	L	70		4.00		1	
650.5-040	OL-BMI-GD01		OL-BMI-GD01-21-01		8/20/2021	Multiplate		Hyalella sp.	4	L	70		4.00		1	
650.5-040	OL-BMI-GD01		OL-BMI-GD01-21-01		8/20/2021	Multiplate		Physella sp.	2	L	70		4.00		1	
650.5-040	OL-BMI-GD01		OL-BMI-GD01-21-01		8/20/2021	Multiplate		Gyraulus sp.	6	L	70		4.00		1	
650.5-040	OL-BMI-GD01		OL-BMI-GD01-21-01		8/20/2021	Multiplate		Caenis sp.	2	L	70		4.00		1	
650.5-041	OL-BMI-GD02		OL-BMI-GD02-21-01		8/20/2021	Multiplate		Hyalella sp.	3	L	89		4.00		1	
650.5-041	OL-BMI-GD02		OL-BMI-GD02-21-01		8/20/2021	Multiplate		Nais sp.	1	L	89		4.00		1	
650.5-041	OL-BMI-GD02		OL-BMI-GD02-21-01		8/20/2021	Multiplate		Helisoma sp.	3	L	89		4.00		1	
650.5-041	OL-BMI-GD02		OL-BMI-GD02-21-01		8/20/2021	Multiplate		Gyraulus sp.	19	L	89		4.00		1	
650.5-041	OL-BMI-GD02		OL-BMI-GD02-21-01		8/20/2021	Multiplate		Undetermined Turbellaria	1	L	89		4.00		1	
650.5-041	OL-BMI-GD02		OL-BMI-GD02-21-01		8/20/2021	Multiplate		Gammarus sp.	1	L	89		4.00		1	
650.5-041	OL-BMI-GD02		OL-BMI-GD02-21-01		8/20/2021	Multiplate		Dreissena polymorpha	35	L	89		4.00		1	
650.5-041	OL-BMI-GD02		OL-BMI-GD02-21-01		8/20/2021	Multiplate		Dreissena bugensis	19	L	89		4.00		1	
650.5-041	OL-BMI-GD02		OL-BMI-GD02-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	2	L	89		4.00		1	
650.5-041	OL-BMI-GD02		OL-BMI-GD02-21-01		8/20/2021	Multiplate		Chironomus sp.	1	L	89		4.00		1	
650.5-041	OL-BMI-GD02		OL-BMI-GD02-21-01		8/20/2021	Multiplate		Caenis sp.	2	L	89		4.00		1	
650.5-041	OL-BMI-GD02		OL-BMI-GD02-21-01		8/20/2021	Multiplate		Caecidotea sp.	2	L	89		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Physella sp.	1	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Undetermined Naididae	2	L	99	damaged	4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Caenis sp.	3	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Tanytarsus sp.	8	L	99		4.00		1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Chironomus sp.	44	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Cladopelma sp.	2	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Undetermined Corduliidae	1	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Dero sp.	8	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Dreissena bugensis	13	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Aulodrilus sp.	1	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Hyalella sp.	6	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Nais sp.	2	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Gyraulus sp.	1	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Undet. Tubificidae w/o cap. setae	1	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Polypedilum halterale gr.	4	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Gammarus sp.	1	L	99		4.00		1	
650.5-042	OL-BMI-GD03		OL-BMI-GD03-21-01		8/20/2021	Multiplate		Undetermined Hydrobiidae	1	L	99		4.00		1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Tanytarsus sp.	2	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Larsia sp.	1	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Undet. Tubificidae w/o cap. setae	2	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Ablabesmyia sp.	2	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Polypedilum halterale gr.	3	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Paratanytarsus sp.	2	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Ischnura sp.	2	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Cladopelma sp.	3	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Limnodrilus sp.	1	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Hyalella sp.	19	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Undetermined Planorbidae	1	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Dreissena polymorpha	1	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Pseudochironomus sp.	51	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Caenis sp.	3	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Chironomus sp.	1	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Undetermined Ceratopogonidae	2	L	100		19.00	20.00	1	
650.5-043	OL-BMI-TD02		OL-BMI-TD02-21-01		8/20/2021	Ponar		Undetermined Turbellaria	4	L	100		19.00	20.00	1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Caenis sp.	6	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Callibaetis sp.	1	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Ferrissia sp.	1	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Undetermined Turbellaria	9	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Dicrotendipes sp.	1	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Undet. Tubificidae w/o cap. setae	5	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Limnodrilus sp.	2	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Hyalella sp.	57	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Limnesia sp.	1	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Physella sp.	3	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Pseudochironomus sp.	3	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Paratanytarsus sp.	4	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Ischnura sp.	1	L	100		15.00		1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Undetermined Hydrobiidae	2	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Hydroptila sp.	1	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Procladius sp.	1	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Triaenodes sp.	1	L	100		15.00		1	
650.5-044	OL-BMI-TD02		OL-BMI-TD02-21-02		8/20/2021	Ponar		Gyraulus sp.	1	L	100		15.00		1	
650.5-045	OL-BMI-TD03		OL-BMI-TD03-21-01		8/20/2021	Ponar		Undet. Tubificidae w/o cap. setae	1	L	11		30.00		1	
650.5-045	OL-BMI-TD03		OL-BMI-TD03-21-01		8/20/2021	Ponar		Undetermined Ceratopogonidae	1	L	11		30.00		1	
650.5-045	OL-BMI-TD03		OL-BMI-TD03-21-01		8/20/2021	Ponar		Pseudochironomus sp.	1	L	11		30.00		1	
650.5-045	OL-BMI-TD03		OL-BMI-TD03-21-01		8/20/2021	Ponar		Undetermined Tanypodinae	1	L	11		30.00		1	
650.5-045	OL-BMI-TD03		OL-BMI-TD03-21-01		8/20/2021	Ponar		Tanypus sp.	2	L	11		30.00		1	
650.5-045	OL-BMI-TD03		OL-BMI-TD03-21-01		8/20/2021	Ponar		Hyalella sp.	4	L	11		30.00		1	
650.5-045	OL-BMI-TD03		OL-BMI-TD03-21-01		8/20/2021	Ponar		Ischnura sp.	1	L	11		30.00		1	
650.5-046	OL-BMI-TD03		OL-BMI-TD03-21-02		8/20/2021	Ponar		Larsia sp.	1	L	19		30.00		1	
650.5-046	OL-BMI-TD03		OL-BMI-TD03-21-02		8/20/2021	Ponar		Pseudochironomus sp.	1	L	19		30.00		1	
650.5-046	OL-BMI-TD03		OL-BMI-TD03-21-02		8/20/2021	Ponar		Polypedilum halterale gr.	2	L	19		30.00		1	
650.5-046	OL-BMI-TD03		OL-BMI-TD03-21-02		8/20/2021	Ponar		Tanypus sp.	3	L	19		30.00		1	
650.5-046	OL-BMI-TD03		OL-BMI-TD03-21-02		8/20/2021	Ponar		Hyalella sp.	1	L	19		30.00		1	
650.5-046	OL-BMI-TD03		OL-BMI-TD03-21-02		8/20/2021	Ponar		Limnodrilus sp.	6	L	19		30.00		1	
650.5-046	OL-BMI-TD03		OL-BMI-TD03-21-02		8/20/2021	Ponar		Undet. Tubificidae w/o cap. setae	4	L	19		30.00		1	
650.5-046	OL-BMI-TD03		OL-BMI-TD03-21-02		8/20/2021	Ponar		Undetermined Ceratopogonidae	1	L	19		30.00		1	
650.5-047	OL-BMI-SD01		OL-BMI-SD01-21-01		8/13/2021	Ponar		Cryptochironomus sp.	1	L	17		30.00		1	
650.5-047	OL-BMI-SD01		OL-BMI-SD01-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	8	L	17		30.00		1	
650.5-047	OL-BMI-SD01		OL-BMI-SD01-21-01		8/13/2021	Ponar		Limnodrilus sp.	1	L	17		30.00		1	
650.5-047	OL-BMI-SD01		OL-BMI-SD01-21-01		8/13/2021	Ponar		Pisidium sp.	2	L	17		30.00		1	
650.5-047	OL-BMI-SD01		OL-BMI-SD01-21-01		8/13/2021	Ponar		Chironomus sp.	3	L	17		30.00		1	
650.5-047	OL-BMI-SD01		OL-BMI-SD01-21-01		8/13/2021	Ponar		Dreissena bugensis	2	L	17		30.00		1	
650.5-048	OL-BMI-SD01		OL-BMI-SD01-21-02		8/13/2021	Ponar		Cladopelma sp.	2	L	25		30.00		1	
650.5-048	OL-BMI-SD01		OL-BMI-SD01-21-02		8/13/2021	Ponar		Limnodrilus sp.	2	L	25		30.00		1	
650.5-048	OL-BMI-SD01		OL-BMI-SD01-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	13	L	25		30.00		1	
650.5-048	OL-BMI-SD01		OL-BMI-SD01-21-02		8/13/2021	Ponar		Chironomus sp.	4	L	25		30.00		1	
650.5-048	OL-BMI-SD01		OL-BMI-SD01-21-02		8/13/2021	Ponar		Cryptochironomus sp.	1	L	25		30.00		1	
650.5-048	OL-BMI-SD01		OL-BMI-SD01-21-02		8/13/2021	Ponar		Undetermined Bivalvia	1	L	25		30.00		1	
650.5-048	OL-BMI-SD01		OL-BMI-SD01-21-02		8/13/2021	Ponar		Procladius sp.	1	L	25		30.00		1	
650.5-048	OL-BMI-SD01		OL-BMI-SD01-21-02		8/13/2021	Ponar		Corbicula fluminea	1	L	25		30.00		1	
650.5-049	OL-BMI-SD02		OL-BMI-SD02-21-01		8/13/2021	Ponar		Chironomus sp.	7	L	10		30.00	30.00	1	
650.5-049	OL-BMI-SD02		OL-BMI-SD02-21-01		8/13/2021	Ponar		Gyraulus sp.	1	L	10		30.00	30.00	1	
650.5-049	OL-BMI-SD02		OL-BMI-SD02-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	2	L	10		30.00	30.00	1	
650.5-050	OL-BMI-SD02		OL-BMI-SD02-21-02		8/13/2021	Ponar		Chironomus sp.	4	L	4		30.00		1	
650.5-051	OL-BMI-SD03		OL-BMI-SD03-21-01		8/13/2021	Ponar		Dreissena bugensis	10	L	65		30.00	30.00	1	
650.5-051	OL-BMI-SD03		OL-BMI-SD03-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	9	L	65		30.00	30.00	1	
650.5-051	OL-BMI-SD03		OL-BMI-SD03-21-01		8/13/2021	Ponar		Rhyacodrilus sp.	1	L	65		30.00	30.00	1	
650.5-051	OL-BMI-SD03		OL-BMI-SD03-21-01		8/13/2021	Ponar		Dreissena polymorpha	44	L	65		30.00	30.00	1	
650.5-051	OL-BMI-SD03		OL-BMI-SD03-21-01		8/13/2021	Ponar		Limnodrilus sp.	1	L	65		30.00	30.00	1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-052	OL-BMI-SD03		OL-BMI-SD03-21-02		8/13/2021	Ponar		Undetermined Bivalvia	1	L	6		30.00	30.00	1	
650.5-052	OL-BMI-SD03		OL-BMI-SD03-21-02		8/13/2021	Ponar		Undetermined Naididae	2	L	6		30.00	30.00	1	
650.5-052	OL-BMI-SD03		OL-BMI-SD03-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	3	L	6		30.00	30.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Chironomus sp.	5	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Polypedilum halterale gr.	6	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Rhyacodrilus sp.	2	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Limnodrilus sp.	4	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	18	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Undetermined Planorbidae	1	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Dero sp.	2	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Ochrotrichia sp.	2	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Paratanytarsus sp.	17	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Hyalella sp.	3	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Ischnura sp.	1	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Gammarus sp.	3	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Tanytarsus sp.	4	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Pseudochironomus sp.	1	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Corynoneura sp.	1	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Cladopelma sp.	1	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Caenis sp.	15	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Callibaetis sp.	1	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Undetermined Turbellaria	11	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Dreissena bugensis	2	L	102		19.00	23.00	1	
650.5-053	OL-BMI-TD01		OL-BMI-TD01-21-01		8/13/2021	Ponar		Paratanytarsus sp.	2	L	102		19.00	23.00	2	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	7	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Paratanytarsus sp.	31	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Undetermined Naididae	5	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Gyraulus sp.	10	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Hyalella sp.	6	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Undetermined Turbellaria	5	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Gammarus sp.	2	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Enallagma sp.	1	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Nais sp.	1	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Tanytarsus sp.	9	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Polypedilum halterale gr.	3	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Cricotopus sylvestris gr.	2	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Cladopelma sp.	2	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Ablabesmyia sp.	2	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Pseudochironomus sp.	1	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Procladius sp.	1	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Chironomus sp.	1	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Caenis sp.	2	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Bithynia sp.	4	L	105		15.00	16.00	1	

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WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Dreissena polymorpha	5	L	105		15.00	16.00	1	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Hyalella sp.	2	L	105		15.00	16.00	2	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Helisoma sp.	1	L	105		15.00	16.00	2	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Caenis sp.	1	L	105		15.00	16.00	2	
650.5-054	OL-BMI-TD01		OL-BMI-TD01-21-02		8/13/2021	Ponar		Paratanytarsus sp.	1	L	105		15.00	16.00	2	
650.5-055	OL-BMI-CE01		OL-BMI-CE01-21-01		8/20/2021	Multiplate		Dreissena polymorpha	18	L	162		4.00		1	
650.5-055	OL-BMI-CE01		OL-BMI-CE01-21-01		8/20/2021	Multiplate		Undetermined Planorbidae	2	L	162		4.00		1	
650.5-055	OL-BMI-CE01		OL-BMI-CE01-21-01		8/20/2021	Multiplate		Gyraulus sp.	1	L	162		4.00		1	
650.5-055	OL-BMI-CE01		OL-BMI-CE01-21-01		8/20/2021	Multiplate		Hydroptila sp.	19	L	162		4.00		1	
650.5-055	OL-BMI-CE01		OL-BMI-CE01-21-01		8/20/2021	Multiplate		Gammarus sp.	40	L	162		4.00		1	
650.5-055	OL-BMI-CE01		OL-BMI-CE01-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	14	L	162		4.00		1	
650.5-055	OL-BMI-CE01		OL-BMI-CE01-21-01		8/20/2021	Multiplate		Dicrotendipes sp.	6	L	162		4.00		1	
650.5-055	OL-BMI-CE01		OL-BMI-CE01-21-01		8/20/2021	Multiplate		Cricotopus/Orthocladius Complex	5	L	162		4.00		1	
650.5-055	OL-BMI-CE01		OL-BMI-CE01-21-01		8/20/2021	Multiplate		Pseudochironomus sp.	2	L	162		4.00		1	
650.5-055	OL-BMI-CE01		OL-BMI-CE01-21-01		8/20/2021	Multiplate		Polypedilum halterale gr.	1	L	162		4.00		1	
650.5-055	OL-BMI-CE01		OL-BMI-CE01-21-01		8/20/2021	Multiplate		Undetermined Turbellaria	52	L	162		4.00		1	
650.5-055	OL-BMI-CE01		OL-BMI-CE01-21-01		8/20/2021	Multiplate		Chironomus sp.	1	L	162		4.00		1	
650.5-055	OL-BMI-CE01		OL-BMI-CE01-21-01		8/20/2021	Multiplate		Cricotopus bicinctus	1	L	162		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Undetermined Glossiphoniidae	1	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Corynoneura sp.	2	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Hyalella sp.	1	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Hydroptila sp.	4	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Gammarus sp.	9	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Dreissena polymorpha	76	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	38	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Dicrotendipes sp.	7	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Undetermined Turbellaria	13	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Cricotopus/Orthocladius Complex	2	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Chironomus sp.	2	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Tanytarsus sp.	1	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Pseudochironomus sp.	1	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Parachironomus sp.	1	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Psectrocladius sp.	4	L	166		4.00		1	
650.5-056	OL-BMI-CE02		OL-BMI-CE02-21-01		8/20/2021	Multiplate		Gyraulus sp.	4	L	166		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Micromenetus sp.	3	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Helisoma sp.	3	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Undetermined Planorbidae	1	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Gyraulus sp.	1	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Physella sp.	1	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Hydroptila sp.	6	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Dreissena polymorpha	12	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Dicrotendipes sp.	27	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Caecidotea sp.	1	L	112		4.00		1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Gammarus sp.	6	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	11	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Psectrocladius sp.	1	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Procladius sp.	1	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Corynoneura sp.	1	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Chironomus sp.	1	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Ablabesmyia mallochi	1	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Hyalella sp.	9	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Caenis sp.	1	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Undetermined Turbellaria	24	L	112		4.00		1	
650.5-057	OL-BMI-CE03		OL-BMI-CE03-21-01		8/20/2021	Multiplate		Undetermined Ceratopogonidae	1	L	112		4.00		1	
650.5-058	OL-BMI-GE01		OL-BMI-GE01-21-01		8/20/2021	Multiplate		Nais sp.	2	L	125		4.00		1	
650.5-058	OL-BMI-GE01		OL-BMI-GE01-21-01		8/20/2021	Multiplate		Gammarus sp.	5	L	125		4.00		1	
650.5-058	OL-BMI-GE01		OL-BMI-GE01-21-01		8/20/2021	Multiplate		Dreissena polymorpha	87	L	125		4.00		1	
650.5-058	OL-BMI-GE01		OL-BMI-GE01-21-01		8/20/2021	Multiplate		Parachironomus sp.	12	L	125		4.00		1	
650.5-058	OL-BMI-GE01		OL-BMI-GE01-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	4	L	125		4.00		1	
650.5-058	OL-BMI-GE01		OL-BMI-GE01-21-01		8/20/2021	Multiplate		Glyptotendipes sp.	2	L	125		4.00		1	
650.5-058	OL-BMI-GE01		OL-BMI-GE01-21-01		8/20/2021	Multiplate		Gyraulus sp.	7	L	125		4.00		1	
650.5-058	OL-BMI-GE01		OL-BMI-GE01-21-01		8/20/2021	Multiplate		Chironomus sp.	2	L	125		4.00		1	
650.5-058	OL-BMI-GE01		OL-BMI-GE01-21-01		8/20/2021	Multiplate		Helisoma sp.	2	L	125		4.00		1	
650.5-058	OL-BMI-GE01		OL-BMI-GE01-21-01		8/20/2021	Multiplate		Dicrotendipes sp.	1	L	125		4.00		1	
650.5-058	OL-BMI-GE01		OL-BMI-GE01-21-01		8/20/2021	Multiplate		Cladopelma sp.	1	L	125		4.00		1	
650.5-059	OL-BMI-GE02		OL-BMI-GE02-21-01		8/20/2021	Multiplate		Undetermined Naididae	4	L	128		4.00		1	
650.5-059	OL-BMI-GE02		OL-BMI-GE02-21-01		8/20/2021	Multiplate		Dero sp.	10	L	128		4.00		1	
650.5-059	OL-BMI-GE02		OL-BMI-GE02-21-01		8/20/2021	Multiplate		Amnicola sp.	1	L	128		4.00		1	
650.5-059	OL-BMI-GE02		OL-BMI-GE02-21-01		8/20/2021	Multiplate		Gammarus sp.	4	L	128		4.00		1	
650.5-059	OL-BMI-GE02		OL-BMI-GE02-21-01		8/20/2021	Multiplate		Dreissena polymorpha	92	L	128		4.00		1	
650.5-059	OL-BMI-GE02		OL-BMI-GE02-21-01		8/20/2021	Multiplate		Dicrotendipes sp.	6	L	128		4.00		1	
650.5-059	OL-BMI-GE02		OL-BMI-GE02-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	5	L	128		4.00		1	
650.5-059	OL-BMI-GE02		OL-BMI-GE02-21-01		8/20/2021	Multiplate		Psectrocladius sp.	1	L	128		4.00		1	
650.5-059	OL-BMI-GE02		OL-BMI-GE02-21-01		8/20/2021	Multiplate		Cladopelma sp.	1	L	128		4.00		1	
650.5-059	OL-BMI-GE02		OL-BMI-GE02-21-01		8/20/2021	Multiplate		Chironomus sp.	1	L	128		4.00		1	
650.5-059	OL-BMI-GE02		OL-BMI-GE02-21-01		8/20/2021	Multiplate		Caenis sp.	1	L	128		4.00		1	
650.5-059	OL-BMI-GE02		OL-BMI-GE02-21-01		8/20/2021	Multiplate		Undetermined Turbellaria	1	L	128		4.00		1	
650.5-059	OL-BMI-GE02		OL-BMI-GE02-21-01		8/20/2021	Multiplate		Valvata lewisi	1	L	128		4.00		1	
650.5-060	OL-BMI-GE03		OL-BMI-GE03-21-01		8/20/2021	Multiplate		Paratanytarsus sp.	1	L	185		4.00		1	
650.5-060	OL-BMI-GE03		OL-BMI-GE03-21-01		8/20/2021	Multiplate		Hyalella sp.	2	L	185		4.00		1	
650.5-060	OL-BMI-GE03		OL-BMI-GE03-21-01		8/20/2021	Multiplate		Gyraulus sp.	20	L	185		4.00		1	
650.5-060	OL-BMI-GE03		OL-BMI-GE03-21-01		8/20/2021	Multiplate		Physella sp.	4	L	185		4.00		1	
650.5-060	OL-BMI-GE03		OL-BMI-GE03-21-01		8/20/2021	Multiplate		Amnicola sp.	58	L	185		4.00		1	
650.5-060	OL-BMI-GE03		OL-BMI-GE03-21-01		8/20/2021	Multiplate		Gammarus sp.	7	L	185		4.00		1	
650.5-060	OL-BMI-GE03		OL-BMI-GE03-21-01		8/20/2021	Multiplate		Dreissena polymorpha	83	L	185		4.00		1	
650.5-060	OL-BMI-GE03		OL-BMI-GE03-21-01		8/20/2021	Multiplate		Enallagma sp.	1	L	185		4.00		1	
650.5-060	OL-BMI-GE03		OL-BMI-GE03-21-01		8/20/2021	Multiplate		Dicrotendipes sp.	2	L	185		4.00		1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-060	OL-BMI-GE03		OL-BMI-GE03-21-01		8/20/2021	Multiplate		Corynoneura sp.	1	L	185		4.00		1	
650.5-060	OL-BMI-GE03		OL-BMI-GE03-21-01		8/20/2021	Multiplate		Undetermined Turbellaria	1	L	185		4.00		1	
650.5-060	OL-BMI-GE03		OL-BMI-GE03-21-01		8/20/2021	Multiplate		Dreissena bugensis	2	L	185		4.00		1	
650.5-060	OL-BMI-GE03		OL-BMI-GE03-21-01		8/20/2021	Multiplate		Chironomus sp.	3	L	185		4.00		1	
650.5-061	OL-BMI-SE02		OL-BMI-SE02-21-01		8/20/2021	Ponar		Undet. Tubificidae w/o cap. setae	4	L	6		30.00	30.00	1	
650.5-061	OL-BMI-SE02		OL-BMI-SE02-21-01		8/20/2021	Ponar		Undetermined Naididae	1	L	6		30.00	30.00	1	
650.5-061	OL-BMI-SE02		OL-BMI-SE02-21-01		8/20/2021	Ponar		Undetermined Bivalvia	1	L	6		30.00	30.00	1	
650.5-062	OL-BMI-SE02		OL-BMI-SE02-21-02		8/20/2021	Ponar		Dreissena polymorpha	3	L	18		30.00	30.00	1	
650.5-062	OL-BMI-SE02		OL-BMI-SE02-21-02		8/20/2021	Ponar		Sphaerium sp.	1	L	18		30.00	30.00	1	
650.5-062	OL-BMI-SE02		OL-BMI-SE02-21-02		8/20/2021	Ponar		Pisidium sp.	5	L	18		30.00	30.00	1	
650.5-062	OL-BMI-SE02		OL-BMI-SE02-21-02		8/20/2021	Ponar		Undet. Tubificidae w/o cap. setae	4	L	18		30.00	30.00	1	
650.5-062	OL-BMI-SE02		OL-BMI-SE02-21-02		8/20/2021	Ponar		Limnodrilus sp.	5	L	18		30.00	30.00	1	
650.5-063	OL-BMI-SE03		OL-BMI-SE03-21-01		8/20/2021	Ponar		Undet. Tubificidae w/o cap. setae	1	L	10		30.00	30.00	1	
650.5-063	OL-BMI-SE03		OL-BMI-SE03-21-01		8/20/2021	Ponar		Cladopelma sp.	1	L	10		30.00	30.00	1	
650.5-063	OL-BMI-SE03		OL-BMI-SE03-21-01		8/20/2021	Ponar		Dreissena polymorpha	1	L	10		30.00	30.00	1	
650.5-063	OL-BMI-SE03		OL-BMI-SE03-21-01		8/20/2021	Ponar		Pisidium sp.	5	L	10		30.00	30.00	1	
650.5-063	OL-BMI-SE03		OL-BMI-SE03-21-01		8/20/2021	Ponar		Limnodrilus sp.	1	L	10		30.00	30.00	1	
650.5-063	OL-BMI-SE03		OL-BMI-SE03-21-01		8/20/2021	Ponar		Cryptochironomus sp.	1	L	10		30.00	30.00	1	
650.5-064	OL-BMI-SE03		OL-BMI-SE03-21-02		8/20/2021	Ponar		Cryptochironomus sp.	1	L	17		30.00	30.00	1	
650.5-064	OL-BMI-SE03		OL-BMI-SE03-21-02		8/20/2021	Ponar		Rhyacodrilus sp.	4	L	17		30.00	30.00	1	
650.5-064	OL-BMI-SE03		OL-BMI-SE03-21-02		8/20/2021	Ponar		Limnodrilus sp.	3	L	17		30.00	30.00	1	
650.5-064	OL-BMI-SE03		OL-BMI-SE03-21-02		8/20/2021	Ponar		Chironomus sp.	2	L	17		30.00	30.00	1	
650.5-064	OL-BMI-SE03		OL-BMI-SE03-21-02		8/20/2021	Ponar		Undet. Tubificidae w/o cap. setae	7	L	17		30.00	30.00	1	
650.5-065	OL-BMI-SE01		OL-BMI-SE01-21-01		8/13/2021	Ponar		Dreissena polymorpha	1	L	100		30.00	30.00	1	
650.5-065	OL-BMI-SE01		OL-BMI-SE01-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	49	L	100		30.00	30.00	1	
650.5-065	OL-BMI-SE01		OL-BMI-SE01-21-01		8/13/2021	Ponar		Cladopelma sp.	1	L	100		30.00	30.00	1	
650.5-065	OL-BMI-SE01		OL-BMI-SE01-21-01		8/13/2021	Ponar		Undetermined Bivalvia	7	L	100	unique	30.00	30.00	1	
650.5-065	OL-BMI-SE01		OL-BMI-SE01-21-01		8/13/2021	Ponar		Cryptochironomus sp.	1	L	100		30.00	30.00	1	
650.5-065	OL-BMI-SE01		OL-BMI-SE01-21-01		8/13/2021	Ponar		Rhyacodrilus sp.	4	L	100		30.00	30.00	1	
650.5-065	OL-BMI-SE01		OL-BMI-SE01-21-01		8/13/2021	Ponar		Chironomus sp.	4	L	100		30.00	30.00	1	
650.5-065	OL-BMI-SE01		OL-BMI-SE01-21-01		8/13/2021	Ponar		Aulodrilus sp.	1	L	100		30.00	30.00	1	
650.5-065	OL-BMI-SE01		OL-BMI-SE01-21-01		8/13/2021	Ponar		Undetermined Naididae	1	L	100		30.00	30.00	1	
650.5-065	OL-BMI-SE01		OL-BMI-SE01-21-01		8/13/2021	Ponar		Limnodrilus sp.	30	L	100		30.00	30.00	1	
650.5-065	OL-BMI-SE01		OL-BMI-SE01-21-01		8/13/2021	Ponar		Nais sp.	1	L	100		30.00	30.00	1	
650.5-066	OL-BMI-SE01		OL-BMI-SE01-21-02		8/13/2021	Ponar		Undetermined Bivalvia	2	L	46		30.00	30.00	1	
650.5-066	OL-BMI-SE01		OL-BMI-SE01-21-02		8/13/2021	Ponar		Chironomus sp.	2	L	46		30.00	30.00	1	
650.5-066	OL-BMI-SE01		OL-BMI-SE01-21-02		8/13/2021	Ponar		Limnodrilus sp.	20	L	46		30.00	30.00	1	
650.5-066	OL-BMI-SE01		OL-BMI-SE01-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	22	L	46		30.00	30.00	1	
650.5-067	OL-BMI-CSX01		OL-BMI-CSX01-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	18	L	157		15.00	20.00	1	
650.5-067	OL-BMI-CSX01		OL-BMI-CSX01-21-01		8/13/2021	Ponar		Limnodrilus sp.	21	L	157		15.00	20.00	1	
650.5-067	OL-BMI-CSX01		OL-BMI-CSX01-21-01		8/13/2021	Ponar		Undetermined Planorbidae	1	L	157		15.00	20.00	1	
650.5-067	OL-BMI-CSX01		OL-BMI-CSX01-21-01		8/13/2021	Ponar		Undetermined Naididae	1	L	157		15.00	20.00	1	
650.5-067	OL-BMI-CSX01		OL-BMI-CSX01-21-01		8/13/2021	Ponar		Dreissena polymorpha	57	L	157		15.00	20.00	1	
650.5-067	OL-BMI-CSX01		OL-BMI-CSX01-21-01		8/13/2021	Ponar		Cricotopus trifascia gr.	1	L	157		15.00	20.00	1	
650.5-067	OL-BMI-CSX01		OL-BMI-CSX01-21-01		8/13/2021	Ponar		Rhyacodrilus sp.	1	L	157		15.00	20.00	1	
650.5-067	OL-BMI-CSX01		OL-BMI-CSX01-21-01		8/13/2021	Ponar		Rhyacodrilus sp.	3	L	157		15.00	20.00	2	
650.5-067	OL-BMI-CSX01		OL-BMI-CSX01-21-01		8/13/2021	Ponar		Stylaria sp.	1	L	157		15.00	20.00	2	
650.5-067	OL-BMI-CSX01		OL-BMI-CSX01-21-01		8/13/2021	Ponar		Helisoma sp.	2	L	157		15.00	20.00	2	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-067	OL-BMI-CSX01		OL-BMI-CSX01-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	20	L	157		15.00	20.00	2	
650.5-067	OL-BMI-CSX01		OL-BMI-CSX01-21-01		8/13/2021	Ponar		Limnodrilus sp.	30	L	157		15.00	20.00	2	
650.5-067	OL-BMI-CSX01		OL-BMI-CSX01-21-01		8/13/2021	Ponar		Parachironomus sp.	1	L	157		15.00	20.00	2	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Limnodrilus sp.	5	L	151		12.00	23.00	1	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Undetermined Turbellaria	3	L	151		12.00	23.00	1	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Cricotopus sylvestris gr.	3	L	151		12.00	23.00	1	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Ablabesmyia sp.	1	L	151		12.00	23.00	1	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Parachironomus sp.	1	L	151		12.00	23.00	1	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	19	L	151		12.00	23.00	1	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Hyalella sp.	1	L	151		12.00	23.00	1	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Helisoma sp.	7	L	151		12.00	23.00	1	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Gyraulus sp.	6	L	151		12.00	23.00	1	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Hydroptila sp.	1	L	151		12.00	23.00	1	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Dreissena polymorpha	51	L	151		12.00	23.00	1	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Gammarus sp.	2	L	151		12.00	23.00	1	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	24	L	151		12.00	23.00	2	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Paratanytarsus sp.	2	L	151		12.00	23.00	2	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Cricotopus sylvestris gr.	3	L	151		12.00	23.00	2	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Parachironomus sp.	4	L	151		12.00	23.00	2	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Hydroptila sp.	1	L	151		12.00	23.00	2	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Gyraulus sp.	11	L	151		12.00	23.00	2	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Hyalella sp.	2	L	151		12.00	23.00	2	
650.5-068	OL-BMI-CSX01		OL-BMI-CSX01-21-02		8/13/2021	Ponar		Limnodrilus sp.	4	L	151		12.00	23.00	2	
650.5-069	OL-BMI-CSX02		OL-BMI-CSX02-21-01		8/12/2021	Ponar		Undetermined Coenagrionidae	1	L	53		30.00	30.00	1	
650.5-069	OL-BMI-CSX02		OL-BMI-CSX02-21-01		8/12/2021	Ponar		Gammarus sp.	1	L	53		30.00	30.00	1	
650.5-069	OL-BMI-CSX02		OL-BMI-CSX02-21-01		8/12/2021	Ponar		Gyraulus sp.	4	L	53		30.00	30.00	1	
650.5-069	OL-BMI-CSX02		OL-BMI-CSX02-21-01		8/12/2021	Ponar		Dicrotendipes sp.	2	L	53		30.00	30.00	1	
650.5-069	OL-BMI-CSX02		OL-BMI-CSX02-21-01		8/12/2021	Ponar		Limnodrilus sp.	7	L	53		30.00	30.00	1	
650.5-069	OL-BMI-CSX02		OL-BMI-CSX02-21-01		8/12/2021	Ponar		Rhyacodrilus sp.	2	L	53		30.00	30.00	1	
650.5-069	OL-BMI-CSX02		OL-BMI-CSX02-21-01		8/12/2021	Ponar		Helisoma sp.	2	L	53		30.00	30.00	1	
650.5-069	OL-BMI-CSX02		OL-BMI-CSX02-21-01		8/12/2021	Ponar		Parachironomus sp.	4	L	53		30.00	30.00	1	
650.5-069	OL-BMI-CSX02		OL-BMI-CSX02-21-01		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	16	L	53		30.00	30.00	1	
650.5-069	OL-BMI-CSX02		OL-BMI-CSX02-21-01		8/12/2021	Ponar		Paratanytarsus sp.	3	L	53		30.00	30.00	1	
650.5-069	OL-BMI-CSX02		OL-BMI-CSX02-21-01		8/12/2021	Ponar		Cryptochironomus sp.	1	L	53		30.00	30.00	1	
650.5-069	OL-BMI-CSX02		OL-BMI-CSX02-21-01		8/12/2021	Ponar		Cricotopus sylvestris gr.	6	L	53		30.00	30.00	1	
650.5-069	OL-BMI-CSX02		OL-BMI-CSX02-21-01		8/12/2021	Ponar		Cladopelma sp.	4	L	53		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Helisoma sp.	1	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Chironomus sp.	1	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Corynoneura sp.	1	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Parachironomus sp.	1	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Undetermined Orthocladiinae	1	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Ablabesmyia sp.	3	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Cladopelma sp.	3	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Paratanytarsus sp.	5	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Cricotopus sylvestris gr.	13	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Dreissena polymorpha	1	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Gyraulus sp.	4	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Hyalella sp.	2	L	56		30.00	30.00	1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Rhyacodrilus sp.	3	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	7	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Limnodrilus sp.	9	L	56		30.00	30.00	1	
650.5-070	OL-BMI-CSX02		OL-BMI-CSX02-21-02		8/12/2021	Ponar		Undetermined Coenagrionidae	1	L	56		30.00	30.00	1	
650.5-071	OL-BMI-CSX03		OL-BMI-CSX03-21-01		8/12/2021	Ponar		Polypedilum halterale gr.	2	L	46		30.00	30.00	1	
650.5-071	OL-BMI-CSX03		OL-BMI-CSX03-21-01		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	26	L	46		30.00	30.00	1	
650.5-071	OL-BMI-CSX03		OL-BMI-CSX03-21-01		8/12/2021	Ponar		Limnodrilus sp.	5	L	46		30.00	30.00	1	
650.5-071	OL-BMI-CSX03		OL-BMI-CSX03-21-01		8/12/2021	Ponar		Rhyacodrilus sp.	1	L	46		30.00	30.00	1	
650.5-071	OL-BMI-CSX03		OL-BMI-CSX03-21-01		8/12/2021	Ponar		Tanytarsus sp.	2	L	46		30.00	30.00	1	
650.5-071	OL-BMI-CSX03		OL-BMI-CSX03-21-01		8/12/2021	Ponar		Pseudochironomus sp.	1	L	46		30.00	30.00	1	
650.5-071	OL-BMI-CSX03		OL-BMI-CSX03-21-01		8/12/2021	Ponar		Cryptochironomus sp.	1	L	46		30.00	30.00	1	
650.5-071	OL-BMI-CSX03		OL-BMI-CSX03-21-01		8/12/2021	Ponar		Chironomus sp.	1	L	46		30.00	30.00	1	
650.5-071	OL-BMI-CSX03		OL-BMI-CSX03-21-01		8/12/2021	Ponar		Cladopelma sp.	7	L	46		30.00	30.00	1	
650.5-072	OL-BMI-CSX03		OL-BMI-CSX03-21-02		8/12/2021	Ponar		Rhyacodrilus sp.	8	L	100		30.00	22.00	1	
650.5-072	OL-BMI-CSX03		OL-BMI-CSX03-21-02		8/12/2021	Ponar		Cladopelma sp.	1	L	100		30.00	22.00	1	
650.5-072	OL-BMI-CSX03		OL-BMI-CSX03-21-02		8/12/2021	Ponar		Corynoneura sp.	1	L	100		30.00	22.00	1	
650.5-072	OL-BMI-CSX03		OL-BMI-CSX03-21-02		8/12/2021	Ponar		Polypedilum halterale gr.	1	L	100		30.00	22.00	1	
650.5-072	OL-BMI-CSX03		OL-BMI-CSX03-21-02		8/12/2021	Ponar		Chironomus sp.	2	L	100		30.00	22.00	1	
650.5-072	OL-BMI-CSX03		OL-BMI-CSX03-21-02		8/12/2021	Ponar		Dicrotendipes sp.	2	L	100		30.00	22.00	1	
650.5-072	OL-BMI-CSX03		OL-BMI-CSX03-21-02		8/12/2021	Ponar		Tanytarsus sp.	2	L	100		30.00	22.00	1	
650.5-072	OL-BMI-CSX03		OL-BMI-CSX03-21-02		8/12/2021	Ponar		Tribelos/Endochironomus/Phaenopsec	3	L	100		30.00	22.00	1	
650.5-072	OL-BMI-CSX03		OL-BMI-CSX03-21-02		8/12/2021	Ponar		Limnodrilus sp.	7	L	100		30.00	22.00	1	
650.5-072	OL-BMI-CSX03		OL-BMI-CSX03-21-02		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	73	L	100		30.00	22.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Dicrotendipes sp.	1	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Caecidotea sp.	2	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Undetermined Turbellaria	2	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Cricotopus sylvestris gr.	1	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Paratanytarsus sp.	1	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Chironomus sp.	2	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Dreissena polymorpha	65	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Gammarus sp.	10	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Amnicola sp.	4	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Hydroptila sp.	1	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Hyalella sp.	3	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	1	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Valvata lewisi	3	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Caenis sp.	4	L	105		20.00	30.00	1	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Dicrotendipes sp.	1	L	105		20.00	30.00	2	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Amnicola sp.	3	L	105		20.00	30.00	2	
650.5-073	OL-BMI-RR02B		OL-BMI-RR02B-21-01		8/13/2021	Ponar		Paratanytarsus sp.	1	L	105		20.00	30.00	2	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Undetermined Turbellaria	1	L	138		22.00	30.00	1	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Amnicola sp.	11	L	138		22.00	30.00	1	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Chironomus sp.	5	L	138		22.00	30.00	1	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Dicrotendipes sp.	11	L	138		22.00	30.00	1	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Undetermined Glossiphoniidae	1	L	138		22.00	30.00	1	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Undetermined Ceratopogonidae	1	L	138		22.00	30.00	1	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Aulodrilus sp.	2	L	138		22.00	30.00	1	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Rhyacodrilus sp.	2	L	138		22.00	30.00	1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	4	L	138		22.00	30.00	1	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Limnodrilus sp.	5	L	138		22.00	30.00	1	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Valvata lewisi	1	L	138		22.00	30.00	1	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Dreissena polymorpha	54	L	138		22.00	30.00	1	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Gammarus sp.	2	L	138		22.00	30.00	1	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Triaenodes sp.	1	L	138		22.00	30.00	2	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Amnicola sp.	4	L	138		22.00	30.00	2	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Chironomus sp.	13	L	138		22.00	30.00	2	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Dicrotendipes sp.	6	L	138		22.00	30.00	2	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Hyalella sp.	1	L	138		22.00	30.00	2	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Rhyacodrilus sp.	1	L	138		22.00	30.00	2	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Undetermined Chironomidae	2	L	138		22.00	30.00	2	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Undetermined Naididae	1	L	138		22.00	30.00	2	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	3	L	138		22.00	30.00	2	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Limnodrilus sp.	4	L	138		22.00	30.00	2	
650.5-074	OL-BMI-RR02B		OL-BMI-RR02B-21-02		8/13/2021	Ponar		Valvata lewisi	2	L	138		22.00	30.00	2	
650.5-075	OL-BMI-RR02C		OL-BMI-RR02C-21-01		8/13/2021	Ponar		Rhyacodrilus sp.	4	L	34		30.00	30.00	1	
650.5-075	OL-BMI-RR02C		OL-BMI-RR02C-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	9	L	34		30.00	30.00	1	
650.5-075	OL-BMI-RR02C		OL-BMI-RR02C-21-01		8/13/2021	Ponar		Chironomus sp.	9	L	34		30.00	30.00	1	
650.5-075	OL-BMI-RR02C		OL-BMI-RR02C-21-01		8/13/2021	Ponar		Dreissena polymorpha	3	L	34		30.00	30.00	1	
650.5-075	OL-BMI-RR02C		OL-BMI-RR02C-21-01		8/13/2021	Ponar		Pisidium sp.	8	L	34		30.00	30.00	1	
650.5-075	OL-BMI-RR02C		OL-BMI-RR02C-21-01		8/13/2021	Ponar		Limnodrilus sp.	1	L	34		30.00	30.00	1	
650.5-076	OL-BMI-RR02C		OL-BMI-RR02C-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	11	L	20		30.00	30.00	1	
650.5-076	OL-BMI-RR02C		OL-BMI-RR02C-21-02		8/13/2021	Ponar		Chironomus sp.	4	L	20		30.00	30.00	1	
650.5-076	OL-BMI-RR02C		OL-BMI-RR02C-21-02		8/13/2021	Ponar		Rhyacodrilus sp.	5	L	20		30.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Dicrotendipes sp.	4	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	10	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Limnodrilus sp.	4	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Hyalella sp.	8	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Gyraulus sp.	1	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Paratanytarsus sp.	2	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Oecetis sp.	1	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Undetermined Turbellaria	5	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Caenis sp.	1	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Chironomus sp.	10	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Enallagma sp.	1	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Undetermined Glossiphoniidae	3	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Amnicola sp.	6	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Gammarus sp.	2	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Dreissena polymorpha	42	L	122		20.00	30.00	1	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Dicrotendipes sp.	3	L	122		20.00	30.00	2	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	4	L	122		20.00	30.00	2	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Limnodrilus sp.	3	L	122		20.00	30.00	2	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Hyalella sp.	1	L	122		20.00	30.00	2	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Chironomus sp.	8	L	122		20.00	30.00	2	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Paratanytarsus sp.	1	L	122		20.00	30.00	2	
650.5-077	OL-BMI-RR03B		OL-BMI-RR03B-21-01		8/13/2021	Ponar		Gammarus sp.	2	L	122		20.00	30.00	2	
650.5-078	OL-BMI-RR03B		OL-BMI-RR03B-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	18	L	46		30.00	30.00	1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-078	OL-BMI-RR03B		OL-BMI-RR03B-21-02		8/13/2021	Ponar		Undetermined Turbellaria	3	L	46		30.00	30.00	1	
650.5-078	OL-BMI-RR03B		OL-BMI-RR03B-21-02		8/13/2021	Ponar		Gammarus sp.	3	L	46		30.00	30.00	1	
650.5-078	OL-BMI-RR03B		OL-BMI-RR03B-21-02		8/13/2021	Ponar		Dreissena polymorpha	6	L	46		30.00	30.00	1	
650.5-078	OL-BMI-RR03B		OL-BMI-RR03B-21-02		8/13/2021	Ponar		Rhyacodrilus sp.	2	L	46		30.00	30.00	1	
650.5-078	OL-BMI-RR03B		OL-BMI-RR03B-21-02		8/13/2021	Ponar		Tanytarsus sp.	1	L	46		30.00	30.00	1	
650.5-078	OL-BMI-RR03B		OL-BMI-RR03B-21-02		8/13/2021	Ponar		Chironomus sp.	5	L	46		30.00	30.00	1	
650.5-078	OL-BMI-RR03B		OL-BMI-RR03B-21-02		8/13/2021	Ponar		Cladopelma sp.	1	L	46		30.00	30.00	1	
650.5-078	OL-BMI-RR03B		OL-BMI-RR03B-21-02		8/13/2021	Ponar		Physella sp.	1	L	46		30.00	30.00	1	
650.5-078	OL-BMI-RR03B		OL-BMI-RR03B-21-02		8/13/2021	Ponar		Oecetis sp.	1	L	46		30.00	30.00	1	
650.5-078	OL-BMI-RR03B		OL-BMI-RR03B-21-02		8/13/2021	Ponar		Undetermined Hydrobiidae	1	L	46		30.00	30.00	1	
650.5-078	OL-BMI-RR03B		OL-BMI-RR03B-21-02		8/13/2021	Ponar		Amnicola sp.	3	L	46		30.00	30.00	1	
650.5-078	OL-BMI-RR03B		OL-BMI-RR03B-21-02		8/13/2021	Ponar		Ochrotrichia sp.	1	L	46		30.00	30.00	1	
650.5-079	OL-BMI-RR03C		OL-BMI-RR03C-21-01		8/13/2021	Ponar		Limnesia sp.	1	L	154		5.00	30.00	1	
650.5-079	OL-BMI-RR03C		OL-BMI-RR03C-21-01		8/13/2021	Ponar		Gammarus sp.	15	L	154		5.00	30.00	1	
650.5-079	OL-BMI-RR03C		OL-BMI-RR03C-21-01		8/13/2021	Ponar		Dreissena polymorpha	44	L	154		5.00	30.00	1	
650.5-079	OL-BMI-RR03C		OL-BMI-RR03C-21-01		8/13/2021	Ponar		Polypedilum halterale gr.	1	L	154		5.00	30.00	1	
650.5-079	OL-BMI-RR03C		OL-BMI-RR03C-21-01		8/13/2021	Ponar		Undetermined Naididae	1	L	154		5.00	30.00	1	
650.5-079	OL-BMI-RR03C		OL-BMI-RR03C-21-01		8/13/2021	Ponar		Dreissena bugensis	10	L	154		5.00	30.00	1	
650.5-079	OL-BMI-RR03C		OL-BMI-RR03C-21-01		8/13/2021	Ponar		Dicrotendipes sp.	1	L	154		5.00	30.00	1	
650.5-079	OL-BMI-RR03C		OL-BMI-RR03C-21-01		8/13/2021	Ponar		Limnodrilus sp.	3	L	154		5.00	30.00	1	
650.5-079	OL-BMI-RR03C		OL-BMI-RR03C-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	24	L	154		5.00	30.00	1	
650.5-079	OL-BMI-RR03C		OL-BMI-RR03C-21-01		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	12	L	154		5.00	30.00	2	
650.5-079	OL-BMI-RR03C		OL-BMI-RR03C-21-01		8/13/2021	Ponar		Limnodrilus sp.	1	L	154		5.00	30.00	2	
650.5-079	OL-BMI-RR03C		OL-BMI-RR03C-21-01		8/13/2021	Ponar		Undetermined Turbellaria	1	L	154		5.00	30.00	2	
650.5-079	OL-BMI-RR03C		OL-BMI-RR03C-21-01		8/13/2021	Ponar		Gammarus sp.	40	L	154		5.00	30.00	2	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Undetermined Turbellaria	1	L	133		10.00	12.00	1	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	23	L	133		10.00	12.00	1	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Limnodrilus sp.	2	L	133		10.00	12.00	1	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Dreissena polymorpha	21	L	133		10.00	12.00	1	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Dreissena bugensis	12	L	133		10.00	12.00	1	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Paratendipes sp.	1	L	133		10.00	12.00	1	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Chironomus sp.	1	L	133		10.00	12.00	1	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Cryptochironomus sp.	1	L	133		10.00	12.00	1	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Gammarus sp.	38	L	133		10.00	12.00	1	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Limnodrilus sp.	8	L	133		10.00	12.00	2	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Cryptochironomus sp.	1	L	133		10.00	12.00	2	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Rhyacodrilus sp.	1	L	133		10.00	12.00	2	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	11	L	133		10.00	12.00	2	
650.5-080	OL-BMI-RR03C		OL-BMI-RR03C-21-02		8/13/2021	Ponar		Gammarus sp.	12	L	133		10.00	12.00	2	
650.5-081	OL-BMI-RR01A		OL-BMI-RR01A-21-01		8/12/2021	Ponar		Paratanytarsus sp.	2	L	71		30.00	30.00	1	
650.5-081	OL-BMI-RR01A		OL-BMI-RR01A-21-01		8/12/2021	Ponar		Undet. Tubificidae	14	L	71		30.00	30.00	1	
650.5-081	OL-BMI-RR01A		OL-BMI-RR01A-21-01		8/12/2021	Ponar		Gammarus sp.	1	L	71		30.00	30.00	1	
650.5-081	OL-BMI-RR01A		OL-BMI-RR01A-21-01		8/12/2021	Ponar		Dreissena polymorpha	33	L	71		30.00	30.00	1	
650.5-081	OL-BMI-RR01A		OL-BMI-RR01A-21-01		8/12/2021	Ponar		Dreissena bugensis	2	L	71		30.00	30.00	1	
650.5-081	OL-BMI-RR01A		OL-BMI-RR01A-21-01		8/12/2021	Ponar		Procladius sp.	10	L	71		30.00	30.00	1	
650.5-081	OL-BMI-RR01A		OL-BMI-RR01A-21-01		8/12/2021	Ponar		Tanytarsus sp.	2	L	71		30.00	30.00	1	
650.5-081	OL-BMI-RR01A		OL-BMI-RR01A-21-01		8/12/2021	Ponar		Caenis sp.	3	L	71		30.00	30.00	1	
650.5-081	OL-BMI-RR01A		OL-BMI-RR01A-21-01		8/12/2021	Ponar		Polypedilum halterale gr.	4	L	71		30.00	30.00	1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-082	OL-BMI-RR01A		OL-BMI-RR01A-21-02		8/12/2021	Ponar		Paratanytarsus sp.	1	L	77		30.00	30.00	1	
650.5-082	OL-BMI-RR01A		OL-BMI-RR01A-21-02		8/12/2021	Ponar		Undetermined Hydrobiidae	1	L	77		30.00	30.00	1	
650.5-082	OL-BMI-RR01A		OL-BMI-RR01A-21-02		8/12/2021	Ponar		Procladius sp.	1	L	77		30.00	30.00	1	
650.5-082	OL-BMI-RR01A		OL-BMI-RR01A-21-02		8/12/2021	Ponar		Gammarus sp.	2	L	77		30.00	30.00	1	
650.5-082	OL-BMI-RR01A		OL-BMI-RR01A-21-02		8/12/2021	Ponar		Undet. Tubificidae	12	L	77		30.00	30.00	1	
650.5-082	OL-BMI-RR01A		OL-BMI-RR01A-21-02		8/12/2021	Ponar		Polypedilum halterale gr.	1	L	77		30.00	30.00	1	
650.5-082	OL-BMI-RR01A		OL-BMI-RR01A-21-02		8/12/2021	Ponar		Dreissena polymorpha	59	L	77		30.00	30.00	1	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Undet. Tubificidae	1	L	149		5.00	30.00	1	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Caenis sp.	1	L	149		5.00	30.00	1	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Chironomus sp.	1	L	149		5.00	30.00	1	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Dreissena sp.	94	L	149		5.00	30.00	1	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Gammarus sp.	1	L	149		5.00	30.00	1	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Oecetis sp.	2	L	149		5.00	30.00	1	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Undetermined Hydrobiidae	2	L	149		5.00	30.00	2	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Procladius sp.	5	L	149		5.00	30.00	2	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Ablabesmyia mallochi	1	L	149		5.00	30.00	2	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Undetermined Turbellaria	1	L	149		5.00	30.00	2	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Paratanytarsus sp.	1	L	149		5.00	30.00	2	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Oecetis sp.	2	L	149		5.00	30.00	2	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Cryptochironomus sp.	2	L	149		5.00	30.00	2	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Dicrotendipes sp.	2	L	149		5.00	30.00	2	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Polypedilum halterale gr.	3	L	149		5.00	30.00	2	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Amnicola sp.	1	L	149		5.00	30.00	2	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Gammarus sp.	18	L	149		5.00	30.00	2	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Dreissena sp.	6	L	149		5.00	30.00	2	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Caenis sp.	3	L	149		5.00	30.00	2	
650.5-083	OL-BMI-RR01B		OL-BMI-RR01B-21-01		8/12/2021	Ponar		Tanytarsus sp.	2	L	149		5.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Undet. Tubificidae	4	L	160		2.00	30.00	1	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Gammarus sp.	1	L	160		2.00	30.00	1	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Dreissena sp.	93	L	160		2.00	30.00	1	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Cryptochironomus sp.	1	L	160		2.00	30.00	1	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Procladius sp.	1	L	160		2.00	30.00	1	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Undet. Tubificidae	21	L	160		2.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Limnodrilus sp.	5	L	160		2.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Pisidium sp.	1	L	160		2.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Oecetis sp.	2	L	160		2.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Amnicola sp.	1	L	160		2.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Polypedilum halterale gr.	1	L	160		2.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Gammarus sp.	7	L	160		2.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Caenis sp.	5	L	160		2.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Chironomus sp.	1	L	160		2.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Cladopelma sp.	1	L	160		2.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Cryptochironomus sp.	3	L	160		2.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Dicrotendipes sp.	3	L	160		2.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Procladius sp.	8	L	160		2.00	30.00	2	
650.5-084	OL-BMI-RR01B		OL-BMI-RR01B-21-02		8/12/2021	Ponar		Undetermined Coenagrionidae	1	L	160		2.00	30.00	2	
650.5-085	OL-BMI-RR01C		OL-BMI-RR01C-21-01		8/12/2021	Ponar		Limnodrilus sp.	1	L	101		8.00	30.00	1	
650.5-085	OL-BMI-RR01C		OL-BMI-RR01C-21-01		8/12/2021	Ponar		Paratendipes sp.	1	L	101		8.00	30.00	1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-085	OL-BMI-RR01C		OL-BMI-RR01C-21-01		8/12/2021	Ponar		Undet. Tubificidae	1	L	101		8.00	30.00	1	
650.5-085	OL-BMI-RR01C		OL-BMI-RR01C-21-01		8/12/2021	Ponar		Dreissena polymorpha	18	L	101		8.00	30.00	1	
650.5-085	OL-BMI-RR01C		OL-BMI-RR01C-21-01		8/12/2021	Ponar		Chironomus sp.	9	L	101		8.00	30.00	1	
650.5-085	OL-BMI-RR01C		OL-BMI-RR01C-21-01		8/12/2021	Ponar		Dreissena bugensis	66	L	101		8.00	30.00	1	
650.5-085	OL-BMI-RR01C		OL-BMI-RR01C-21-01		8/12/2021	Ponar		Polypedilum halterale gr.	1	L	101		8.00	30.00	1	
650.5-085	OL-BMI-RR01C		OL-BMI-RR01C-21-01		8/12/2021	Ponar		Paratanytarsus sp.	1	L	101		8.00	30.00	1	
650.5-085	OL-BMI-RR01C		OL-BMI-RR01C-21-01		8/12/2021	Ponar		Undetermined Bivalvia	1	L	101		8.00	30.00	1	
650.5-085	OL-BMI-RR01C		OL-BMI-RR01C-21-01		8/12/2021	Ponar		Procladius sp.	1	L	101		8.00	30.00	1	
650.5-085	OL-BMI-RR01C		OL-BMI-RR01C-21-01		8/12/2021	Ponar		Undetermined Bivalvia	1	L	101	not Dreissena	8.00	30.00	2	
650.5-086	OL-BMI-RR01C		OL-BMI-RR01C-21-02		8/12/2021	Ponar		Chironomus sp.	2	L	11		30.00	30.00	1	
650.5-086	OL-BMI-RR01C		OL-BMI-RR01C-21-02		8/12/2021	Ponar		Dreissena sp.	2	L	11		30.00	30.00	1	
650.5-086	OL-BMI-RR01C		OL-BMI-RR01C-21-02		8/12/2021	Ponar		Limnodrilus sp.	2	L	11		30.00	30.00	1	
650.5-086	OL-BMI-RR01C		OL-BMI-RR01C-21-02		8/12/2021	Ponar		Undet. Tubificidae	5	L	11		30.00	30.00	1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Tribelos/Endochironomus/Phaenopsec	2	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Paratanytarsus sp.	4	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Undetermined Ceratopogonidae	1	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Dicrotendipes sp.	1	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Polypedilum halterale gr.	1	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Pisidium sp.	2	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Stictochironomus sp.	1	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	41	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Rhyacodrilus sp.	5	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Hyalella sp.	1	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Undetermined Naididae	4	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Undetermined Hydrobiidae	2	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Amnicola sp.	1	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Gammarus sp.	3	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Paratendipes sp.	13	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Chironomus sp.	8	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Tanytarsus sp.	4	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Procladius sp.	4	L	100		8.00		1	
650.5-087	OL-BMI-RR02A		OL-BMI-RR02A-21-01		8/12/2021	Ponar		Limnodrilus sp.	2	L	100		8.00		1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Chironomus sp.	6	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Dicrotendipes sp.	6	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Limnodrilus sp.	1	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Hyalella sp.	5	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Gyraulus sp.	1	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Gammarus sp.	1	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Undetermined Coenagrionidae	2	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Undet. Tubificidae	28	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Caenis sp.	1	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Tanytarsus sp.	4	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Paratendipes sp.	4	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Procladius sp.	3	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Stictochironomus sp.	2	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Psectrocladius sp.	1	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Ablabesmyia mallochi	1	L	76		30.00	30.00	1	
650.5-088	OL-BMI-RR02A		OL-BMI-RR02A-21-02		8/12/2021	Ponar		Paratanytarsus sp.	10	L	76		30.00	30.00	1	

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Amnicola sp.	1	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Undetermined Hydrobiidae	14	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Agraylea sp.	3	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Oecetis sp.	1	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Dreissena polymorpha	5	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Limnodrilus sp.	4	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Cladotanytarsus sp.	1	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Pisidium sp.	1	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Paratanytarsus sp.	5	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Pseudochironomus sp.	2	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Cryptochironomus sp.	1	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Undetermined Ceratopogonidae	1	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Caenis sp.	4	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Undet. Tubificidae	15	L	59		30.00		1	
650.5-089	OL-BMI-RR03A		OL-BMI-RR03A-21-01		8/12/2021	Ponar		Dicrotendipes sp.	1	L	59		30.00		1	
650.5-090	OL-BMI-RR03A		OL-BMI-RR03A-21-02		8/12/2021	Ponar		Pseudochironomus sp.	1	L	37		30.00	30.00	1	
650.5-090	OL-BMI-RR03A		OL-BMI-RR03A-21-02		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	14	L	37		30.00	30.00	1	
650.5-090	OL-BMI-RR03A		OL-BMI-RR03A-21-02		8/12/2021	Ponar		Rhyacodrilus sp.	5	L	37		30.00	30.00	1	
650.5-090	OL-BMI-RR03A		OL-BMI-RR03A-21-02		8/12/2021	Ponar		Undetermined Naididae	2	L	37		30.00	30.00	1	
650.5-090	OL-BMI-RR03A		OL-BMI-RR03A-21-02		8/12/2021	Ponar		Undetermined Hydrobiidae	3	L	37		30.00	30.00	1	
650.5-090	OL-BMI-RR03A		OL-BMI-RR03A-21-02		8/12/2021	Ponar		Cladotanytarsus sp.	4	L	37		30.00	30.00	1	
650.5-090	OL-BMI-RR03A		OL-BMI-RR03A-21-02		8/12/2021	Ponar		Paratanytarsus sp.	1	L	37		30.00	30.00	1	
650.5-090	OL-BMI-RR03A		OL-BMI-RR03A-21-02		8/12/2021	Ponar		Dicrotendipes sp.	1	L	37		30.00	30.00	1	
650.5-090	OL-BMI-RR03A		OL-BMI-RR03A-21-02		8/12/2021	Ponar		Caenis sp.	2	L	37		30.00	30.00	1	
650.5-090	OL-BMI-RR03A		OL-BMI-RR03A-21-02		8/12/2021	Ponar		Gammarus sp.	4	L	37		30.00	30.00	1	
650.5-091	OL-BMI-GA03		OL-BMI-GA03-21-Archive		8/20/2021	Multiplate		Procladius sp.	1	L	214		4.00			
650.5-091	OL-BMI-GA03		OL-BMI-GA03-21-Archive		8/20/2021	Multiplate		Paratanytarsus sp.	1	L	214		4.00			
650.5-091	OL-BMI-GA03		OL-BMI-GA03-21-Archive		8/20/2021	Multiplate		Ablabesmyia sp.	2	L	214		4.00			
650.5-091	OL-BMI-GA03		OL-BMI-GA03-21-Archive		8/20/2021	Multiplate		Tanytarsus sp.	3	L	214		4.00			
650.5-091	OL-BMI-GA03		OL-BMI-GA03-21-Archive		8/20/2021	Multiplate		Chironomus sp.	7	L	214		4.00			
650.5-091	OL-BMI-GA03		OL-BMI-GA03-21-Archive		8/20/2021	Multiplate		Dreissena polymorpha	187	L	214		4.00			
650.5-091	OL-BMI-GA03		OL-BMI-GA03-21-Archive		8/20/2021	Multiplate		Gammarus sp.	2	L	214		4.00			
650.5-091	OL-BMI-GA03		OL-BMI-GA03-21-Archive		8/20/2021	Multiplate		Undetermined Planorbidae	1	L	214	early	4.00			
650.5-091	OL-BMI-GA03		OL-BMI-GA03-21-Archive		8/20/2021	Multiplate		Hyalella sp.	6	L	214		4.00			
650.5-091	OL-BMI-GA03		OL-BMI-GA03-21-Archive		8/20/2021	Multiplate		Amnicola sp.	3	L	214		4.00			
650.5-091	OL-BMI-GA03		OL-BMI-GA03-21-Archive		8/20/2021	Multiplate		Caenis sp.	1	L	214		4.00			
650.5-092	OL-BMI-TA02		OL-BMI-TA02-21-Archive		8/12/2021	Ponar		Cricotopus/Orthocladius Complex	1	L	75					
650.5-092	OL-BMI-TA02		OL-BMI-TA02-21-Archive		8/12/2021	Ponar		Hyalella sp.	1	L	75					
650.5-092	OL-BMI-TA02		OL-BMI-TA02-21-Archive		8/12/2021	Ponar		Dreissena polymorpha	31	L	75					
650.5-092	OL-BMI-TA02		OL-BMI-TA02-21-Archive		8/12/2021	Ponar		Dicrotendipes sp.	9	L	75					
650.5-092	OL-BMI-TA02		OL-BMI-TA02-21-Archive		8/12/2021	Ponar		Paratanytarsus sp.	6	L	75					
650.5-092	OL-BMI-TA02		OL-BMI-TA02-21-Archive		8/12/2021	Ponar		Ablabesmyia sp.	2	L	75					
650.5-092	OL-BMI-TA02		OL-BMI-TA02-21-Archive		8/12/2021	Ponar		Caenis sp.	3	L	75					
650.5-092	OL-BMI-TA02		OL-BMI-TA02-21-Archive		8/12/2021	Ponar		Tribelos/Endochironomus/Phaenopsec	1	L	75					
650.5-092	OL-BMI-TA02		OL-BMI-TA02-21-Archive		8/12/2021	Ponar		Tanytarsus sp.	1	L	75					
650.5-092	OL-BMI-TA02		OL-BMI-TA02-21-Archive		8/12/2021	Ponar		Parakiefferiella sp.	1	L	75					
650.5-092	OL-BMI-TA02		OL-BMI-TA02-21-Archive		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	18	L	75					
650.5-092	OL-BMI-TA02		OL-BMI-TA02-21-Archive		8/12/2021	Ponar		Procladius sp.	1	L	75					

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WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-093	OL-BMI-SA03		OL-BMI-SA03-21-Archive		8/11/2021	Ponar		Chironomus sp.	2	L	10					
650.5-093	OL-BMI-SA03		OL-BMI-SA03-21-Archive		8/11/2021	Ponar		Dreissena polymorpha	4	L	10					
650.5-093	OL-BMI-SA03		OL-BMI-SA03-21-Archive		8/11/2021	Ponar		Undetermined Sphaeriidae	3	L	10	early				
650.5-093	OL-BMI-SA03		OL-BMI-SA03-21-Archive		8/11/2021	Ponar		Limnodrilus sp.	1	L	10					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Cladopelma sp.	2	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Limnodrilus sp.	6	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Undet. Tubificidae w/ cap. setae	5	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Hyalella sp.	1	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Dreissena polymorpha	6	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Paratanytarsus sp.	8	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Dicrotendipes sp.	8	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Procladius sp.	2	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Nais sp.	1	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Polypedilum halterale gr.	1	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Cryptochironomus sp.	1	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Caenis sp.	3	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Tanytarsus sp.	3	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Undet. Tubificidae w/o cap. setae	28	L	88					
650.5-094	OL-BMI-TA01		OL-BMI-TA01-21-Archive		8/11/2021	Ponar		Cricotopus/Orthocladius Complex	13	L	88					
650.5-095	OL-BMI-TB01		OL-BMI-TB01-21-Archive		8/19/2021	Ponar		Chironomus sp.	3	L	6					
650.5-095	OL-BMI-TB01		OL-BMI-TB01-21-Archive		8/19/2021	Ponar		Hyalella sp.	2	L	6					
650.5-095	OL-BMI-TB01		OL-BMI-TB01-21-Archive		8/19/2021	Ponar		Undet. Tubificidae w/o cap. setae	1	L	6					
650.5-096	OL-BMI-TB02		OL-BMI-TB02-21-Archive		8/19/2021	Ponar		Pseudochironomus sp.	1	L	40					
650.5-096	OL-BMI-TB02		OL-BMI-TB02-21-Archive		8/19/2021	Ponar		Undet. Tubificidae w/o cap. setae	1	L	40					
650.5-096	OL-BMI-TB02		OL-BMI-TB02-21-Archive		8/19/2021	Ponar		Hyalella sp.	21	L	40					
650.5-096	OL-BMI-TB02		OL-BMI-TB02-21-Archive		8/19/2021	Ponar		Dreissena polymorpha	6	L	40					
650.5-096	OL-BMI-TB02		OL-BMI-TB02-21-Archive		8/19/2021	Ponar		Ablabesmyia sp.	1	L	40					
650.5-096	OL-BMI-TB02		OL-BMI-TB02-21-Archive		8/19/2021	Ponar		Caenis sp.	4	L	40					
650.5-096	OL-BMI-TB02		OL-BMI-TB02-21-Archive		8/19/2021	Ponar		Undetermined Turbellaria	4	L	40					
650.5-096	OL-BMI-TB02		OL-BMI-TB02-21-Archive		8/19/2021	Ponar		Oxyethira sp.	2	L	40					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Pseudochironomus sp.	1	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Undet. Tubificidae w/o cap. setae	1	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Agraylea sp.	4	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Ischnura sp.	1	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Polypedilum halterale gr.	3	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Tanypus sp.	1	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Hyalella sp.	53	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Procladius sp.	1	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Bezzia sp.	1	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Tanytarsus sp.	1	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Caenis sp.	8	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Parachironomus sp.	1	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Undetermined Ceratopogonidae	5	L	85	unique				
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Cladopelma sp.	1	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Chironomus sp.	1	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Cryptochironomus sp.	1	L	85					
650.5-097	OL-BMI-TB03		OL-BMI-TB03-21-Archive		8/19/2021	Ponar		Labrundinia sp.	1	L	85					
650.5-098	OL-BMI-SB02		OL-BMI-SB02-21-Archive		8/13/2021	Ponar		Chironomus sp.	3	L	13					

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-098	OL-BMI-SB02		OL-BMI-SB02-21-Archive		8/13/2021	Ponar		Dreissena polymorpha	2	L	13					
650.5-098	OL-BMI-SB02		OL-BMI-SB02-21-Archive		8/13/2021	Ponar		Limnodrilus sp.	2	L	13					
650.5-098	OL-BMI-SB02		OL-BMI-SB02-21-Archive		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	5	L	13					
650.5-098	OL-BMI-SB02		OL-BMI-SB02-21-Archive		8/13/2021	Ponar		Dreissena bugensis	1	L	13					
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Physella sp.	1	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Dreissena polymorpha	92	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Helisoma sp.	4	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Gyraulus sp.	18	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Gammarus sp.	1	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Polycentropus sp.	1	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Erpobdella sp.	1	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Chironomus sp.	3	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Paratanytarsus sp.	2	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Dicrotendipes sp.	2	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Hyalella sp.	16	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Parachironomus sp.	1	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Ablabesmyia sp.	1	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Caenis sp.	2	L	148		4.00			
650.5-099	OL-BMI-GD01		OL-BMI-GD01-21-Archive		8/20/2021	Multiplate		Undetermined Turbellaria	3	L	148		4.00			
650.5-100	OL-BMI-SE02		OL-BMI-SE02-21-Archive		8/20/2021	Ponar		Sphaerium sp.	4	L	10	3 agg				
650.5-100	OL-BMI-SE02		OL-BMI-SE02-21-Archive		8/20/2021	Ponar		Chironomus sp.	1	L	10					
650.5-100	OL-BMI-SE02		OL-BMI-SE02-21-Archive		8/20/2021	Ponar		Valvata lewisi	1	L	10					
650.5-100	OL-BMI-SE02		OL-BMI-SE02-21-Archive		8/20/2021	Ponar		Limnodrilus sp.	1	L	10					
650.5-100	OL-BMI-SE02		OL-BMI-SE02-21-Archive		8/20/2021	Ponar		Dreissena polymorpha	1	L	10					
650.5-100	OL-BMI-SE02		OL-BMI-SE02-21-Archive		8/20/2021	Ponar		Procladius sp.	1	L	10					
650.5-100	OL-BMI-SE02		OL-BMI-SE02-21-Archive		8/20/2021	Ponar		Cryptochironomus sp.	1	L	10					
650.5-101	OL-BMI-SE03		OL-BMI-SE03-21-Archive		8/20/2021	Ponar		Chironomus sp.	4	L	15					
650.5-101	OL-BMI-SE03		OL-BMI-SE03-21-Archive		8/20/2021	Ponar		Cricotopus sp.	1	L	15					
650.5-101	OL-BMI-SE03		OL-BMI-SE03-21-Archive		8/20/2021	Ponar		Cladopelma sp.	1	L	15					
650.5-101	OL-BMI-SE03		OL-BMI-SE03-21-Archive		8/20/2021	Ponar		Undet. Tubificidae w/o cap. setae	7	L	15					
650.5-101	OL-BMI-SE03		OL-BMI-SE03-21-Archive		8/20/2021	Ponar		Undet. Tubificidae w/ cap. setae	2	L	15					
650.5-102	OL-BMI-SE01		OL-BMI-SE01-21-Archive		8/13/2021	Ponar		Limnodrilus sp.	15	L	38					
650.5-102	OL-BMI-SE01		OL-BMI-SE01-21-Archive		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	20	L	38					
650.5-102	OL-BMI-SE01		OL-BMI-SE01-21-Archive		8/13/2021	Ponar		Chironomus sp.	2	L	38					
650.5-102	OL-BMI-SE01		OL-BMI-SE01-21-Archive		8/13/2021	Ponar		Undet. Tubificidae w/ cap. setae	1	L	38					
650.5-103	OL-BMI-CSX01		OL-BMI-CSX01-21-Archive		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	19	L	48					
650.5-103	OL-BMI-CSX01		OL-BMI-CSX01-21-Archive		8/13/2021	Ponar		Limnodrilus sp.	12	L	48					
650.5-103	OL-BMI-CSX01		OL-BMI-CSX01-21-Archive		8/13/2021	Ponar		Undet. Tubificidae w/ cap. setae	1	L	48					
650.5-103	OL-BMI-CSX01		OL-BMI-CSX01-21-Archive		8/13/2021	Ponar		Dreissena polymorpha	8	L	48					
650.5-103	OL-BMI-CSX01		OL-BMI-CSX01-21-Archive		8/13/2021	Ponar		Cricotopus/Orthocladius Complex	1	L	48					
650.5-103	OL-BMI-CSX01		OL-BMI-CSX01-21-Archive		8/13/2021	Ponar		Chironomus sp.	2	L	48					
650.5-103	OL-BMI-CSX01		OL-BMI-CSX01-21-Archive		8/13/2021	Ponar		Gammarus sp.	5	L	48					
650.5-104	OL-BMI-RR02C		OL-BMI-RR02C-21-Archive		8/13/2021	Ponar		Undet. Tubificidae w/o cap. setae	22	L	33					
650.5-104	OL-BMI-RR02C		OL-BMI-RR02C-21-Archive		8/13/2021	Ponar		Limnodrilus sp.	1	L	33					
650.5-104	OL-BMI-RR02C		OL-BMI-RR02C-21-Archive		8/13/2021	Ponar		Pisidium sp.	3	L	33					
650.5-104	OL-BMI-RR02C		OL-BMI-RR02C-21-Archive		8/13/2021	Ponar		Chironomus sp.	6	L	33					

TABLE 2E.9 MACROINVERTERATE TAXONOMIC DATA

WAA ID	STATION	BASIN	LOCATION	RiverMile	COLL_DATE	COLLECT	Replicate	MACRO_GENSPECIES	INDIV	Stage	TotalInd	Comments	#_Quarters Sorted 1	#_Quarters Sorted 2	Sort 1 or Sort 2	PercentWTSorted
650.5-104	OL-BMI-RR02C		OL-BMI-RR02C-21-Archive		8/13/2021	Ponar		Undetermined Ceratopogonidae	1	L	33					
650.5-105	OL-BMI-RR01A		OL-BMI-RR01A-21-Archive		8/12/2021	Ponar		Caenis sp.	3	L	36					
650.5-105	OL-BMI-RR01A		OL-BMI-RR01A-21-Archive		8/12/2021	Ponar		Procladius sp.	3	L	36					
650.5-105	OL-BMI-RR01A		OL-BMI-RR01A-21-Archive		8/12/2021	Ponar		Undet. Tubificidae w/o cap. setae	1	L	36					
650.5-105	OL-BMI-RR01A		OL-BMI-RR01A-21-Archive		8/12/2021	Ponar		Paratanytarsus sp.	7	L	36					
650.5-105	OL-BMI-RR01A		OL-BMI-RR01A-21-Archive		8/12/2021	Ponar		Dreissena polymorpha	15	L	36					
650.5-105	OL-BMI-RR01A		OL-BMI-RR01A-21-Archive		8/12/2021	Ponar		Polypedilum halterale gr.	1	L	36					
650.5-105	OL-BMI-RR01A		OL-BMI-RR01A-21-Archive		8/12/2021	Ponar		Undet. Tubificidae w/ cap. setae	3	L	36					
650.5-105	OL-BMI-RR01A		OL-BMI-RR01A-21-Archive		8/12/2021	Ponar		Dicrotendipes sp.	3	L	36					

APPENDIX 3A - DATA USABILITY AND SUMMARY REPORT ONONDAGA LAKE 2021 TISSUE MONITORING

APPENDIX 3A:

DATA USABILITY SUMMARY REPORT

2021 ONONDAGA LAKE TISSUE MONITORING ONONDAGA COUNTY, NEW YORK

Prepared For:

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APRIL 2022 (REVISED FEBRUARY 2025)

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LIST OF ATTACHMENTS

SECTION 1 DATA USABILITY SUMMARY

Fish and zooplankton samples were collected as part of the 2021 tissue monitoring efforts at Onondaga Lake from March 24, 2021 through November 23, 2021. Analytical results from the project samples were validated and reviewed by Parsons for usability with respect to the following requirements:

- Work Plan
- QAPP
- USEPA Region II Standard Operating Procedures (SOPs) for organic and inorganic data review

The fish samples were collected by Parsons and the zooplankton samples were collected by Upstate Freshwater Institute (UFI).

The analytical laboratories for this project were SGS – Dayton and SGS – Wilmington (SGS) for the fish samples and Eurofins – Lancaster and Eurofins – Frontier (Eurofins) for the zooplankton samples. These laboratories are certified by the State of New York to conduct laboratory analyses for this project through the National Environmental Laboratory Accreditation Conference (NELAC) and New York Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP).

3A1.1 Laboratory Data Packages

The laboratory data package turnaround time, defined as the time from sample receipt by the laboratory to receipt of the analytical data packages by Parsons, was 23 to 238 days for the project samples.

The data packages received from the laboratories were paginated, complete, and overall were of good quality. Comments on specific quality control (QC) and other requirements are discussed in detail in the attached data validation report which is summarized in Section 2.

3A1.2 Sampling and Chain-of-Custody

The project samples were collected, shipped under a COC record, and received at the laboratory within one to two days of sampling. All samples were received intact and in good condition at SGS and Eurofins.

3A1.3 Laboratory Analytical Methods

The fish samples were collected from the site and analyzed for hexachlorobenzene, 4,4'-DDT and metabolites, polychlorinated biphenyls (PCBs), dioxins and furans, mercury, percent lipids, and/or percent moisture. The zooplankton samples were collected from the site and analyzed for low level mercury and methyl mercury. Summaries of deviations from the Work Plan, QAPP, or USEPA Region II SOPs concerning these laboratory analyses are presented in Subsections 3A1.3.1 through 3A1.3.5. The data qualifications resulting from the data validation review and statements on the laboratory analytical precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) are discussed for each analytical method by matrix in Section 2. The laboratory data were reviewed and may be qualified with the following validation flags:

"U" - not detected at the value given

"UJ" - estimated and not detected at the value given
"J" - estimated at the value given
"J+" - estimated biased high at the value given
"J-" - estimated biased low at the value given
"N" - presumptive evidence at the value given
"R" - unusable value

The validated laboratory data were tabulated and are presented in Attachment A.

3A1.3.1 Mercury and Methyl Mercury Analysis

Fish samples collected from the site were analyzed for mercury using the USEPA SW846 7471B analytical method. Zooplankton samples collected from the site were analyzed for low level mercury using the USEPA 1631E analytical method; and methyl mercury using the USEPA 1630 analytical method. Certain reported results for these samples were considered estimated based upon instrument calibrations. The reported mercury and methyl mercury analytical results were considered 100% complete (i.e., usable) for the data presented by SGS and Eurofins. PARCCS requirements were met.

3A1.3.2 PCB Analysis

Fish samples collected from the site were analyzed for PCBs using the USEPA SW846 8082A analytical method. Certain reported results for the PCB samples were considered estimated based upon matrix spike/matrix spike duplicate (MS/MSD) recoveries, LCS standard reference material (SRM) recoveries, sample result identifications, and duplicate precision. The reported PCB analytical results were considered 100% complete with all data considered usable and valid as reported by SGS. PARCCS requirements were met.

3A1.3.3 Hexachlorobenzene, 4,4'-DDT, and Metabolites Analysis

Fish samples collected from the site were analyzed for hexachlorobenzene, 4,4'-DDT, and metabolites using the USEPA SW846 8081B analytical method. Certain reported results for these samples were qualified as estimated based upon sample surrogate recoveries, MS/MSD recoveries, LCS SRM recoveries, and sample result identifications. The reported analytical results for these samples were considered 100% complete with all data considered usable and valid as reported by SGS. PARCCS requirements were met.

3A1.3.4 Dioxins and Furans

Fish samples collected from the site were analyzed for dioxins and furans using the USEPA SW846 8290A analytical method. Certain reported results for these samples were qualified as estimated based upon sample surrogate recoveries, LCS SRM recoveries, sample result identifications, and duplicate precision. Certain reported results for these samples were considered unusable and qualified "R" based upon poor LCS SRM recoveries. The reported analytical results for these samples were considered 98.7% complete (i.e., usable) as reported by SGS. PARCCS requirements were met overall.

3A1.3.5 Percent Lipids and Percent Moisture

Fish samples collected from the site were analyzed for percent lipids and percent moisture using the USEPA SW-846 3540 and the ASTM D2216 analytical methods, respectively. Certain reported results for percent lipids and percent moisture were qualified as estimated based upon LCS SRM recoveries. Certain reported results for percent lipids and percent moisture were considered unsable and qualified “R” based upon sample mix-up at the laboratory. The reported analytical results for these samples were considered 98.6% complete (i.e., usable) as reported by SGS. PARCCS requirements were met overall.

SECTION 2 DATA VALIDATION REPORT

3A2.1 Fish Samples

Data review has been completed for data packages generated by SGS containing fish samples collected from the site. The specific samples contained in these data packages, the analyses performed, and validated laboratory data are tabulated and presented in Attachment A-1. This attachment presents the fish samples in the following sample delivery group (SDG) order to include preyfish first followed by sport fish: JD78424, B7550, JD78426, B7551, JD77878, B7552, JD78163, B7553, JD80342, B7554, JD85967, B7556, JD87136, B7555, JD81415, and B7557. All of these samples were shipped under a COC record and received intact by the analytical laboratory. A summary of fish groupings and associated SDGs are included below.

Fish Grouping Name	Fish Type	Lab SDG	
		SGS Wilmington	SGS Dayton
Prey 01	Large Prey	B7550	JD78424
Prey 02	Small Prey	B7551	JD78426
Prey 03	Small and Large Prey	B7552	JD77878
Sport 01	Sport	B7553	JD78163
Sport-02	Sport	B7554	JD80342
Sport 03	Sport	B7556	JD85967
Sport-04	Sport	B7555	JD87136
Sport-05	Sport	B7557	JD81415

Data validation was performed for all samples in accordance with the project work plan and QAPP as well as the USEPA Region II SOPs HW-36, Revision 4 “Pesticide Data Validation”; HW-37, Revision 3 “Polychlorinated Biphenyl (PCB) Aroclor Data Validation”; and HW-2c, Revision 15 “Mercury and Cyanide Data Validation.” This data validation and usability report is presented by analysis type.

3A2.1.1 Mercury

The following items were reviewed for compliancy in the mercury analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Initial and continuing calibration, and laboratory preparation blank contamination
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) and LCS standard reference material (SRM) recoveries
- Interference check sample recoveries

- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of MS/MSD recoveries as discussed below.

MS/MSD Recoveries

All MS/MSD recoveries were considered acceptable and within the 80-120%R QC limit for designated spiked project samples with the exception of the MS/MSD mercury recoveries associated with sample OL-F-3307-03F (567.3%R/504.7%R). The associated LCS recovered within criteria. Validation qualification was not required for the affected sample since the unspiked sample concentration (1.2 mg/kg) was greater than four times the spike concentration (0.264 mg/kg MS, 0.277 mg/kg MSD). Per the USEPA Region 2 HW-2c SOP, recovery criteria of the MS and MSD is not applicable if the unspiked concentration is greater than 4x the spike added.

Usability

All mercury sample results for the fish samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The mercury data presented by SGS were 100% complete (i.e., usable). The validated mercury laboratory data are tabulated and presented in Attachment A-1.

Attachment B presents the LCS SRM recovery and duplicate precision results for mercury. A table summary of mercury QC results are provided in Attachment C.

3A2.1.2 PCBs

The following items were reviewed for compliancy in the PCB analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- MS/MSD precision and accuracy
- LCS and LCS SRM recoveries
- Laboratory method blank contamination
- Initial calibrations
- Verification calibrations
- Chromatogram quality
- Sample result verification and identification
- Duplicate precision
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of surrogate recoveries, MS/MSD precision and accuracy, LCS SRM recoveries, verification calibrations, sample result identifications, and duplicate precision as discussed below.

Surrogate Recoveries

All sample surrogate recoveries were considered acceptable and within QC limits with the exception of the high surrogate recoveries for decachlorobiphenyl (QC limit 18-154%R) in samples OL-F-3302-13F (169%R, 189%R) and OL-F-3305-07F (171%R, 198%R). Validation qualification was not required for the affected samples.

MS/MSD Precision and Accuracy

All MS/MSD precision (relative percent difference; RPD) and accuracy (percent recovery; %R) measurements were considered acceptable and within the 70-130%R QAPP QC limit for designated spiked project samples with the exception of the following:

1. For sample group Prey-01, high MS/MSD accuracy results were noted for PCB-1016 (380%R/354%R) and PCB-1260 (349%R/275%R) during the spiked analyses of sample OL-F-3304-02. Validation qualification was not required for the affected parent sample since PCB-1016 was not detected and the sample concentration for PCB-1260 was greater than four times the MS/MSD spiked concentrations.
2. For sample group Prey-02, low MS/MSD accuracy results were noted for PCB-1260 (69%R/49%R) during the spiked analyses of sample OL-F-3318-01. Therefore, the PCB-1260 result was considered estimated and qualified “J” for the affected parent sample.
3. For sample group Prey-03, high MS/MSD accuracy results were noted for PCB-1016 (362%R/270%R) and low MS/MSD accuracy results were noted for PCB-1260 (26%R/-153%R MSD) during the spiked analyses of sample OL-F-3320-02. Validation qualification was not required for the affected parent sample since PCB-1016 was not detected and the sample concentration for PCB-1260 was greater than four times the MS/MSD spiked concentrations.
4. For sample group Sport-01, high MS/MSD accuracy results were noted for PCB-1016 (244%R/255%R) during the spiked analyses of sample OL-F-3305-01F. Validation qualification was not required for the affected parent sample since PCB-1016 was not detected.
5. For sample group Sport-02, low MS/MSD accuracy results were noted for PCB-11016 (65%R/56%R) and a high MS accuracy result was noted for PCB-1260 (167%R) during the spiked analyses of sample OL-F-3303-13F. The nondetected PCB-1016 result was considered estimated and qualified “UJ” for the affected parent sample. PCB-1260 did not require qualification for the affected parent sample.
6. For sample group Sport-05, high MS/MSD accuracy results were noted for PCB-1016 (149%R/155%R) and low MS/MSD accuracy results were noted for PCB-1260 (39%R/46%R) during the spiked analyses of sample OL-F-3309-07F. Therefore, the PCB-1260 result was considered estimated and qualified “J” for the affected parent sample. The PCB-1016 result did not require qualification since it was not detected in the affected parent sample.

It is worth noting that the standard spiking compound used for the PCB MS and MSD at SGS Dayton is a mixture of Aroclor 1016 and 1260. Aroclor 1016 is rarely detected in Onondaga Lake fish tissue samples, resulting in high MS/MSD recoveries for Aroclor 1016. Aroclor 1260, while detected frequently in Onondaga Lake fish tissue samples, was being spiked at a concentration too low relative to the sample concentration. As a result, the laboratory has changed their procedure for Onondaga Lake fish, and samples are now spiked with a higher concentration of Aroclor 1254, which is detected more frequently in Onondaga Lake fish.

LCS SRM Recoveries

All LCS SRM recoveries were considered acceptable and within the 70-130%R QC limit with the exception of the low LCS SRM recoveries for total PCBs associated with samples in SDGs JD78424 (64.5%R), JD77878 (67.6%R), and JD81415 (54.5%R). Therefore, all results were considered estimated, possibly biased low, with positive results qualified “J-” and nondetected results qualified “UJ” for the affected samples.

Verification Calibrations

For PCB analysis, the lab chooses results from either the primary or secondary column to report based upon QC results and column performance. Either column can be used to quantitate results, depending on performance. All continuing calibration verifications were considered acceptable for all compounds and percent differences (%Ds) within the ±20% QC limit with the exception of PCB-1248 on the second column in the continuing calibrations associated with samples OL-F-3313-01, -02, OL-F-3319-02, -04, and OL-F-3302-16F; and PCB-1254 on the second column in the continuing calibrations associated with samples OL-F-3304-01, -02, -05, OL-F-3318-03, -04, -05, -06, -07, -08, -10, OL-F-3315-02, OL-F-3302-13F, OL-F-3314-06F, and OL-F-3316-01F. Validation qualification was not required for the affected samples since results for these compounds were reported from the alternate column.

Sample Result Identifications

All positive PCB sample results were within retention time windows and verified present using secondary column confirmation. The precision (%RPD) between the PCB results on the quantitation and confirmation columns were less than 40% with the exception of PCB-1248 in samples OL-F-3301-03F (63.7%RPD), OL-F-3302-06F (43.8%RPD), and -11F (49.4%RPD); PCB-1254 in samples OL-F-3307-07F (54.1%RPD), OL-F-3309-08F (41.2%RPD), OL-F-3301-04F (48.5%RPD), -05F (49.0%RPD), OL-F-3302-06F (41.9%RPD), -10F (43.0%RPD), -11F (44.8%RPD), -16F (41.3%RPD), OL-F-3307-02F (45.2%RPD), OL-F-3316-02F (40.8%RPD), -04F (43.0%RPD), and OL-F-3303-11F (46.3%RPD); PCB-1260 in sample OL-F-3320-02 (69%RPD); and total PCBs in samples OL-F-3320-02 (54.6%RPD), OL-F-3307-07F (80.8%RPD), and OL-F-3301-05F (74.6%RPD). The results for these compounds were considered estimated and qualified “J” for the affected samples.

Duplicate Precision

All duplicate precision results were considered acceptable with the exception of the precision results for PCB-PCB-1248, PCB-1254, and total PCBs associated with sample OL-F-3318-03 and its duplicate OL-F-3318-03-DUP; PCB-1248 associated with sample OL-F-3303-13F and its duplicate OL-F-3303-13F-DUP; PCB-1260 associated with sample OL-F-3305-02F and its duplicate OL-F-3305-02F-DUP; and PCB-1254 and PCB-1260 associated with sample OL-F-3309-07F and its duplicate OL-F-3309-07F-DUP. Therefore, the results for these compounds were considered estimated and qualified “J” for the affected parent samples.

It should be noted that the duplicate summary form provided within the laboratory reports may not necessarily be reporting the duplicate results accurately because of limitations in the laboratory information management system (LIMS) in reporting the correct result from the quantitation column when there are multiple dilutions. This limitation is only in instances of dual column analysis when multiple dilutions are required. The precision between the parent sample and the duplicate sample was calculated from concentrations provided in the laboratory EDD.

Usability

All PCB sample results for the fish samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The PCB data presented by SGS were 100% complete with all data considered usable and valid. The validated data are tabulated and presented in Attachment A-1.

Attachment B presents the LCS SRM recovery and duplicate precision results for PCBs. A table summary of PCB QC results are provided in Attachment C.

3A2.1.3 Hexachlorobenzene, 4,4’-DDT, and Metabolites

The following items were reviewed for compliancy in the hexachlorobenzene, 4,4'-DDT, and metabolites analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- MS/MSD precision and accuracy
- LCS and LCS SRM recoveries
- Laboratory method blank contamination
- Initial calibrations
- Verification calibrations
- 4,4'-DDT breakdown
- Chromatogram quality
- Sample result verification and identification
- Duplicate precision
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exceptions of surrogate recoveries, MS/MSD precision and accuracy, LCS SRM recoveries, verification calibrations, and sample result identifications as discussed below.

Surrogate Recoveries

All sample surrogate recoveries were considered acceptable and within QC limits with the exception of the surrogate recoveries for decachlorobiphenyl (QC limit 40-150%R) in samples OL-F-3313-02 (157%R, 235%R) and OL-F-3315-01 (177%R); and tetrachloro-m-xylene (QC limit 66-150%R) in samples OL-F-3315-01 (65%R), OL-F-3304-06 (57%R, 51%R), -04 (55%R, 52%R), -07 (55%R, 52%R), -10 (60%R, 56%R), OL-F-3308-01 (48%R, 46%R), OL-F-3310-02 (58%R, 52%R), -03 (49%R, 45%R), OL-F-3300-01 (55%R, 50%R), OL-F-3320-01 (53%R, 44%R), OL-F-3318-05 (50%R, 54%R), -08 (63%R, 65%R), -13 (54%R, 56%R), -15 (47%R, 52%R), -19 (57%R, 57%R), OL-F-3319-01 (61%R, 62%R), -03 (65%R, 62%R), -04 (63%R, 63%R), OL-F-3303-13F (65%R, 61%R), -10F (55%R, 52%R), -12F (57%R, 52%R), -09F (64%R, 62%R), OL-F-3302-12F (63%R, 60%R), -07F (61%R, 60%R), OL-F-3305-07F (47%R, 58%R), OL-F-3309-09F (64%R, 58%R), -16F (63%R, 56%R), -07F (56%R, 47%R), OL-F-3301-01F (55%R, 50%R), -03F (60%R, 54%R), OL-F-3306-02F (58%R, 48%R), -03F (64%R, 53%R), OL-F-3311-01F (65%R, 55%R), -02F (64%R, 56%R), -04F (59%R, 51%R), -06F (60%R, 52%R), OL-F-3312-01F (55%R, 50%R), -02F (59%R, 49%R), -03F (61%R, 51%R), -05F (53%R, 46%R), -06F (64%R, 55%R), OL-F-3314-04F (45%R, 50%R), OL-F-3316-01F (41%R, 45%R), -02F (57%R, 51%R), -05F (52%R, 50%R), and OL-F-3317-01F (48%R, 46%R). Validation qualification was not required for the affected samples with the exception of OL-F-3315-01. The 4,4'-DDD and hexachlorobenzene sample results were considered estimated, possibly biased low, and qualified "J-" for this affected sample.

MS/MSD Precision and Accuracy

All MS/MSD precision and accuracy measurements for spiked compounds were considered acceptable and within QC limits for designated spiked project samples with the exception of the high MSD accuracy result for 4,4'-DDD (157%R; QC limit 23-133%R) during the spiked analyses of sample OL-F-3304-02; and the low MS/MSD accuracy results for 4,4'-DDE (-29%R/-55%R; QC limit 10-207%R) and 4,4'-DDT (-47%R/-78%R; QC limit 10-241%R) during the spiked analyses of sample OL-F-3320-02. Validation qualification was not required for the parent sample OL-F-3304-02. However, the 4,4'-DDE and 4,4'-DDT results were considered estimated and qualified "J" for the parent sample OL-F-3320-02.

LCS SRM Recoveries

All LCS SRM recoveries were considered acceptable and within the 70-130%R QC limit with the exception of the low LCS SRM recoveries for hexchlorobenzene (46.8%R), 4,4'-DDE (58.3%R), and 4,4'-DDD (51.0%R) associated with samples in SDG JD78424; 4,4'-DDD (63.4%R, 50.8%R) and hexachlorobenzene (52.1%R, 41.4%R) associated with samples in SDGs JD78426 and JD77878; and hexachlorobenzene (60.2%R, 28.1%R) associated with samples in SDGs JD87136 and JD81415. Therefore, results for these compounds were considered estimated, possibly biased low, with positive results qualified "J-" and nondetected results qualified "UJ" for the affected samples.

Verification Calibrations

For pesticide analysis, the lab chooses results from either the primary or secondary column to report based upon QC results and column performance. Either column can be used to quantitate results, depending on performance. All continuing calibration verifications were considered acceptable with percent differences (%Ds) within ±20% with the exception of 4,4'-DDE on the second column in the continuing calibrations associated with samples in SDG JD78424; 4,4'-DDD on the second column in the continuing calibrations associated with samples OL-F-3300-02, OL-F-3313-01, -02, OL-F-3318-09, -14, and -17; 4,4'-DDT on the second column in the continuing calibrations associated with samples OL-F-3318-18, OL-F-3319-02, -03, -04, and OL-F-3320-03; and hexachlorobenzene on the second column in the continuing calibrations associated with samples in SDG JD81415 except OL-F-3314-03F, -04F, OL-F-3316-01F, -02F, -05F, and OL-F-3317-01F. Validation qualification was not required for the affected samples since results for these compounds were reported from the alternate column.

Sample Result Identifications

All positive pesticide sample results were within retention time windows and verified present using secondary column confirmation. The precision (%RPD) between the pesticide results on the quantitation and confirmation columns were less than 40% with the exception of hexachlorobenzene in samples OL-F-3304-06, OL-F-3313-01, -02, OL-F-3318-14, OL-F-3319-02, -03, -04, OL-F-3303-04F, -10F, OL-F-3305-07F, and OL-F-3302-16F; 4,4'-DDE in all samples in SDG JD78424; 4,4'-DDD in samples OL-F-3318-05, -09, -10, -11, -18, and all samples in SDG JD78424 except OL-F-3304-01; and 4,4'-DDT in all samples in SDGs JD78424, JD78426, and JD77878 except OL-F-3315-02. Therefore, the results for these compounds were considered estimated and qualified "J" for the affected samples.

It was noted that the precision between the quantitation and confirmation columns exceeded 90% for hexachlorobenzene in samples OL-F-3319-02, -03, and -04; 4,4'-DDD in samples OL-F-3304-03 and -10; and 4,4'-DDT in all samples in SDGs JD78424, JD78426, and JD77878 except OL-F-3318-16, -18, and OL-F-3315-02. Therefore, the results for these compounds were considered estimated, tentatively identified, and qualified "JN" for the affected samples.

Usability

All hexachlorobenzene, 4,4'-DDT, and metabolite sample results for the fish samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The hexachlorobenzene, 4,4'-DDT, and metabolite data presented by SGS were 100% complete with all data considered usable and valid. The validated data are tabulated and presented in Attachment A-1.

Attachment B presents the LCS SRM recovery and duplicate precision results for hexachlorobenzene, 4,4'-DDT, and metabolites.

3A2.1.4 Dioxins and Furans

The following items were reviewed for compliancy in the dioxin and furan analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- MS/MSD precision and accuracy
- LCS and LCS SRM recoveries
- Laboratory method blank contamination
- Initial calibrations
- Verification calibrations
- Internal standard recoveries
- Chromatogram quality
- Sample result verification and identification
- Duplicate precision
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of surrogate recoveries, LCS SRM recoveries, blank contamination, sample result identification, and duplicate precision as discussed below.

Surrogate Recoveries

All sample surrogate recoveries were considered acceptable and within QC limits with the exception of the low surrogate recoveries resulting from sample clean-up for 2,3,7,8-TCDD, 1,2,3,7,8-PeCDD, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, and 2,3,4,6,7,8-HxCDF in sample OL-F-3302-17F; and 2,3,7,8-TCDD, 1,2,3,7,8-PeCDD, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, and 2,3,4,6,7,8-HxCDF in sample OL-F-3309-14F. Therefore, associated results were considered estimated, possibly biased low with positive results qualified "J-" and nondetected results qualified "UJ" for the affected samples.

LCS SRM Recoveries

All LCS SRM recoveries were considered acceptable and within the 70-130%R QC limit with the exception of the LCS SRM recoveries for 1,2,3,4,7,8-HxCDD (201%R) associated with all samples in SDG B7555 except OL-F-3301-05F, OL-F-3302-13F, OL-F-3307-06F, -07F, OL-F-3309-08F, and -10F; 1,2,3,4,7,8-HxCDD (66%R) associated with samples OL-F-3301-05F, OL-F-3302-13F, OL-F-3307-06F, -07F, OL-F-3309-08F, and -10F; 1,2,3,4,7,8-HxCDD (135%R), 1,2,3,7,8,9-HxCDD (0%R), and OCDD (65.4%R) associated with all samples in SDG B7554 except for OL-F-3301-01F, OL-F-3302-12F, OL-F-3303-12F, and OL-F-3309-09F; 1,2,3,7,8,9-HxCDD (66%R) associated with samples OL-F-3301-01F, OL-F-3302-12F, OL-F-3303-12F, and OL-F-3309-09F; and 1,2,3,7,8-PeCDD (63.6%R) and OCDD (69.0%R) associated with all samples in SDG B7556. Therefore, positive results for those compounds where associated LCS SRM recoveries exceeded the QC limit were considered estimated, possibly biased high, and qualified "J+" for the affected samples. Results for those compounds where associated LCS SRM recoveries fell below the QC limit were considered estimated, possibly biased low, with positive results qualified "J-" and nondetected results qualified "UJ" for the affected samples. However, nondetected results for those compounds where associated LCS SRM recoveries fell below 10% were considered unusable and qualified "R" for the affected samples.

Blank Contamination

The laboratory method blank associated with samples OL-F-3301-01F, -05F, OL-F-3302-12F, -13F, OL-F-3307-06F, -07F, OL-F-3309-08F, -09F, -10F, and OL-F-3303-12F contained OCDD below the reporting limit at a concentration of 0.658 pg/g. Validation qualification was not required for the affected samples.

Sample Result Identification

It was noted that 2,3,7,8-TCDF was affected by the presence of diphenyl ethers in sample OL-F-3303-13F. Therefore, the result for this compound was considered estimated and qualified "J" for the affected sample.

Duplicate Precision

All duplicate precision results were considered acceptable and within the 30%RPD QC limit with the exception of 1,2,3,7,8-PeCDD and total PeCDD (50.4%RPD), 2,3,7,8-TCDF and total TCDF (58.6%RPD), 2,3,4,7,8-PeCDF and total PeCDF (68.8%RPD) associated with sample OL-F-3309-12F and its duplicate sample OL-F-3309-12F-DUP. Therefore, results for these compounds were considered estimated and qualified "J" for the affected parent sample.

Usability

All dioxin and furan sample results for the fish samples were considered usable following data validation with the exception of certain nondetected results based upon poor LCS SRM recoveries.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The dioxin and furan data presented by SGS were 98.7% complete (i.e, usable). The validated data are tabulated and presented in Attachment A-1.

Attachment B presents the LCS SRM recovery and duplicate precision results for the dioxin and furan data.

3A2.1.5 Percent Lipids and Percent Moisture

The following items were reviewed for compliancy in the percent lipids and percent moisture analysis:

- Custody documentation
- Holding times
- Laboratory blank contamination
- Laboratory duplicate precision
- LCS SRM recoveries (%lipids only)
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of LCS SRM recoveries as discussed below.

LCS SRM Recoveries

CARP-2 is used as the LCS SRM for percent lipids. All LCS SRM recoveries were considered acceptable and within the 70-130%R QC limit with the exception of the low LCS SRM recovery for percent lipids (67%R) associated with samples in SDG B7554. Therefore, the percent lipids results were considered estimated, possibly biased low, and qualified "J-" for the affected samples.

Usability

All percent lipids and percent moisture sample results for the fish samples were considered usable following data validation with the exception of the percent lipids and percent moisture results for samples OL-F-3315-02 and OL-F-3319-03 based upon sample mix-up at the laboratory (see explanation below).

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The percent lipids and percent moisture data presented by SGS were 98.6% complete (i.e., usable). The validated laboratory data are tabulated and presented in Attachment A-1.

Attachment B presents the LCS SRM recovery results for percent lipids and duplicate precision results for percent lipids and percent moisture.

Following receipt of data, lipid results were reviewed in detail and compared to the long-term historic dataset, and a high outlier was noted in the small prey fish dataset. Upon review of laboratory pictures of sample homogenate, it was determined that percent lipids and percent moisture samples OL-F-3315-02 and OL-F-3319-03 were inadvertently switched at the laboratory. This was further investigated and confirmed by the laboratory. Following discussion with NYSDEC, it was determined that the percent lipids and percent moisture results for these samples should be considered unusable and qualified "R".

3A2.2 Zooplankton Samples

Data review has been completed for data packages generated by Eurofins containing zooplankton samples collected from the site. The specific samples contained in these data packages, the analyses performed, and the validated laboratory data were tabulated and are presented in Attachment A-2. All of these samples were shipped under a COC record and received intact by the analytical laboratory.

Data validation was performed for all samples in accordance with the project work plan and QAPP as well as the USEPA Region II SOP HW-2c, Revision 15 "Mercury and Cyanide Data Validation". This data validation and usability report is presented by analysis type.

3A2.2.1 Low Level Mercury

The following items were reviewed for compliancy in the low level mercury analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Initial and continuing calibration, and laboratory preparation blank contamination
- Matrix spike / matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries

- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of blank contamination as discussed below.

Blank Contamination

The laboratory preparation blanks associated with project samples contained low level mercury at concentrations ranging 0.105-9.951 ng/g; the laboratory initial calibration blanks associated with project samples contained low level mercury at concentrations ranging 0.014-0.083 ng/L; and laboratory continuing calibration blanks associated with project samples contained low level mercury at concentrations ranging 0.007-0.192 ng/L. Validation qualification was not required for the associated project samples.

Usability

All low level mercury sample results for the zooplankton samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The low level mercury data presented by Eurofins were 100% complete (i.e., usable). The validated low level mercury laboratory data are tabulated and presented in Attachment A-2.

It was noted that samples OL-3603-01, OL-3611-01, OL-3619-01, OL-3626-01, OL-3660-01, OL-3664-01, OL-3680-01, OL-3684-01, OL-3688-01, and OL-3692-01 were not analyzed by the laboratory for low level mercury due to limited volume. As a result, the low level mercury analysis was cancelled for these samples.

3A2.2.2 Methyl Mercury

The following items were reviewed for compliancy in the methyl mercury analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Initial and continuing calibration verifications
- Initial and continuing calibration, and laboratory preparation blank contamination
- Matrix spike / matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of initial calibration verifications and blank contamination as discussed below.

Initial Calibration Verifications

All initial calibration verifications were analyzed at the appropriate frequency with recoveries within the 65-135%R QC limit with the exception of the low initial calibration verification recovery for methyl mercury (64.5%R) associated with samples OL-3633-01 and OL-3640-01. Therefore, the methyl mercury results were considered estimated, possibly biased low, and qualified “J-” for the affected samples.

Blank Contamination

The laboratory initial calibration blanks associated with project samples contained methyl mercury at concentrations ranging 0.0008-0.04 ng/L; the laboratory continuing calibration blanks associated with project samples contained methyl mercury at concentrations ranging 0.0002-0.05 ng/L; and the laboratory preparation blanks associated with project samples contained methyl mercury at concentrations ranging 0.6-1.1 ng/g. Validation qualification was not required for the affected samples.

Usability

All methyl mercury sample results for the zooplankton samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The methyl mercury data presented by Eurofins were 100% complete (i.e., usable). The validated methyl mercury laboratory data are tabulated and presented in Attachment A-2.

ATTACHMENT A – VALIDATED LABORATORY DATA

ATTACHMENT A-1 – VALIDATED LABORATORY DATA FOR FISH SAMPLES

			Location ID	OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A	
			Field Sample ID	OL-F-3318-19		OL-F-3318-19		OL-F-3318-19		OL-F-3318-20		OL-F-3318-20	
			Sample Name	OL-F-1A-21-MIN-01		OL-F-1A-21-MIN-01		OL-F-1A-21-MIN-01		OL-F-1A-21-MIN-02		OL-F-1A-21-MIN-02	
			Sampled	8/4/2021		8/4/2021		8/4/2021		8/4/2021		8/4/2021	
			Lab Sample ID	B7551_016		B7551_016-R2		JD78426-16		B7551_017		B7551_017-R2	
			Taxonomic	MIN		MIN		MIN		MIN		MIN	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		--		--		--	
			Length (mm)	77		77		77		80		80	
			Weight (g)	109		109		109		109		109	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%	76.792						77.48092			
SW3540	LIPIDS	%Lipids Determination	%			1.471289						0.501884	
SW7471	7439-97-6	Mercury	mg/kg					0.073					
SW8081	72-54-8	4,4'-DDD	ug/kg					0.12	J				
SW8081	72-55-9	4,4'-DDE	ug/kg					0.93					
SW8081	50-29-3	4,4'-DDT	ug/kg					0.35	JN				
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.2	UJ				
SW8082	12674-11-2	Aroclor-1016	ug/kg					10	U				
SW8082	11104-28-2	Aroclor-1221	ug/kg					10	U				
SW8082	11141-16-5	Aroclor-1232	ug/kg					10	U				
SW8082	53469-21-9	Aroclor-1242	ug/kg					10	U				
SW8082	12672-29-6	Aroclor-1248	ug/kg					13.9	J				
SW8082	11097-69-1	Aroclor-1254	ug/kg					26.1	J				
SW8082	11096-82-5	Aroclor-1260	ug/kg					9.8	J				
SW8082	11100-14-4	Aroclor-1268	ug/kg					10	U				
SW8082	PCB	Total PCBs	ug/kg					49.8					

			Location ID	OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A	
			Field Sample ID	OL-F-3318-20		OL-F-3319-01		OL-F-3319-01		OL-F-3319-01		OL-F-3320-02	
			Sample Name	OL-F-1A-21-MIN-02		OL-F-1A-21-MIN-03		OL-F-1A-21-MIN-03		OL-F-1A-21-MIN-03		OL-F-1A-21-WHS-01	
			Sampled	8/4/2021		8/4/2021		8/4/2021		8/4/2021		10/4/2021	
			Lab Sample ID	JD78426-17		B7551_020		B7551_020-R2		JD78426-20		B7552_006	
			Taxonomic	MIN		MIN		MIN		MIN		WHS	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		--		--		--	
			Length (mm)	80		85		85		85		545	
			Weight (g)	109		119		119		119		1412	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%			76.82482						72.95	
SW3540	LIPIDS	%Lipids Determination	%					1.480527					
SW7471	7439-97-6	Mercury	mg/kg	0.066						0.08			
SW8081	72-54-8	4,4'-DDD	ug/kg	0.17	J					0.16	J		
SW8081	72-55-9	4,4'-DDE	ug/kg	0.92						0.65			
SW8081	50-29-3	4,4'-DDT	ug/kg	0.33	JN					0.32	JN		
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.19	UJ					0.19	UJ		
SW8082	12674-11-2	Aroclor-1016	ug/kg	9.6	U					9.6	U		
SW8082	11104-28-2	Aroclor-1221	ug/kg	9.6	U					9.6	U		
SW8082	11141-16-5	Aroclor-1232	ug/kg	9.6	U					9.6	U		
SW8082	53469-21-9	Aroclor-1242	ug/kg	9.6	U					9.6	U		
SW8082	12672-29-6	Aroclor-1248	ug/kg	12	J					12.3			
SW8082	11097-69-1	Aroclor-1254	ug/kg	26.1	J					18.4	J		
SW8082	11096-82-5	Aroclor-1260	ug/kg	10						7.9	J		
SW8082	11100-14-4	Aroclor-1268	ug/kg	9.6	U					9.6	U		
SW8082	PCB	Total PCBs	ug/kg	48.1						38.5			

			Location ID	OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A	
			Field Sample ID	OL-F-3320-02		OL-F-3320-02		OL-F-3320-03		OL-F-3320-03		OL-F-3320-03	
			Sample Name	OL-F-1A-21-WHS-01		OL-F-1A-21-WHS-01		OL-F-1A-21-WHS-02		OL-F-1A-21-WHS-02		OL-F-1A-21-WHS-02	
			Sampled	10/4/2021		10/4/2021		10/5/2021		10/5/2021		10/5/2021	
			Lab Sample ID	B7552_20680_006		JD77878-6		B7552_007		B7552_20680_007		JD77878-7	
			Taxonomic	WHS		WHS		WHS		WHS		WHS	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		M		M		M	
			Length (mm)	545		545		493		493		493	
			Weight (g)	1412		1412		1292		1292		1292	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%					72.19					
SW3540	LIPIDS	%Lipids Determination	%	4.597						4.024			
SW7471	7439-97-6	Mercury	mg/kg			0.11						0.11	
SW8081	72-54-8	4,4'-DDD	ug/kg			3.5	J-					1.9	J-
SW8081	72-55-9	4,4'-DDE	ug/kg			18.9	J					8.3	
SW8081	50-29-3	4,4'-DDT	ug/kg			10.4	JN					8.1	JN
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.55	J-					0.61	J-
SW8082	12674-11-2	Aroclor-1016	ug/kg			10	UJ					9.8	UJ
SW8082	11104-28-2	Aroclor-1221	ug/kg			10	UJ					9.8	UJ
SW8082	11141-16-5	Aroclor-1232	ug/kg			10	UJ					9.8	UJ
SW8082	53469-21-9	Aroclor-1242	ug/kg			10	UJ					9.8	UJ
SW8082	12672-29-6	Aroclor-1248	ug/kg			196	J-					55.3	J-
SW8082	11097-69-1	Aroclor-1254	ug/kg			188	J-					66.9	J-
SW8082	11096-82-5	Aroclor-1260	ug/kg			261	J-					44.7	J-
SW8082	11100-14-4	Aroclor-1268	ug/kg			10	UJ					9.8	UJ
SW8082	PCB	Total PCBs	ug/kg			645	J-					167	J-

Location ID				OL-F-1A		OL-F-1A		OL-F-1A		OL-F-2A		OL-F-2A	
Field Sample ID				OL-F-3320-04		OL-F-3320-04		OL-F-3320-04		OL-F-3304-08		OL-F-3304-08	
Sample Name				OL-F-1A-21-WHS-03		OL-F-1A-21-WHS-03		OL-F-1A-21-WHS-03		OL-F-2A-21-WHS-01		OL-F-2A-21-WHS-01	
Sampled				10/5/2021		10/5/2021		10/5/2021		5/26/2021		5/26/2021	
Lab Sample ID				B7552_008		B7552_20680_008		JD77878-8		B7550_013		B7550_21027_013-R3	
Taxonomic				WHS		WHS		WHS		WHS		WHS	
Age (yrs)				--		--		--		--		--	
Gender				M		M		M		M		M	
Length (mm)				433		433		433		353		353	
Weight (g)				948		948		948		509		509	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%	69.01						74.69			
SW3540	LIPIDS	%Lipids Determination	%			4.113						4.25	
SW7471	7439-97-6	Mercury	mg/kg					0.075					
SW8081	72-54-8	4,4'-DDD	ug/kg					2	J-				
SW8081	72-55-9	4,4'-DDE	ug/kg					12.8					
SW8081	50-29-3	4,4'-DDT	ug/kg					3.2	JN				
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.37	J-				
SW8082	12674-11-2	Aroclor-1016	ug/kg					10	UJ				
SW8082	11104-28-2	Aroclor-1221	ug/kg					10	UJ				
SW8082	11141-16-5	Aroclor-1232	ug/kg					10	UJ				
SW8082	53469-21-9	Aroclor-1242	ug/kg					10	UJ				
SW8082	12672-29-6	Aroclor-1248	ug/kg					60.5	J-				
SW8082	11097-69-1	Aroclor-1254	ug/kg					83.9	J-				
SW8082	11096-82-5	Aroclor-1260	ug/kg					53.9	J-				
SW8082	11100-14-4	Aroclor-1268	ug/kg					10	UJ				
SW8082	PCB	Total PCBs	ug/kg					198	J-				

			Location ID	OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A	
			Field Sample ID	OL-F-3304-08		OL-F-3304-09		OL-F-3304-09		OL-F-3304-09		OL-F-3304-10	
			Sample Name	OL-F-2A-21-WHS-01		OL-F-2A-21-WHS-02		OL-F-2A-21-WHS-02		OL-F-2A-21-WHS-02		OL-F-2A-21-WHS-03	
			Sampled	5/26/2021		5/26/2021		5/26/2021		5/26/2021		5/26/2021	
			Lab Sample ID	JD78424-13		B7550_005		B7550_21027_005-R3		JD78424-5		B7550_014	
			Taxonomic	WHS		WHS		WHS		WHS		WHS	
			Age (yrs)	--		--		--		--		--	
			Gender	M		M		M		M		F	
			Length (mm)	353		451		451		451		450	
			Weight (g)	509		934		934		934		890	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%			74.16						76.84	
SW3540	LIPIDS	%Lipids Determination	%					0.923					
SW7471	7439-97-6	Mercury	mg/kg	0.027	J					0.078			
SW8081	72-54-8	4,4'-DDD	ug/kg	0.59	J					0.73	J		
SW8081	72-55-9	4,4'-DDE	ug/kg	4.7	J					8.6	J		
SW8081	50-29-3	4,4'-DDT	ug/kg	1	JN					2	JN		
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.35	J-					0.2	J-		
SW8082	12674-11-2	Aroclor-1016	ug/kg	10	UJ					10	UJ		
SW8082	11104-28-2	Aroclor-1221	ug/kg	10	UJ					10	UJ		
SW8082	11141-16-5	Aroclor-1232	ug/kg	10	UJ					10	UJ		
SW8082	53469-21-9	Aroclor-1242	ug/kg	10	UJ					10	UJ		
SW8082	12672-29-6	Aroclor-1248	ug/kg	78.4	J-					54.9	J-		
SW8082	11097-69-1	Aroclor-1254	ug/kg	62.5	J-					107	J-		
SW8082	11096-82-5	Aroclor-1260	ug/kg	41.1	J-					10	UJ		
SW8082	11100-14-4	Aroclor-1268	ug/kg	10	UJ					10	UJ		
SW8082	PCB	Total PCBs	ug/kg	182	J-					162	J-		

			Location ID	OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A	
			Field Sample ID	OL-F-3304-10		OL-F-3304-10		OL-F-3318-16		OL-F-3318-16		OL-F-3318-16	
			Sample Name	OL-F-2A-21-WHS-03		OL-F-2A-21-WHS-03		OL-F-2A-21-RG-01		OL-F-2A-21-RG-01		OL-F-2A-21-RG-01	
			Sampled	5/26/2021		5/26/2021		8/4/2021		8/4/2021		8/4/2021	
			Lab Sample ID	B7550_21027_014-R3		JD78424-14		B7551_014		B7551_014-R2		JD78426-14	
			Taxonomic	WHS		WHS		RG		RG		RG	
			Age (yrs)	--		--		--		--		--	
			Gender	F		F		--		--		--	
			Length (mm)	450		450		64		64		64	
			Weight (g)	890		890		110		110		110	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%					76.38376					
SW3540	LIPIDS	%Lipids Determination	%	0.539						1.126583			
SW7471	7439-97-6	Mercury	mg/kg			0.073						0.048	
SW8081	72-54-8	4,4'-DDD	ug/kg			0.098	JN					0.2	UJ
SW8081	72-55-9	4,4'-DDE	ug/kg			2.9	J					0.64	
SW8081	50-29-3	4,4'-DDT	ug/kg			0.71	JN					0.62	J
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.12	J					0.17	J
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.8	UJ					10	U
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.8	UJ					10	U
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.8	UJ					10	U
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.8	UJ					10	U
SW8082	12672-29-6	Aroclor-1248	ug/kg			12.1	J-					10	U
SW8082	11097-69-1	Aroclor-1254	ug/kg			25.1	J-					34.2	
SW8082	11096-82-5	Aroclor-1260	ug/kg			9.8	UJ					10	U
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.8	UJ					10	U
SW8082	PCB	Total PCBs	ug/kg			37.2	J-					57.9	

			Location ID	OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A	
			Field Sample ID	OL-F-3318-17		OL-F-3318-17		OL-F-3318-17		OL-F-3318-18		OL-F-3318-18	
			Sample Name	OL-F-2A-21-MIN-01		OL-F-2A-21-MIN-01		OL-F-2A-21-MIN-01		OL-F-2A-21-RG-02		OL-F-2A-21-RG-02	
			Sampled	8/4/2021		8/4/2021		8/4/2021		8/4/2021		8/4/2021	
			Lab Sample ID	B7551_015		B7551_015-R2		JD78426-15		B7552_001		B7552_20680_001	
			Taxonomic	MIN		MIN		MIN		RG		RG	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		--		--		--	
			Length (mm)	62		62		62		64		64	
			Weight (g)	115		115		115		156		156	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%	76.03143						76.28			
SW3540	LIPIDS	%Lipids Determination	%			1.644314						1.683	
SW7471	7439-97-6	Mercury	mg/kg					0.054					
SW8081	72-54-8	4,4'-DDD	ug/kg					0.36	J-				
SW8081	72-55-9	4,4'-DDE	ug/kg					2.6					
SW8081	50-29-3	4,4'-DDT	ug/kg					1.3	JN				
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.2	UJ				
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.8	U				
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.8	U				
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.8	U				
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.8	U				
SW8082	12672-29-6	Aroclor-1248	ug/kg					30.1					
SW8082	11097-69-1	Aroclor-1254	ug/kg					81.3					
SW8082	11096-82-5	Aroclor-1260	ug/kg					9.8	U				
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.8	U				
SW8082	PCB	Total PCBs	ug/kg					168					

			Location ID	OL-F-2A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A	
			Field Sample ID	OL-F-3318-18		OL-F-3304-01		OL-F-3304-01		OL-F-3304-01		OL-F-3304-06	
			Sample Name	OL-F-2A-21-RG-02		OL-F-3A-21-SHRH-01		OL-F-3A-21-SHRH-01		OL-F-3A-21-SHRH-01		OL-F-3A-21-SHRH-02	
			Sampled	8/4/2021		5/18/2021		5/18/2021		5/18/2021		5/26/2021	
			Lab Sample ID	JD77878-1		B7550_001		B7550_21027_001-R3		JD78424-1		B7550_004	
			Taxonomic	RG		SHRH		SHRH		SHRH		SHRH	
			Age (yrs)	--		--		--		--		--	
			Gender	--		M		M		M		F	
			Length (mm)	64		501		501		501		481	
			Weight (g)	156		1374		1374		1374		1061	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%			65.74						71.37	
SW3540	LIPIDS	%Lipids Determination	%					9.26					
SW7471	7439-97-6	Mercury	mg/kg	0.041						0.27			
SW8081	72-54-8	4,4'-DDD	ug/kg	0.13	J					5.1	J		
SW8081	72-55-9	4,4'-DDE	ug/kg	1						39.8	J		
SW8081	50-29-3	4,4'-DDT	ug/kg	2.6	J					6.5	JN		
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.24	J-					1.4	J-		
SW8082	12674-11-2	Aroclor-1016	ug/kg	9.8	UJ					10	UJ		
SW8082	11104-28-2	Aroclor-1221	ug/kg	9.8	UJ					10	UJ		
SW8082	11141-16-5	Aroclor-1232	ug/kg	9.8	UJ					10	UJ		
SW8082	53469-21-9	Aroclor-1242	ug/kg	9.8	UJ					10	UJ		
SW8082	12672-29-6	Aroclor-1248	ug/kg	17.6	J-					354	J-		
SW8082	11097-69-1	Aroclor-1254	ug/kg	27.3	J-					428	J-		
SW8082	11096-82-5	Aroclor-1260	ug/kg	9.8	UJ					285	J-		
SW8082	11100-14-4	Aroclor-1268	ug/kg	9.8	UJ					10	UJ		
SW8082	PCB	Total PCBs	ug/kg	44.9	J-					1070	J-		

			Location ID	OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A	
			Field Sample ID	OL-F-3304-06		OL-F-3304-06		OL-F-3304-07		OL-F-3304-07		OL-F-3304-07	
			Sample Name	OL-F-3A-21-SHRH-02		OL-F-3A-21-SHRH-02		OL-F-3A-21-WHS-01		OL-F-3A-21-WHS-01		OL-F-3A-21-WHS-01	
			Sampled	5/26/2021		5/26/2021		5/26/2021		5/26/2021		5/26/2021	
			Lab Sample ID	B7550_21027_004-R3		JD78424-4		B7550_007		B7550_21027_007-R3		JD78424-7	
			Taxonomic	SHRH		SHRH		WHS		WHS		WHS	
			Age (yrs)	--		--		--		--		--	
			Gender	F		F		M		M		M	
			Length (mm)	481		481		435		435		435	
			Weight (g)	1061		1061		758		758		758	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%					76.98					
SW3540	LIPIDS	%Lipids Determination	%	2.74						0.764			
SW7471	7439-97-6	Mercury	mg/kg			0.18						0.077	
SW8081	72-54-8	4,4'-DDD	ug/kg			0.28	J					0.28	J
SW8081	72-55-9	4,4'-DDE	ug/kg			2.2	J					4.1	J
SW8081	50-29-3	4,4'-DDT	ug/kg			0.6	JN					0.95	JN
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.17	J					0.076	J
SW8082	12674-11-2	Aroclor-1016	ug/kg			10	UJ					9.8	UJ
SW8082	11104-28-2	Aroclor-1221	ug/kg			10	UJ					9.8	UJ
SW8082	11141-16-5	Aroclor-1232	ug/kg			10	UJ					9.8	UJ
SW8082	53469-21-9	Aroclor-1242	ug/kg			10	UJ					9.8	UJ
SW8082	12672-29-6	Aroclor-1248	ug/kg			23.8	J-					43.5	J-
SW8082	11097-69-1	Aroclor-1254	ug/kg			20.8	J-					58.5	J-
SW8082	11096-82-5	Aroclor-1260	ug/kg			34.2	J-					38.4	J-
SW8082	11100-14-4	Aroclor-1268	ug/kg			10	UJ					9.8	UJ
SW8082	PCB	Total PCBs	ug/kg			78.7	J-					140	J-

			Location ID	OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A	
			Field Sample ID	OL-F-3318-07		OL-F-3318-07		OL-F-3318-07		OL-F-3318-08		OL-F-3318-08	
			Sample Name	OL-F-3A-21-MIN-01		OL-F-3A-21-MIN-01		OL-F-3A-21-MIN-01		OL-F-3A-21-MIN-02		OL-F-3A-21-MIN-02	
			Sampled	8/3/2021		8/3/2021		8/3/2021		8/3/2021		8/3/2021	
			Lab Sample ID	B7551_006		B7551_006-R2		JD78426-6		B7551_007		B7551_007-R2	
			Taxonomic	MIN		MIN		MIN		MIN		MIN	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		--		--		--	
			Length (mm)	59		59		59		76		76	
			Weight (g)	104		104		104		123		123	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%	73.87218						75.89454			
SW3540	LIPIDS	%Lipids Determination	%			1.63827						1.49089	
SW7471	7439-97-6	Mercury	mg/kg					0.035					
SW8081	72-54-8	4,4'-DDD	ug/kg					0.13	J				
SW8081	72-55-9	4,4'-DDE	ug/kg					1.4					
SW8081	50-29-3	4,4'-DDT	ug/kg					0.55	JN				
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.2	UJ				
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.8	U				
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.8	U				
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.8	U				
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.8	U				
SW8082	12672-29-6	Aroclor-1248	ug/kg					17.5					
SW8082	11097-69-1	Aroclor-1254	ug/kg					39.1	J				
SW8082	11096-82-5	Aroclor-1260	ug/kg					15.2					
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.8	U				
SW8082	PCB	Total PCBs	ug/kg					71.9					

			Location ID	OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-4A	
			Field Sample ID	OL-F-3318-08		OL-F-3318-09		OL-F-3318-09		OL-F-3318-09		OL-F-3308-01	
			Sample Name	OL-F-3A-21-MIN-02		OL-F-3A-21-RG-01		OL-F-3A-21-RG-01		OL-F-3A-21-RG-01		OL-F-4A-21-WHS-01	
			Sampled	8/3/2021		8/3/2021		8/3/2021		8/3/2021		6/4/2021	
			Lab Sample ID	JD78426-7		B7551_019		B7551_019-R2		JD78426-19		B7550_008	
			Taxonomic	MIN		RG		RG		RG		WHS	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		--		--		M	
			Length (mm)	76		68		68		68		380	
			Weight (g)	123		120		120		120		394	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%			76.73179						82.23	
SW3540	LIPIDS	%Lipids Determination	%					1.20808					
SW7471	7439-97-6	Mercury	mg/kg	0.085						0.038			
SW8081	72-54-8	4,4'-DDD	ug/kg	0.14	J					0.34	J		
SW8081	72-55-9	4,4'-DDE	ug/kg	1.5						1.2			
SW8081	50-29-3	4,4'-DDT	ug/kg	0.7	JN					0.58	JN		
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.2	UJ					0.098	J		
SW8082	12674-11-2	Aroclor-1016	ug/kg	9.8	U					9.1	U		
SW8082	11104-28-2	Aroclor-1221	ug/kg	9.8	U					9.1	U		
SW8082	11141-16-5	Aroclor-1232	ug/kg	9.8	U					9.1	U		
SW8082	53469-21-9	Aroclor-1242	ug/kg	9.8	U					9.1	U		
SW8082	12672-29-6	Aroclor-1248	ug/kg	15	J					18.3	J		
SW8082	11097-69-1	Aroclor-1254	ug/kg	42.5	J					38.6	J		
SW8082	11096-82-5	Aroclor-1260	ug/kg	17.8						16.8			
SW8082	11100-14-4	Aroclor-1268	ug/kg	9.8	U					9.1	U		
SW8082	PCB	Total PCBs	ug/kg	75.3						73.7			

			Location ID	OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A	
			Field Sample ID	OL-F-3308-01		OL-F-3308-01		OL-F-3318-10		OL-F-3318-10		OL-F-3318-10	
			Sample Name	OL-F-4A-21-WHS-01		OL-F-4A-21-WHS-01		OL-F-4A-21-MIN-01		OL-F-4A-21-MIN-01		OL-F-4A-21-MIN-01	
			Sampled	6/4/2021		6/4/2021		8/3/2021		8/3/2021		8/3/2021	
			Lab Sample ID	B7550_21027_008-R3		JD78424-8		B7551_008		B7551_008-R2		JD78426-8	
			Taxonomic	WHS		WHS		MIN		MIN		MIN	
			Age (yrs)	--		--		--		--		--	
			Gender	M		M		--		--		--	
			Length (mm)	380		380		73		73		73	
			Weight (g)	394		394		109		109		109	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%					76.81895					
SW3540	LIPIDS	%Lipids Determination	%	0.193						1.440543			
SW7471	7439-97-6	Mercury	mg/kg			0.1						0.088	
SW8081	72-54-8	4,4'-DDD	ug/kg			0.054	J					0.088	J
SW8081	72-55-9	4,4'-DDE	ug/kg			1.4	J					1	
SW8081	50-29-3	4,4'-DDT	ug/kg			0.39	JN					0.38	JN
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.19	UJ					0.19	UJ
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.6	UJ					9.6	U
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.6	UJ					9.6	U
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.6	UJ					9.6	U
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.6	UJ					9.6	U
SW8082	12672-29-6	Aroclor-1248	ug/kg			9.6	UJ					6.9	J
SW8082	11097-69-1	Aroclor-1254	ug/kg			12.3	J-					24.4	J
SW8082	11096-82-5	Aroclor-1260	ug/kg			14	J-					13.5	
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.6	UJ					9.6	U
SW8082	PCB	Total PCBs	ug/kg			26.3	J-					44.8	

			Location ID	OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A	
			Field Sample ID	OL-F-3318-11		OL-F-3318-11		OL-F-3318-11		OL-F-3318-12		OL-F-3318-12	
			Sample Name	OL-F-4A-21-MIN-02		OL-F-4A-21-MIN-02		OL-F-4A-21-MIN-02		OL-F-4A-21-MIN-03		OL-F-4A-21-MIN-03	
			Sampled	8/3/2021		8/3/2021		8/3/2021		8/3/2021		8/3/2021	
			Lab Sample ID	B7551_009		B7551_009-R2		JD78426-9		B7551_010		B7551_010-R2	
			Taxonomic	MIN		MIN		MIN		MIN		MIN	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		--		--		--	
			Length (mm)	64		64		64		71		71	
			Weight (g)	110		110		110		199		199	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%	76.14504						76.37363			
SW3540	LIPIDS	%Lipids Determination	%			1.13742						0.694625	
SW7471	7439-97-6	Mercury	mg/kg					0.097					
SW8081	72-54-8	4,4'-DDD	ug/kg					0.08	J				
SW8081	72-55-9	4,4'-DDE	ug/kg					1					
SW8081	50-29-3	4,4'-DDT	ug/kg					0.36	JN				
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.19	UJ				
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.6	U				
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.6	U				
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.6	U				
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.6	U				
SW8082	12672-29-6	Aroclor-1248	ug/kg					8.1	J				
SW8082	11097-69-1	Aroclor-1254	ug/kg					23.5	J				
SW8082	11096-82-5	Aroclor-1260	ug/kg					10.6					
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.6	U				
SW8082	PCB	Total PCBs	ug/kg					42.2					

			Location ID	OL-F-4A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A	
			Field Sample ID	OL-F-3318-12		OL-F-3310-02		OL-F-3310-02		OL-F-3310-02		OL-F-3310-03	
			Sample Name	OL-F-4A-21-MIN-03		OL-F-5A-21-SHRH-01		OL-F-5A-21-SHRH-01		OL-F-5A-21-SHRH-01		OL-F-5A-21-WHS-01	
			Sampled	8/3/2021		6/9/2021		6/9/2021		6/9/2021		6/9/2021	
			Lab Sample ID	JD78426-10		B7550_010		B7550_21027_010-R3		JD78424-10		B7550_011	
			Taxonomic	MIN		SHRH		SHRH		SHRH		WHS	
			Age (yrs)	--		--		--		--		--	
			Gender	--		F		F		F		F	
			Length (mm)	71		480		480		480		465	
			Weight (g)	199		1115		1115		1115		1147	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%			72.84						75.47	
SW3540	LIPIDS	%Lipids Determination	%					1.61					
SW7471	7439-97-6	Mercury	mg/kg	0.095						0.36			
SW8081	72-54-8	4,4'-DDD	ug/kg	0.087	J					0.93	J		
SW8081	72-55-9	4,4'-DDE	ug/kg	0.99						11.6	J		
SW8081	50-29-3	4,4'-DDT	ug/kg	0.38	JN					1.6	JN		
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.2	UJ					0.14	J		
SW8082	12674-11-2	Aroclor-1016	ug/kg	10	U					10	UJ		
SW8082	11104-28-2	Aroclor-1221	ug/kg	10	U					10	UJ		
SW8082	11141-16-5	Aroclor-1232	ug/kg	10	U					10	UJ		
SW8082	53469-21-9	Aroclor-1242	ug/kg	10	U					10	UJ		
SW8082	12672-29-6	Aroclor-1248	ug/kg	8.9	J					42.4	J-		
SW8082	11097-69-1	Aroclor-1254	ug/kg	24.3	J					76.3	J-		
SW8082	11096-82-5	Aroclor-1260	ug/kg	11.6						70.3	J-		
SW8082	11100-14-4	Aroclor-1268	ug/kg	10	U					10	UJ		
SW8082	PCB	Total PCBs	ug/kg	44.7						189	J-		

			Location ID	OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A	
			Field Sample ID	OL-F-3310-03		OL-F-3310-03		OL-F-3315-01		OL-F-3315-01		OL-F-3315-01	
			Sample Name	OL-F-5A-21-WHS-01		OL-F-5A-21-WHS-01		OL-F-5A-21-SHRH-02		OL-F-5A-21-SHRH-02		OL-F-5A-21-SHRH-02	
			Sampled	6/9/2021		6/9/2021		7/1/2021		7/1/2021		7/1/2021	
			Lab Sample ID	B7550_21027_011-R3		JD78424-11		B7550_019		B7550_21027_019-R3		JD78424-19	
			Taxonomic	WHS		WHS		SHRH		SHRH		SHRH	
			Age (yrs)	--		--		--		--		--	
			Gender	F		F		F		F		F	
			Length (mm)	465		465		497		497		497	
			Weight (g)	1147		1147		1322		1322		1322	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%					70.04					
SW3540	LIPIDS	%Lipids Determination	%	0.817						3.28			
SW7471	7439-97-6	Mercury	mg/kg			0.088						0.26	
SW8081	72-54-8	4,4'-DDD	ug/kg			0.049	JN					1.5	J
SW8081	72-55-9	4,4'-DDE	ug/kg			0.89	J					20.6	J
SW8081	50-29-3	4,4'-DDT	ug/kg			0.27	JN					2.4	JN
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.07	J					0.17	J
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.3	UJ					9.4	UJ
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.3	UJ					9.4	UJ
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.3	UJ					9.4	UJ
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.3	UJ					9.4	UJ
SW8082	12672-29-6	Aroclor-1248	ug/kg			17.8	J-					34.9	J-
SW8082	11097-69-1	Aroclor-1254	ug/kg			10.9	J-					77.3	J-
SW8082	11096-82-5	Aroclor-1260	ug/kg			13.6	J-					81.7	J-
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.3	UJ					9.4	UJ
SW8082	PCB	Total PCBs	ug/kg			42.3	J-					194	J-

PARSONS

			Location ID	OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A	
			Field Sample ID	OL-F-3318-04		OL-F-3318-04		OL-F-3318-04		OL-F-3318-05		OL-F-3318-05	
			Sample Name	OL-F-5A-21-MIN-01		OL-F-5A-21-MIN-01		OL-F-5A-21-MIN-01		OL-F-5A-21-MIN-02		OL-F-5A-21-MIN-02	
			Sampled	8/3/2021		8/3/2021		8/3/2021		8/3/2021		8/3/2021	
			Lab Sample ID	B7551_003		B7551_003-R2		JD78426-3		B7551_004		B7551_004-R2	
			Taxonomic	MIN		MIN		MIN		MIN		MIN	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		--		--		--	
			Length (mm)	80		80		80		79		79	
			Weight (g)	121		121		121		126		126	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%	76.21832						76.24309			
SW3540	LIPIDS	%Lipids Determination	%			0.819215						1.163364	
SW7471	7439-97-6	Mercury	mg/kg					0.1					
SW8081	72-54-8	4,4'-DDD	ug/kg					0.09	J				
SW8081	72-55-9	4,4'-DDE	ug/kg					0.65					
SW8081	50-29-3	4,4'-DDT	ug/kg					0.24	JN				
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.19	UJ				
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.6	U				
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.6	U				
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.6	U				
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.6	U				
SW8082	12672-29-6	Aroclor-1248	ug/kg					7.9	J				
SW8082	11097-69-1	Aroclor-1254	ug/kg					16.6	J				
SW8082	11096-82-5	Aroclor-1260	ug/kg					6.9	J				
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.6	U				
SW8082	PCB	Total PCBs	ug/kg					31.4					

			Location ID	OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5B	
			Field Sample ID	OL-F-3318-05		OL-F-3318-06		OL-F-3318-06		OL-F-3318-06		OL-F-3304-02	
			Sample Name	OL-F-5A-21-MIN-02		OL-F-5A-21-MIN-03		OL-F-5A-21-MIN-03		OL-F-5A-21-MIN-03		OL-F-5B-21-SHRH-01	
			Sampled	8/3/2021		8/3/2021		8/3/2021		8/3/2021		5/20/2021	
			Lab Sample ID	JD78426-4		B7551_005		B7551_005-R2		JD78426-5		B7550_002	
			Taxonomic	MIN		MIN		MIN		MIN		SHRH	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		--		--		M	
			Length (mm)	79		77		77		77		497	
			Weight (g)	126		215		215		215		1449	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%			76.43564						67.18	
SW3540	LIPIDS	%Lipids Determination	%					1.082118					
SW7471	7439-97-6	Mercury	mg/kg	0.094						0.083			
SW8081	72-54-8	4,4'-DDD	ug/kg	0.11	J					0.13	J		
SW8081	72-55-9	4,4'-DDE	ug/kg	0.92						1.1			
SW8081	50-29-3	4,4'-DDT	ug/kg	0.37	JN					0.38	JN		
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.18	UJ					0.2	UJ		
SW8082	12674-11-2	Aroclor-1016	ug/kg	9.1	U					9.8	U		
SW8082	11104-28-2	Aroclor-1221	ug/kg	9.1	U					9.8	U		
SW8082	11141-16-5	Aroclor-1232	ug/kg	9.1	U					9.8	U		
SW8082	53469-21-9	Aroclor-1242	ug/kg	9.1	U					9.8	U		
SW8082	12672-29-6	Aroclor-1248	ug/kg	9.4	J					11.2	J		
SW8082	11097-69-1	Aroclor-1254	ug/kg	21.1	J					25.4	J		
SW8082	11096-82-5	Aroclor-1260	ug/kg	9.1						10.8			
SW8082	11100-14-4	Aroclor-1268	ug/kg	9.1	U					9.8	U		
SW8082	PCB	Total PCBs	ug/kg	39.6						47.3			

			Location ID	OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B	
			Field Sample ID	OL-F-3304-02		OL-F-3304-02		OL-F-3310-01		OL-F-3310-01		OL-F-3310-01	
			Sample Name	OL-F-5B-21-SHRH-01		OL-F-5B-21-SHRH-01		OL-F-5B-21-WHS-01		OL-F-5B-21-WHS-01		OL-F-5B-21-WHS-01	
			Sampled	5/20/2021		5/20/2021		6/4/2021		6/4/2021		6/4/2021	
			Lab Sample ID	B7550_21027_002-R3		JD78424-2		B7550_009		B7550_21027_009-R3		JD78424-9	
			Taxonomic	SHRH		SHRH		WHS		WHS		WHS	
			Age (yrs)	--		--		--		--		--	
			Gender	M		M		F		F		F	
			Length (mm)	497		497		436		436		436	
			Weight (g)	1449		1449		1116		1116		1116	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%					72.66					
SW3540	LIPIDS	%Lipids Determination	%	7.26						2.4			
SW7471	7439-97-6	Mercury	mg/kg			0.18						0.044	
SW8081	72-54-8	4,4'-DDD	ug/kg			7.8	J					1.4	J
SW8081	72-55-9	4,4'-DDE	ug/kg			73.2	J					12.4	J
SW8081	50-29-3	4,4'-DDT	ug/kg			7.7	JN					2.9	JN
SW8081	118-74-1	Hexachlorobenzene	ug/kg			1	J-					0.38	J-
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.4	UJ					9.6	UJ
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.4	UJ					9.6	UJ
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.4	UJ					9.6	UJ
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.4	UJ					9.6	UJ
SW8082	12672-29-6	Aroclor-1248	ug/kg			286	J-					166	J-
SW8082	11097-69-1	Aroclor-1254	ug/kg			388	J-					145	J-
SW8082	11096-82-5	Aroclor-1260	ug/kg			233	J-					120	J-
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.4	UJ					9.6	UJ
SW8082	PCB	Total PCBs	ug/kg			907	J-					431	J-

			Location ID	OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B	
			Field Sample ID	OL-F-3315-02		OL-F-3315-02		OL-F-3315-02		OL-F-3318-01		OL-F-3318-01	
			Sample Name	OL-F-5B-21-SHRH-02		OL-F-5B-21-SHRH-02		OL-F-5B-21-SHRH-02		OL-F-5B-21-MIN-01		OL-F-5B-21-MIN-01	
			Sampled	7/7/2021		7/7/2021		7/7/2021		8/2/2021		8/2/2021	
			Lab Sample ID	B7552_002		B7552_20680_002		JD77878-2		B7551_001		B7551_001-R2	
			Taxonomic	SHRH		SHRH		SHRH		MIN		MIN	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		--		--		--	
			Length (mm)	526		526		526		53		53	
			Weight (g)	1357		1357		1357		102		102	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%		R					75.88785			
SW3540	LIPIDS	%Lipids Determination	%				R					1.052364	
SW7471	7439-97-6	Mercury	mg/kg					0.22					
SW8081	72-54-8	4,4'-DDD	ug/kg					53.7	J-				
SW8081	72-55-9	4,4'-DDE	ug/kg					61.1					
SW8081	50-29-3	4,4'-DDT	ug/kg					63.8					
SW8081	118-74-1	Hexachlorobenzene	ug/kg					1.1	J-				
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.8	UJ				
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.8	UJ				
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.8	UJ				
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.8	UJ				
SW8082	12672-29-6	Aroclor-1248	ug/kg					212	J-				
SW8082	11097-69-1	Aroclor-1254	ug/kg					416	J-				
SW8082	11096-82-5	Aroclor-1260	ug/kg					277	J-				
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.8	UJ				
SW8082	PCB	Total PCBs	ug/kg					905	J-				

			Location ID	OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B	
			Field Sample ID	OL-F-3318-01		OL-F-3318-02		OL-F-3318-02		OL-F-3318-02		OL-F-3318-03	
			Sample Name	OL-F-5B-21-MIN-01		OL-F-5B-21-MIN-02		OL-F-5B-21-MIN-02		OL-F-5B-21-MIN-02		OL-F-5B-21-RG-01	
			Sampled	8/2/2021		8/2/2021		8/2/2021		8/2/2021		8/2/2021	
			Lab Sample ID	JD78426-1		B7551_018		B7551_018-R2		JD78426-18		B7551_002	
			Taxonomic	MIN		MIN		MIN		MIN		RG	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		--		--		--	
			Length (mm)	53		59		59		59		57	
			Weight (g)	102		102		102		102		112	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%			76.50086						76.25	
SW3540	LIPIDS	%Lipids Determination	%					0.909839					
SW7471	7439-97-6	Mercury	mg/kg	0.087						0.097			
SW8081	72-54-8	4,4'-DDD	ug/kg	0.54	J-					0.3	J-		
SW8081	72-55-9	4,4'-DDE	ug/kg	2.3						1.8			
SW8081	50-29-3	4,4'-DDT	ug/kg	0.66	JN					0.65	JN		
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.19	UJ					0.2	UJ		
SW8082	12674-11-2	Aroclor-1016	ug/kg	9.6	U					10	U		
SW8082	11104-28-2	Aroclor-1221	ug/kg	9.6	U					10	U		
SW8082	11141-16-5	Aroclor-1232	ug/kg	9.6	U					10	U		
SW8082	53469-21-9	Aroclor-1242	ug/kg	9.6	U					10	U		
SW8082	12672-29-6	Aroclor-1248	ug/kg	20.9						16.9	J		
SW8082	11097-69-1	Aroclor-1254	ug/kg	32.8	J					38.8	J		
SW8082	11096-82-5	Aroclor-1260	ug/kg	24.5	J					18.6			
SW8082	11100-14-4	Aroclor-1268	ug/kg	9.6	U					10	U		
SW8082	PCB	Total PCBs	ug/kg	78.2						74.4			

			Location ID	OL-F-5B		OL-F-5B		OL-F-6A		OL-F-6A		OL-F-6A	
			Field Sample ID	OL-F-3318-03		OL-F-3318-03		OL-F-3304-03		OL-F-3304-03		OL-F-3304-03	
			Sample Name	OL-F-5B-21-RG-01		OL-F-5B-21-RG-01		OL-F-6A-21-WHS-01		OL-F-6A-21-WHS-01		OL-F-6A-21-WHS-01	
			Sampled	8/2/2021		8/2/2021		5/24/2021		5/24/2021		5/24/2021	
			Lab Sample ID	B7551_002-R2		JD78426-2		B7550_003		B7550_21027_003-R3		JD78424-3	
			Taxonomic	RG		RG		WHS		WHS		WHS	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		M		M		M	
			Length (mm)	57		57		467		467		467	
			Weight (g)	112		112		1251		1251		1251	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%					71.19					
SW3540	LIPIDS	%Lipids Determination	%	1.325361						4.33			
SW7471	7439-97-6	Mercury	mg/kg			0.068						0.055	
SW8081	72-54-8	4,4'-DDD	ug/kg			0.14	J					1.3	J
SW8081	72-55-9	4,4'-DDE	ug/kg			0.7						8.7	J
SW8081	50-29-3	4,4'-DDT	ug/kg			0.31	JN					1.6	JN
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.069	J					0.54	J-
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.1	U					9.3	UJ
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.1	U					9.3	UJ
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.1	U					9.3	UJ
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.1	U					9.3	UJ
SW8082	12672-29-6	Aroclor-1248	ug/kg			11.1	J					162	J-
SW8082	11097-69-1	Aroclor-1254	ug/kg			18.4	J					110	J-
SW8082	11096-82-5	Aroclor-1260	ug/kg			8	J					77	J-
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.1	U					9.3	UJ
SW8082	PCB	Total PCBs	ug/kg			37.5	J					349	J-

			Location ID	OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A	
			Field Sample ID	OL-F-3313-01		OL-F-3313-01		OL-F-3313-01		OL-F-3313-02		OL-F-3313-02	
			Sample Name	OL-F-6A-21-WHS-02		OL-F-6A-21-WHS-02		OL-F-6A-21-WHS-02		OL-F-6A-21-WHS-03		OL-F-6A-21-WHS-03	
			Sampled	6/23/2021		6/23/2021		6/23/2021		6/23/2021		6/23/2021	
			Lab Sample ID	B7550_017		B7550_21027_017-R3		JD78424-17		B7550_018		B7550_21027_018-R3	
			Taxonomic	WHS		WHS		WHS		WHS		WHS	
			Age (yrs)	--		--		--		--		--	
			Gender	M		M		M		M		M	
			Length (mm)	415		415		415		395		395	
			Weight (g)	697		697		697		643		643	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%	74.71						74.56			
SW3540	LIPIDS	%Lipids Determination	%			1.11						2.43	
SW7471	7439-97-6	Mercury	mg/kg					0.053					
SW8081	72-54-8	4,4'-DDD	ug/kg					3.3	J				
SW8081	72-55-9	4,4'-DDE	ug/kg					13.7	J				
SW8081	50-29-3	4,4'-DDT	ug/kg					3.7	JN				
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.42	J-				
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.4	UJ				
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.4	UJ				
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.4	UJ				
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.4	UJ				
SW8082	12672-29-6	Aroclor-1248	ug/kg					405	J-				
SW8082	11097-69-1	Aroclor-1254	ug/kg					202	J-				
SW8082	11096-82-5	Aroclor-1260	ug/kg					90.3	J-				
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.4	UJ				
SW8082	PCB	Total PCBs	ug/kg					697	J-				

			Location ID	OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A	
			Field Sample ID	OL-F-3313-02		OL-F-3319-02		OL-F-3319-02		OL-F-3319-02		OL-F-3319-03	
			Sample Name	OL-F-6A-21-WHS-03		OL-F-6A-21-MIN-01		OL-F-6A-21-MIN-01		OL-F-6A-21-MIN-01		OL-F-6A-21-MIN-02	
			Sampled	6/23/2021		8/9/2021		8/9/2021		8/9/2021		8/9/2021	
			Lab Sample ID	JD78424-18		B7552_003		B7552_20680_003		JD77878-3		B7552_004	
			Taxonomic	WHS		MIN		MIN		MIN		MIN	
			Age (yrs)	--		--		--		--		--	
			Gender	M		--		--		--		--	
			Length (mm)	395		70		70		70		77	
			Weight (g)	643		109		109		109		118	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%			74.58							R
SW3540	LIPIDS	%Lipids Determination	%					2.318					
SW7471	7439-97-6	Mercury	mg/kg	0.049						0.047			
SW8081	72-54-8	4,4'-DDD	ug/kg	4.5	J					0.93	J-		
SW8081	72-55-9	4,4'-DDE	ug/kg	16.4	J					2.7			
SW8081	50-29-3	4,4'-DDT	ug/kg	5	JN					6.1	JN		
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.56	J					0.17	JN		
SW8082	12674-11-2	Aroclor-1016	ug/kg	9.4	UJ					10	UJ		
SW8082	11104-28-2	Aroclor-1221	ug/kg	9.4	UJ					10	UJ		
SW8082	11141-16-5	Aroclor-1232	ug/kg	9.4	UJ					10	UJ		
SW8082	53469-21-9	Aroclor-1242	ug/kg	9.4	UJ					10	UJ		
SW8082	12672-29-6	Aroclor-1248	ug/kg	420	J-					676	J-		
SW8082	11097-69-1	Aroclor-1254	ug/kg	211	J-					100	J-		
SW8082	11096-82-5	Aroclor-1260	ug/kg	102	J-					26.4	J-		
SW8082	11100-14-4	Aroclor-1268	ug/kg	9.4	UJ					10	UJ		
SW8082	PCB	Total PCBs	ug/kg	733	J-					802	J-		

			Location ID	OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A	
			Field Sample ID	OL-F-3319-03		OL-F-3319-03		OL-F-3319-04		OL-F-3319-04		OL-F-3319-04	
			Sample Name	OL-F-6A-21-MIN-02		OL-F-6A-21-MIN-02		OL-F-6A-21-MIN-03		OL-F-6A-21-MIN-03		OL-F-6A-21-MIN-03	
			Sampled	8/9/2021		8/9/2021		8/9/2021		8/9/2021		8/9/2021	
			Lab Sample ID	B7552_20680_004		JD77878-4		B7552_005		B7552_20680_005		JD77878-5	
			Taxonomic	MIN		MIN		MIN		MIN		MIN	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		--		--		--	
			Length (mm)	77		77		74		74		74	
			Weight (g)	118		118		123		123		123	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%					73.37					
SW3540	LIPIDS	%Lipids Determination	%		R					2.217			
SW7471	7439-97-6	Mercury	mg/kg			0.058						0.059	
SW8081	72-54-8	4,4'-DDD	ug/kg			0.68	J-					0.71	J-
SW8081	72-55-9	4,4'-DDE	ug/kg			2.2						2.2	
SW8081	50-29-3	4,4'-DDT	ug/kg			4.8	JN					4.9	JN
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.064	JN					0.17	JN
SW8082	12674-11-2	Aroclor-1016	ug/kg			10	UJ					10	UJ
SW8082	11104-28-2	Aroclor-1221	ug/kg			10	UJ					10	UJ
SW8082	11141-16-5	Aroclor-1232	ug/kg			10	UJ					10	UJ
SW8082	53469-21-9	Aroclor-1242	ug/kg			10	UJ					10	UJ
SW8082	12672-29-6	Aroclor-1248	ug/kg			454	J-					543	J-
SW8082	11097-69-1	Aroclor-1254	ug/kg			76.6	J-					81.6	J-
SW8082	11096-82-5	Aroclor-1260	ug/kg			21.7	J-					23.3	J-
SW8082	11100-14-4	Aroclor-1268	ug/kg			10	UJ					10	UJ
SW8082	PCB	Total PCBs	ug/kg			552	J-					648	J-

			Location ID	OL-F-6A		OL-F-6A		OL-F-6A		OL-F-7A		OL-F-7A	
			Field Sample ID	OL-F-3320-01		OL-F-3320-01		OL-F-3320-01		OL-F-3300-01		OL-F-3300-01	
			Sample Name	OL-F-6A-21-WHS-04		OL-F-6A-21-WHS-04		OL-F-6A-21-WHS-04		OL-F-7A-21-WHS-01		OL-F-7A-21-WHS-01	
			Sampled	8/19/2021		8/19/2021		8/19/2021		3/24/2021		3/24/2021	
			Lab Sample ID	B7550_020		B7550_21027_020-R3		JD78424-20		B7550_015		B7550_21027_015-R3	
			Taxonomic	WHS		WHS		WHS		WHS		WHS	
			Age (yrs)	--		--		--		--		--	
			Gender	M		M		M		M		M	
			Length (mm)	384		384		384		302		302	
			Weight (g)	714		714		714		319		319	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%	72.88						79.17			
SW3540	LIPIDS	%Lipids Determination	%			3.58						0.47	
SW7471	7439-97-6	Mercury	mg/kg					0.088					
SW8081	72-54-8	4,4'-DDD	ug/kg					0.96	J				
SW8081	72-55-9	4,4'-DDE	ug/kg					7.4	J				
SW8081	50-29-3	4,4'-DDT	ug/kg					1.8	JN				
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.82	J-				
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.8	UJ				
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.8	UJ				
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.8	UJ				
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.8	UJ				
SW8082	12672-29-6	Aroclor-1248	ug/kg					83.3	J-				
SW8082	11097-69-1	Aroclor-1254	ug/kg					107	J-				
SW8082	11096-82-5	Aroclor-1260	ug/kg					71.9	J-				
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.8	UJ				
SW8082	PCB	Total PCBs	ug/kg					262	J-				

			Location ID	OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A	
			Field Sample ID	OL-F-3300-01		OL-F-3300-02		OL-F-3300-02		OL-F-3300-02		OL-F-3304-04	
			Sample Name	OL-F-7A-21-WHS-01		OL-F-7A-21-WHS-02		OL-F-7A-21-WHS-02		OL-F-7A-21-WHS-02		OL-F-7A-21-SHRH-01	
			Sampled	3/24/2021		3/31/2021		3/31/2021		3/31/2021		5/25/2021	
			Lab Sample ID	JD78424-15		B7550_016		B7550_21027_016-R3		JD78424-16		B7550_006	
			Taxonomic	WHS		WHS		WHS		WHS		SHRH	
			Age (yrs)	--		--		--		--		--	
			Gender	M		M		M		M		M	
			Length (mm)	302		455		455		455		485	
			Weight (g)	319		717		717		717		1025	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%			75.43						76.88	
SW3540	LIPIDS	%Lipids Determination	%					1.55					
SW7471	7439-97-6	Mercury	mg/kg	0.039						0.079			
SW8081	72-54-8	4,4'-DDD	ug/kg	0.3	J					1.8	J		
SW8081	72-55-9	4,4'-DDE	ug/kg	3.5	J					10.4	J		
SW8081	50-29-3	4,4'-DDT	ug/kg	0.28	JN					1.7	JN		
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.2	UJ					0.32	J		
SW8082	12674-11-2	Aroclor-1016	ug/kg	9.8	UJ					9.8	UJ		
SW8082	11104-28-2	Aroclor-1221	ug/kg	9.8	UJ					9.8	UJ		
SW8082	11141-16-5	Aroclor-1232	ug/kg	9.8	UJ					9.8	UJ		
SW8082	53469-21-9	Aroclor-1242	ug/kg	9.8	UJ					9.8	UJ		
SW8082	12672-29-6	Aroclor-1248	ug/kg	6.3	J					25.3	J-		
SW8082	11097-69-1	Aroclor-1254	ug/kg	15.3	J-					46	J-		
SW8082	11096-82-5	Aroclor-1260	ug/kg	10.8	J-					35.2	J-		
SW8082	11100-14-4	Aroclor-1268	ug/kg	9.8	UJ					9.8	UJ		
SW8082	PCB	Total PCBs	ug/kg	32.4	J-					107	J-		

			Location ID	OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A	
			Field Sample ID	OL-F-3304-04		OL-F-3304-04		OL-F-3304-05		OL-F-3304-05		OL-F-3304-05	
			Sample Name	OL-F-7A-21-SHRH-01		OL-F-7A-21-SHRH-01		OL-F-7A-21-SHRH-02		OL-F-7A-21-SHRH-02		OL-F-7A-21-SHRH-02	
			Sampled	5/25/2021		5/25/2021		5/25/2021		5/25/2021		5/25/2021	
			Lab Sample ID	B7550_21027_006-R3		JD78424-6		B7550_012		B7550_21027_012-R3		JD78424-12	
			Taxonomic	SHRH		SHRH		SHRH		SHRH		SHRH	
			Age (yrs)	--		--		--		--		--	
			Gender	M		M		M		M		M	
			Length (mm)	485		485		450		450		450	
			Weight (g)	1025		1025		786		786		786	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%					73.04					
SW3540	LIPIDS	%Lipids Determination	%	0.319						0.577			
SW7471	7439-97-6	Mercury	mg/kg			0.15						0.2	
SW8081	72-54-8	4,4'-DDD	ug/kg			0.11	J					0.88	J
SW8081	72-55-9	4,4'-DDE	ug/kg			1.1	J					15	J
SW8081	50-29-3	4,4'-DDT	ug/kg			0.23	JN					3.5	JN
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.055	J					0.088	J
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.4	UJ					9.4	UJ
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.4	UJ					9.4	UJ
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.4	UJ					9.4	UJ
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.4	UJ					9.4	UJ
SW8082	12672-29-6	Aroclor-1248	ug/kg			9.4	UJ					44.1	J-
SW8082	11097-69-1	Aroclor-1254	ug/kg			6.8	J					251	J-
SW8082	11096-82-5	Aroclor-1260	ug/kg			10.5	J-					140	J-
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.4	UJ					9.4	UJ
SW8082	PCB	Total PCBs	ug/kg			17.3	J-					435	J-

			Location ID	OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A	
			Field Sample ID	OL-F-3318-13		OL-F-3318-13		OL-F-3318-13		OL-F-3318-14		OL-F-3318-14	
			Sample Name	OL-F-7A-21-MIN-01		OL-F-7A-21-MIN-01		OL-F-7A-21-MIN-01		OL-F-7A-21-MIN-02		OL-F-7A-21-MIN-02	
			Sampled	8/4/2021		8/4/2021		8/4/2021		8/4/2021		8/4/2021	
			Lab Sample ID	B7551_011		B7551_011-R2		JD78426-11		B7551_012		B7551_012-R2	
			Taxonomic	MIN		MIN		MIN		MIN		MIN	
			Age (yrs)	--		--		--		--		--	
			Gender	--		--		--		--		--	
			Length (mm)	84		84		84		83		83	
			Weight (g)	114		114		114		111		111	
Method	Parameter Code	Parameter Name	Units										
ASTM D2216	MOISTURE-%	Percent Moisture	%	75						75.69444			
SW3540	LIPIDS	%Lipids Determination	%			0.826063						0.879353	
SW7471	7439-97-6	Mercury	mg/kg					0.082					
SW8081	72-54-8	4,4'-DDD	ug/kg					0.3	J-				
SW8081	72-55-9	4,4'-DDE	ug/kg					1.2					
SW8081	50-29-3	4,4'-DDT	ug/kg					0.47	JN				
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.19	UJ				
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.3	U				
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.3	U				
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.3	U				
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.3	U				
SW8082	12672-29-6	Aroclor-1248	ug/kg					19.1	J				
SW8082	11097-69-1	Aroclor-1254	ug/kg					36.8	J				
SW8082	11096-82-5	Aroclor-1260	ug/kg					12.3					
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.3	U				
SW8082	PCB	Total PCBs	ug/kg					68.2					

Location ID				OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A	
Field Sample ID				OL-F-3318-14		OL-F-3318-15		OL-F-3318-15		OL-F-3318-15	
Sample Name				OL-F-7A-21-MIN-02		OL-F-7A-21-MIN-03		OL-F-7A-21-MIN-03		OL-F-7A-21-MIN-03	
Sampled				8/4/2021		8/4/2021		8/4/2021		8/4/2021	
Lab Sample ID				JD78426-12		B7551_013		B7551_013-R2		JD78426-13	
Taxonomic				MIN		MIN		MIN		MIN	
Age (yrs)				--		--		--		--	
Gender				--		--		--		--	
Length (mm)				83		81		81		81	
Weight (g)				111		172		172		172	
Method	Parameter Code	Parameter Name	Units								
ASTM D2216	MOISTURE-%	Percent Moisture	%			76.51515					
SW3540	LIPIDS	%Lipids Determination	%					0.765306			
SW7471	7439-97-6	Mercury	mg/kg	0.032						0.1	
SW8081	72-54-8	4,4'-DDD	ug/kg	0.52	J-					0.19	J-
SW8081	72-55-9	4,4'-DDE	ug/kg	1.6						0.67	
SW8081	50-29-3	4,4'-DDT	ug/kg	0.53	JN					0.29	JN
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.06	J					0.19	UJ
SW8082	12674-11-2	Aroclor-1016	ug/kg	9.8	U					9.6	U
SW8082	11104-28-2	Aroclor-1221	ug/kg	9.8	U					9.6	U
SW8082	11141-16-5	Aroclor-1232	ug/kg	9.8	U					9.6	U
SW8082	53469-21-9	Aroclor-1242	ug/kg	9.8	U					9.6	U
SW8082	12672-29-6	Aroclor-1248	ug/kg	32.3						14.5	
SW8082	11097-69-1	Aroclor-1254	ug/kg	46.8	J					21.1	J
SW8082	11096-82-5	Aroclor-1260	ug/kg	16						7.7	J
SW8082	11100-14-4	Aroclor-1268	ug/kg	9.8	U					9.6	U
SW8082	PCB	Total PCBs	ug/kg	95.1						43.2	

			Location ID	OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A	
			Field Sample ID	OL-F-3301-01F		OL-F-3301-01F		OL-F-3301-01F		OL-F-3301-01F		OL-F-3301-02F		OL-F-3301-02F		OL-F-3301-02F		OL-F-3301-02F	
			Sample Name	OL-F-1A-21-PKSD-01		OL-F-1A-21-PKSD-01		OL-F-1A-21-PKSD-01		OL-F-1A-21-PKSD-01		OL-F-1A-21-PKSD-02		OL-F-1A-21-PKSD-02		OL-F-1A-21-PKSD-02		OL-F-1A-21-PKSD-02	
			Sampled	4/13/2021		4/13/2021		4/13/2021		4/13/2021		4/14/2021		4/14/2021		4/14/2021		4/14/2021	
			Lab Sample ID	B7554_016		B7554_20790_016		554_20972_DF_016-		JD80342-16		B7556_017		B7556_21016_017		556_21016_DF_017-		JD85967-17	
			Taxonomic	PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD	
			Age (yrs)	4		4		4		4		4		4		4		4	
			Gender	F		F		F		F		M		M		M		M	
			Length (mm)	151		151		151		151		154		154		154		154	
			Weight (g)	86		86		86		86		70		70		70		70	
Method	Parameter Code	Parameter Name	Units																
ASTM D2216	MOISTURE-%	Percent Moisture	%	75.88								77.04							
SW3540	LIPIDS	%Lipids Determination	%			0.447	J-							0.58					
SW7471	7439-97-6	Mercury	mg/kg							0.21								0.25	
SW8081	118-74-1	Hexachlorobenzene	ug/kg							0.059	J							0.11	J
SW8082	12674-11-2	Aroclor-1016	ug/kg							10	U							9.6	U
SW8082	11104-28-2	Aroclor-1221	ug/kg							10	U							9.6	U
SW8082	11141-16-5	Aroclor-1232	ug/kg							10	U							9.6	U
SW8082	53469-21-9	Aroclor-1242	ug/kg							10	U							9.6	U
SW8082	12672-29-6	Aroclor-1248	ug/kg							16.6								5.8	J
SW8082	11097-69-1	Aroclor-1254	ug/kg							10.6								8.8	J
SW8082	11096-82-5	Aroclor-1260	ug/kg							4.7	J							9.6	U
SW8082	11100-14-4	Aroclor-1268	ug/kg							10	U							9.6	U
SW8082	PCB	Total PCBs	ug/kg							31.9								14.6	
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g					0.212	U							0.308	U		
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g					0.204	U							0.186	U		
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g					0.258	U							0.239	U		
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g					0.287	U							0.327	U		
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g					0.205	U							0.206	U		
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g					0.263	U							0.322	U		
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g					0.198	U							0.205	U		
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g					0.277	UJ							0.359	U		
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g					0.286	U							0.231	U		
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g					0.257	U							0.347	UJ		
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g					0.136	U							0.22	U		
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g					0.235	U							0.214	U		
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g					0.15	U							0.21	U		
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g					0.209	U							0.701	U		
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g					0.201	U							0.25	U		
SW8290	3268-87-9	OCDD	pg/g					0.329	UJ							0.463	UJ		
SW8290	39001-02-0	OCDF	pg/g					0.231	U							0.367	U		
SW8290	HpCDD	Total Hepta-Dixons	pg/g					0.212	U							0.308	U		
SW8290	HpCDF	Total HPCDF	pg/g					0.228	U							0.209	U		
SW8290	HxCDD	Total HxCDD	pg/g					0.274	U							0.336	U		
SW8290	HxCDF	Total HxCDF	pg/g					0.227	U							0.213	U		
SW8290	PeCDD	Total PECDD	pg/g					0.257	U							0.347	U		
SW8290	PeCDF	Total PECDF	pg/g					0.143	U							0.215	U		
SW8290	TCDD	Total TCDD	pg/g					0.209	U							0.701	U		
SW8290	TCDF	Total TCDF	pg/g					0.201	U							0.25	U		

			Location ID	OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A	
			Field Sample ID	OL-F-3301-03F		OL-F-3301-03F		OL-F-3301-03F		OL-F-3301-03F		OL-F-3301-04F		OL-F-3301-04F		OL-F-3301-04F		OL-F-3301-04F		OL-F-3302-07F	
			Sample Name	OL-F-1A-21-PKSD-03		OL-F-1A-21-PKSD-03		OL-F-1A-21-PKSD-03		OL-F-1A-21-PKSD-03		OL-F-1A-21-PKSD-04		OL-F-1A-21-PKSD-04		OL-F-1A-21-PKSD-04		OL-F-1A-21-PKSD-04		OL-F-1A-21-WALL-01	
			Sampled	4/20/2021		4/20/2021		4/20/2021		4/20/2021		4/20/2021		4/20/2021		4/20/2021		4/20/2021		5/19/2021	
			Lab Sample ID	B7554_017		B7554_20790_017		554_20957_DF_017-		JD80342-17		B7556_018		B7556_21016_018		556_21016_DF_018-		JD85967-18		B7556_015	
			Taxonomic	PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		WALL	
			Age (yrs)	3		3		3		3		3+		3+		3+		3+		7+	
			Gender	M		M		M		M		M		M		M		M		F	
			Length (mm)	159		159		159		159		155		155		155		155		475	
			Weight (g)	84		84		84		84		78		78		78		78		934	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%	75.95								75.1								74.71	
SW3540	LIPIDS	%Lipids Determination	%			0.709	J-							0.737							
SW7471	7439-97-6	Mercury	mg/kg							0.15								0.11			
SW8081	118-74-1	Hexachlorobenzene	ug/kg							0.07	J							0.1	J		
SW8082	12674-11-2	Aroclor-1016	ug/kg							9.8	U							10	U		
SW8082	11104-28-2	Aroclor-1221	ug/kg							9.8	U							10	U		
SW8082	11141-16-5	Aroclor-1232	ug/kg							9.8	U							10	U		
SW8082	53469-21-9	Aroclor-1242	ug/kg							9.8	U							10	U		
SW8082	12672-29-6	Aroclor-1248	ug/kg							12.1	J							6.2	J		
SW8082	11097-69-1	Aroclor-1254	ug/kg							19.5								6.4	J		
SW8082	11096-82-5	Aroclor-1260	ug/kg							8	J							10	U		
SW8082	11100-14-4	Aroclor-1268	ug/kg							9.8	U							10	U		
SW8082	PCB	Total PCBs	ug/kg							39.6								12.6			
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g					0.462	U							0.136	U				
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g					0.512	U							0.117	U				
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g					0.769	U							0.152	U				
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g					0.312	U							0.208	U				
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g					0.246	U							0.12	U				
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g					0.314	U							0.196	U				
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g					0.248	U							0.127	U				
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g						R							0.23	U				
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g					0.318	U							0.151	U				
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g					0.277	U							0.232	UJ				
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g					0.28	U							0.163	U				
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g					0.264	U							0.131	U				
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g					0.297	U							0.17	U				
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g					0.317	U							0.362	U				
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g					0.25	U							0.194	U				
SW8290	3268-87-9	OCDD	pg/g					0.58	UJ							0.296	UJ				
SW8290	39001-02-0	OCDF	pg/g					0.644	U							0.307	U				
SW8290	HpCDD	Total Hepta-Dixons	pg/g					0.462	U							0.136	U				
SW8290	HpCDF	Total HPCDF	pg/g					0.624	U							0.133	U				
SW8290	HxCDD	Total HxCDD	pg/g					0.316	U							0.211	U				
SW8290	HxCDF	Total HxCDF	pg/g					0.266	U							0.131	U				
SW8290	PeCDD	Total PECDD	pg/g					0.277	U							0.232	U				
SW8290	PeCDF	Total PECDF	pg/g					0.288	U							0.167	U				
SW8290	TCDD	Total TCDD	pg/g					0.317	U							0.362	U				
SW8290	TCDF	Total TCDF	pg/g					0.838	J							0.194	U				

			Location ID	OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A	
			Field Sample ID	OL-F-3302-07F		OL-F-3302-07F		OL-F-3302-08F		OL-F-3302-08F		OL-F-3302-08F		OL-F-3302-08F		OL-F-3302-09F		OL-F-3302-09F		OL-F-3302-09F	
			Sample Name	OL-F-1A-21-WALL-01		OL-F-1A-21-WALL-01		OL-F-1A-21-WALL-02		OL-F-1A-21-WALL-02		OL-F-1A-21-WALL-02		OL-F-1A-21-WALL-02		OL-F-1A-21-WALL-03		OL-F-1A-21-WALL-03		OL-F-1A-21-WALL-03	
			Sampled	5/19/2021		5/19/2021		5/19/2021		5/19/2021		5/19/2021		5/19/2021		5/19/2021		5/19/2021		5/19/2021	
			Lab Sample ID	B7556_21016_015		JD85967-15		B7554_002		B7554_20790_002		554_20957_DF_002-		JD80342-2		B7553_013		B7553_20758_013		553_20953_DF_013-	
			Taxonomic	WALL		WALL		WALL		WALL		WALL		WALL		WALL		WALL		WALL	
			Age (yrs)	7+		7+		5		5		5		5		5		5		5	
			Gender	F		F		M		M		M		M		M		M		M	
			Length (mm)	475		475		547		547		547		547		514		514		514	
			Weight (g)	934		934		1853		1853		1853		1853		1799		1799		1799	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%					73.45								74.7					
SW3540	LIPIDS	%Lipids Determination	%	3.243						3.373	J-							2.876			
SW7471	7439-97-6	Mercury	mg/kg			0.62								0.7							
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.33								0.52							
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.3	U							10	U						
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.3	U							10	U						
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.3	U							10	U						
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.3	U							10	U						
SW8082	12672-29-6	Aroclor-1248	ug/kg			28.3								175							
SW8082	11097-69-1	Aroclor-1254	ug/kg			29.6								186							
SW8082	11096-82-5	Aroclor-1260	ug/kg			20.3								108							
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.3	U							10	U						
SW8082	PCB	Total PCBs	ug/kg			78.3								469							
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g									0.324	U							0.326	U
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g									0.363	U							0.249	U
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g									0.666	U							0.245	U
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g									0.329	U							0.399	U
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g									0.16	U							0.25	U
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g									0.297	U							0.434	U
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g									0.159	U							0.242	U
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g										R							0.362	U
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g									0.24	U							0.276	U
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g									0.285	J							0.368	U
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g									0.167	U							0.273	U
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g									0.176	U							0.231	U
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g									0.49	J							0.288	U
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g									0.193	J							0.326	U
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g									1.02	J							0.8	
SW8290	3268-87-9	OCDD	pg/g									0.383	UJ							0.564	U
SW8290	39001-02-0	OCDF	pg/g									0.226	U							0.48	U
SW8290	HpCDD	Total Hepta-Dixons	pg/g									0.324	U							0.326	U
SW8290	HpCDF	Total HPCDF	pg/g									0.482	U							0.247	U
SW8290	HxCDD	Total HxCDD	pg/g									0.303	U							0.395	U
SW8290	HxCDF	Total HxCDF	pg/g									0.179	U							0.249	U
SW8290	PeCDD	Total PECDD	pg/g									0.572	J							0.368	U
SW8290	PeCDF	Total PECDF	pg/g									0.49								0.28	U
SW8290	TCDD	Total TCDD	pg/g									0.193	J							0.326	U
SW8290	TCDF	Total TCDF	pg/g									1.93	J							0.8	

			Location ID	OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A	
			Field Sample ID	OL-F-3302-09F		OL-F-3303-01F		OL-F-3303-01F		OL-F-3303-01F		OL-F-3303-01F		OL-F-3303-02F		OL-F-3303-02F		OL-F-3303-02F		OL-F-3303-13F	
			Sample Name	OL-F-1A-21-WALL-03		OL-F-1A-21-CCP-01		OL-F-1A-21-CCP-01		OL-F-1A-21-CCP-01		OL-F-1A-21-CCP-01		OL-F-1A-21-SMB-01		OL-F-1A-21-SMB-01		OL-F-1A-21-SMB-01		OL-F-1A-21-CCP-02	
			Sampled	5/19/2021		5/24/2021		5/24/2021		5/24/2021		5/24/2021		5/24/2021		5/24/2021		5/24/2021		5/27/2021	
			Lab Sample ID	JD78163-13		B7556_004		B7556_21016_004		556_21016_DF_004-		JD85967-4		B7556_002		B7556_21016_002		JD85967-2		B7554_001	
			Taxonomic	WALL		CCP		CCP		CCP		CCP		SMB		SMB		SMB		CCP	
			Age (yrs)	5		4+		4+		4+		4+		6		6		6		5+	
			Gender	M		M		M		M		M		F		F		F		M	
			Length (mm)	514		580		580		580		580		441		441		441		687	
			Weight (g)	1799		2871		2871		2871		2871		1495		1495		1495		4990	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%			67.12								78.07						76.29	
SW3540	LIPIDS	%Lipids Determination	%					9.207								2.122					
SW7471	7439-97-6	Mercury	mg/kg	0.49								0.12						0.71			
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.53								1.6						0.33			
SW8082	12674-11-2	Aroclor-1016	ug/kg	9.8	U							9.8	U					9.6	U		
SW8082	11104-28-2	Aroclor-1221	ug/kg	9.8	U							9.8	U					9.6	U		
SW8082	11141-16-5	Aroclor-1232	ug/kg	9.8	U							9.8	U					9.6	U		
SW8082	53469-21-9	Aroclor-1242	ug/kg	9.8	U							9.8	U					9.6	U		
SW8082	12672-29-6	Aroclor-1248	ug/kg	130								67.5						104			
SW8082	11097-69-1	Aroclor-1254	ug/kg	149								56.5						140			
SW8082	11096-82-5	Aroclor-1260	ug/kg	70.6								67.7						163			
SW8082	11100-14-4	Aroclor-1268	ug/kg	9.8	U							9.8	U					9.6	U		
SW8082	PCB	Total PCBs	ug/kg	350								192						408			
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g							1.11	J										
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g							0.125	U										
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g							0.137	U										
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g							0.334	U										
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g							0.144	U										
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g							0.344	U										
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g							0.166	U										
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g							0.338	U										
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g							0.185	U										
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g							0.259	UJ										
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g							0.253	J										
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g							0.157	U										
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g							0.529	J										
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g							0.594	U										
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g							2.09											
SW8290	3268-87-9	OCDD	pg/g							0.357	UJ										
SW8290	39001-02-0	OCDF	pg/g							0.369	U										
SW8290	HpCDD	Total Hepta-Dixons	pg/g							1.11											
SW8290	HpCDF	Total HPCDF	pg/g							0.13	U										
SW8290	HxCDD	Total HxCDD	pg/g							0.338	U										
SW8290	HxCDF	Total HxCDF	pg/g							0.162	U										
SW8290	PeCDD	Total PECDD	pg/g							0.259	U										
SW8290	PeCDF	Total PECDF	pg/g							0.782	J										
SW8290	TCDD	Total TCDD	pg/g							0.594	U										
SW8290	TCDF	Total TCDF	pg/g							2.09											

			Location ID	OL-F-1A	OL-F-1A	OL-F-1A	OL-F-1A	OL-F-1A	OL-F-1A	OL-F-1A	OL-F-1A	OL-F-1A
			Field Sample ID	OL-F-3303-13F	OL-F-3303-13F	OL-F-3303-13F	OL-F-3311-01F	OL-F-3311-01F	OL-F-3311-01F	OL-F-3311-02F	OL-F-3311-02F	OL-F-3311-02F
			Sample Name	OL-F-1A-21-CCP-02	OL-F-1A-21-CCP-02	OL-F-1A-21-CCP-02	OL-F-1A-21-SMB-02	OL-F-1A-21-SMB-02	OL-F-1A-21-SMB-02	OL-F-1A-21-SMB-03	OL-F-1A-21-SMB-03	OL-F-1A-21-SMB-03
			Sampled	5/27/2021	5/27/2021	5/27/2021	6/15/2021	6/15/2021	6/15/2021	6/15/2021	6/15/2021	6/15/2021
			Lab Sample ID	B7554_20790_001	554_20957_DF_001-	JD80342-1	B7557_005	B7557_20841_005	JD81415-5	B7557_006	B7557_20841_006	JD81415-6
			Taxonomic	CCP	CCP	CCP	SMB	SMB	SMB	SMB	SMB	SMB
			Age (yrs)	5+	5+	5+	6	6	6	5+	5+	5+
			Gender	M	M	M	M	M	M	F	F	F
			Length (mm)	687	687	687	450	450	450	442	442	442
			Weight (g)	4990	4990	4990	1457	1457	1457	1260	1260	1260
Method	Parameter Code	Parameter Name	Units									
ASTM D2216	MOISTURE-%	Percent Moisture	%				74.01			74.68		
SW3540	LIPIDS	%Lipids Determination	%	1.64 J-				1.776			2.15	
SW7471	7439-97-6	Mercury	mg/kg			0.4			0.62			0.5
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.22			0.16 J			0.11 J
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.6 UJ			9.6 UJ			10 UJ
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.6 U			9.6 UJ			10 UJ
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.6 U			9.6 UJ			10 UJ
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.6 U			9.6 UJ			10 UJ
SW8082	12672-29-6	Aroclor-1248	ug/kg			36.8 J			36.3 J-			46.6 J-
SW8082	11097-69-1	Aroclor-1254	ug/kg			162			52.6 J-			57.4 J-
SW8082	11096-82-5	Aroclor-1260	ug/kg			137			9.6 UJ			39.9 J-
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.6 U			9.6 UJ			10 UJ
SW8082	PCB	Total PCBs	ug/kg			336			88.9 J-			144 J-
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g		0.895 J							
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g		0.667 J							
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g		0.76 U							
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g		0.459 U							
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g		0.265 U							
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g		0.592 J							
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g		0.403 J							
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g		R							
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g		0.334 U							
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g		0.44 U							
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g		0.228 U							
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g		0.263 U							
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g		4.4							
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g		0.349 J							
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g		2 J							
SW8290	3268-87-9	OCDD	pg/g		1.25 J							
SW8290	39001-02-0	OCDF	pg/g		0.334 U							
SW8290	HpCDD	Total Hepta-Dixons	pg/g		0.895							
SW8290	HpCDF	Total HPCDF	pg/g		0.667 J							
SW8290	HxCDD	Total HxCDD	pg/g		0.592							
SW8290	HxCDF	Total HxCDF	pg/g		0.403 J							
SW8290	PeCDD	Total PECDD	pg/g		0.44 U							
SW8290	PeCDF	Total PECDF	pg/g		5.88 J							
SW8290	TCDD	Total TCDD	pg/g		0.349 J							
SW8290	TCDF	Total TCDF	pg/g		6.01							

			Location ID	OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A		OL-F-1A	
			Field Sample ID	OL-F-3311-03F		OL-F-3311-03F		OL-F-3311-03F		OL-F-3311-03F		OL-F-3314-02F		OL-F-3314-02F		OL-F-3314-02F		OL-F-3316-01F		OL-F-3316-01F	
			Sample Name	OL-F-1A-21-SMB-04		OL-F-1A-21-SMB-04		OL-F-1A-21-SMB-04		OL-F-1A-21-SMB-04		OL-F-1A-21-CCP-03		OL-F-1A-21-CCP-03		OL-F-1A-21-CCP-03		OL-F-1A-21-CCP-04		OL-F-1A-21-CCP-04	
			Sampled	6/15/2021		6/15/2021		6/15/2021		6/15/2021		7/7/2021		7/7/2021		7/7/2021		7/16/2021		7/16/2021	
			Lab Sample ID	B7553_016		B7553_20758_016		553_20953_DF_016-		JD78163-16		B7557_014		B7557_20841_014		JD81415-14		B7557_017		B7557_20841_017	
			Taxonomic	SMB		SMB		SMB		SMB		CCP		CCP		CCP		CCP		CCP	
			Age (yrs)	11		11		11		11		3		3		3		3		3	
			Gender	M		M		M		M		M		M		M		M		M	
			Length (mm)	485		485		485		485		410		410		410		435		435	
			Weight (g)	1766		1766		1766		1766		897		897		897		1354		1354	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%	75.68								75.24						75.35			
SW3540	LIPIDS	%Lipids Determination	%			2.602								2.429						1.415	
SW7471	7439-97-6	Mercury	mg/kg							0.69						0.048					
SW8081	118-74-1	Hexachlorobenzene	ug/kg							0.24						0.12	J				
SW8082	12674-11-2	Aroclor-1016	ug/kg							10	U					10	UJ				
SW8082	11104-28-2	Aroclor-1221	ug/kg							10	U					10	UJ				
SW8082	11141-16-5	Aroclor-1232	ug/kg							10	U					10	UJ				
SW8082	53469-21-9	Aroclor-1242	ug/kg							10	U					10	UJ				
SW8082	12672-29-6	Aroclor-1248	ug/kg							65.9						7	J				
SW8082	11097-69-1	Aroclor-1254	ug/kg							106						11.5	J-				
SW8082	11096-82-5	Aroclor-1260	ug/kg							78						7.8	J				
SW8082	11100-14-4	Aroclor-1268	ug/kg							10	U					10	UJ				
SW8082	PCB	Total PCBs	ug/kg							250						26.3	J-				
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g					0.465	U												
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g					0.386	U												
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g					0.417	U												
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g					0.605	U												
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g					0.288	U												
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g					0.612	U												
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g					0.299	U												
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g					0.591	U												
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g					0.382	U												
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g					0.498	U												
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g					0.392	U												
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g					0.322	U												
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g					0.367	U												
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g					0.241	U												
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g					1.2	J												
SW8290	3268-87-9	OCDD	pg/g					0.713	U												
SW8290	39001-02-0	OCDF	pg/g					0.452	U												
SW8290	HpCDD	Total Hepta-Dixons	pg/g					0.465	U												
SW8290	HpCDF	Total HPCDF	pg/g					0.4	U												
SW8290	HxCDD	Total HxCDD	pg/g					0.601	U												
SW8290	HxCDF	Total HxCDF	pg/g					0.32	U												
SW8290	PeCDD	Total PECDD	pg/g					0.498	U												
SW8290	PeCDF	Total PECDF	pg/g					0.38	U												
SW8290	TCDD	Total TCDD	pg/g					0.241	U												
SW8290	TCDF	Total TCDF	pg/g					1.2	J												

			Location ID	OL-F-1A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A	
			Field Sample ID	OL-F-3316-01F		OL-F-3301-05F		OL-F-3301-05F		OL-F-3301-05F		OL-F-3301-05F		OL-F-3303-12F		OL-F-3303-12F		OL-F-3303-12F		OL-F-3303-12F	
			Sample Name	OL-F-1A-21-CCP-04		OL-F-2A-21-PKSD-01		OL-F-2A-21-PKSD-01		OL-F-2A-21-PKSD-01		OL-F-2A-21-PKSD-01		OL-F-2A-21-PKSD-02		OL-F-2A-21-PKSD-02		OL-F-2A-21-PKSD-02		OL-F-2A-21-PKSD-02	
			Sampled	7/16/2021		4/28/2021		4/28/2021		4/28/2021		4/28/2021		5/26/2021		5/26/2021		5/26/2021		5/26/2021	
			Lab Sample ID	JD81415-17		B7553_015		B7553_20758_015		553_20972_DF_015-		JD78163-15		B7554_005		B7554_20790_005		554_20972_DF_005-		JD80342-5	
			Taxonomic	CCP		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD	
			Age (yrs)	3		4+		4+		4+		4+		4		4		4		4	
			Gender	M		M		M		M		M		F		F		F		F	
			Length (mm)	435		179		179		179		179		160		160		160		160	
			Weight (g)	1354		129		129		129		129		82		82		82		82	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%			76.94								76.98							
SW3540	LIPIDS	%Lipids Determination	%					0.433								1.086	J-				
SW7471	7439-97-6	Mercury	mg/kg	0.063								0.076								0.1	
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.2	UJ							0.06	J							0.19	U
SW8082	12674-11-2	Aroclor-1016	ug/kg	10	UJ							9.8	U							9.6	U
SW8082	11104-28-2	Aroclor-1221	ug/kg	10	UJ							9.8	U							9.6	U
SW8082	11141-16-5	Aroclor-1232	ug/kg	10	UJ							9.8	U							9.6	U
SW8082	53469-21-9	Aroclor-1242	ug/kg	10	UJ							9.8	U							9.6	U
SW8082	12672-29-6	Aroclor-1248	ug/kg	12.4	J-							9.8	U							13.4	
SW8082	11097-69-1	Aroclor-1254	ug/kg	13.2	J-							3.7	J							20.1	
SW8082	11096-82-5	Aroclor-1260	ug/kg	6.6	J							9.8	U							9.6	U
SW8082	11100-14-4	Aroclor-1268	ug/kg	10	UJ							9.8	U							9.6	U
SW8082	PCB	Total PCBs	ug/kg	32.2	J-							3.7	J							33.5	
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g							0.185	U							0.28	U		
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g							0.103	U							0.22	U		
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g							0.133	U							0.279	U		
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g							0.286	U							0.371	U		
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g							0.173	U							0.248	U		
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g							0.267	U							0.367	U		
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g							0.164	U							0.214	U		
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g							0.267	UJ							0.366	UJ		
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g							0.193	U							0.306	U		
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g							0.203	U							0.238	U		
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g							0.137	U							0.244	U		
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g							0.175	U							0.254	U		
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g							0.129	U							0.228	U		
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g							0.178	U							0.25	U		
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g							0.165	U							0.19	U		
SW8290	3268-87-9	OCDD	pg/g							0.288	U							0.472	UJ		
SW8290	39001-02-0	OCDF	pg/g							0.241	U							0.319	U		
SW8290	HpCDD	Total Hepta-Dixons	pg/g							0.185	U							0.28	U		
SW8290	HpCDF	Total HPCDF	pg/g							0.117	U							0.246	U		
SW8290	HxCDD	Total HxCDD	pg/g							0.272	U							0.367	U		
SW8290	HxCDF	Total HxCDF	pg/g							0.175	U							0.252	U		
SW8290	PeCDD	Total PECDD	pg/g							0.203	U							0.238	U		
SW8290	PeCDF	Total PECDF	pg/g							0.133	U							0.236	U		
SW8290	TCDD	Total TCDD	pg/g							0.178	U							0.25	U		
SW8290	TCDF	Total TCDF	pg/g							0.165	U							0.19	U		

			Location ID	OL-F-2A	OL-F-2A	OL-F-2A	OL-F-2A	OL-F-2A	OL-F-2A	OL-F-2A	OL-F-2A	OL-F-2A
			Field Sample ID	OL-F-3307-02F	OL-F-3307-02F	OL-F-3307-02F	OL-F-3307-03F	OL-F-3307-03F	OL-F-3307-03F	OL-F-3307-04F	OL-F-3307-04F	OL-F-3307-04F
			Sample Name	OL-F-2A-21-SMB-01	OL-F-2A-21-SMB-01	OL-F-2A-21-SMB-01	OL-F-2A-21-WALL-01	OL-F-2A-21-WALL-01	OL-F-2A-21-WALL-01	OL-F-2A-21-WALL-02	OL-F-2A-21-WALL-02	OL-F-2A-21-WALL-02
			Sampled	6/3/2021	6/3/2021	6/3/2021	6/3/2021	6/3/2021	6/3/2021	6/3/2021	6/3/2021	6/3/2021
			Lab Sample ID	B7556_010	B7556_21016_010	JD85967-10	B7555_012	B7555_21051_012	JD87136-12	B7553_005	B7553_20758_005	553_20953_DF_005-
			Taxonomic	SMB	SMB	SMB	WALL	WALL	WALL	WALL	WALL	WALL
			Age (yrs)	6	6	6	8	8	8	7+	7+	7+
			Gender	F	F	F	M	M	M	F	F	F
			Length (mm)	455	455	455	571	571	571	570	570	570
			Weight (g)	1392	1392	1392	2279	2279	2279	2144	2144	2144
Method	Parameter Code	Parameter Name	Units									
ASTM D2216	MOISTURE-%	Percent Moisture	%	76.59			74.16			74.22		
SW3540	LIPIDS	%Lipids Determination	%		0.827			3.302			3.618	
SW7471	7439-97-6	Mercury	mg/kg			0.68			1.2			
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.07 J			0.36 J-			
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.6 U			10 U			
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.6 U			10 U			
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.6 U			10 U			
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.6 U			10 U			
SW8082	12672-29-6	Aroclor-1248	ug/kg			11.2			200			
SW8082	11097-69-1	Aroclor-1254	ug/kg			13 J			292			
SW8082	11096-82-5	Aroclor-1260	ug/kg			14.7			133			
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.6 U			10 U			
SW8082	PCB	Total PCBs	ug/kg			38.9			625			
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g									0.194 U
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g									0.107 U
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g									0.124 U
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g									0.267 U
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g									0.14 U
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g									0.237 U
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g									0.146 U
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g									0.226 U
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g									0.179 U
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g									0.35 J
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g									0.172 U
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g									0.133 U
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g									0.462 J
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g									0.182 U
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g									1.11
SW8290	3268-87-9	OCDD	pg/g									0.39 U
SW8290	39001-02-0	OCDF	pg/g									0.221 U
SW8290	HpCDD	Total Hepta-Dixons	pg/g									0.194 U
SW8290	HpCDF	Total HPCDF	pg/g									0.115 U
SW8290	HxCDD	Total HxCDD	pg/g									0.241 U
SW8290	HxCDF	Total HxCDF	pg/g									0.149 U
SW8290	PeCDD	Total PECDD	pg/g									0.35 J
SW8290	PeCDF	Total PECDF	pg/g									0.462
SW8290	TCDD	Total TCDD	pg/g									0.182 U
SW8290	TCDF	Total TCDF	pg/g									1.11

			Location ID	OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A	
			Field Sample ID	OL-F-3307-04F		OL-F-3307-05F		OL-F-3307-05F		OL-F-3307-05F		OL-F-3307-05F		OL-F-3311-04F		OL-F-3311-04F		OL-F-3311-04F		OL-F-3311-05F	
			Sample Name	OL-F-2A-21-WALL-02		OL-F-2A-21-WALL-03		OL-F-2A-21-WALL-03		OL-F-2A-21-WALL-03		OL-F-2A-21-WALL-03		OL-F-2A-21-CCP-01		OL-F-2A-21-CCP-01		OL-F-2A-21-CCP-01		OL-F-2A-21-CCP-02	
			Sampled	6/3/2021		6/3/2021		6/3/2021		6/3/2021		6/3/2021		6/15/2021		6/15/2021		6/15/2021		6/15/2021	
			Lab Sample ID	JD78163-5		B7554_007		B7554_20790_007		554_20957_DF_007-		JD80342-7		B7557_007		B7557_20841_007		JD81415-7		B7553_017	
			Taxonomic	WALL		WALL		WALL		WALL		WALL		CCP		CCP		CCP		CCP	
			Age (yrs)	7+		5		5		5		5		4+		4+		4+		2+	
			Gender	F		F		F		F		F		M		M		M		F	
			Length (mm)	570		535		535		535		535		431		431		431		536	
			Weight (g)	2144		1946		1946		1946		1946		1379		1379		1379		2090	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%			74.33								73.17						70.36	
SW3540	LIPIDS	%Lipids Determination	%					2.204	J-							2.401					
SW7471	7439-97-6	Mercury	mg/kg	0.71								0.78						0.066			
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.52								0.23						0.11	J		
SW8082	12674-11-2	Aroclor-1016	ug/kg	9.8	U							9.8	U					9.8	UJ		
SW8082	11104-28-2	Aroclor-1221	ug/kg	9.8	U							9.8	U					9.8	UJ		
SW8082	11141-16-5	Aroclor-1232	ug/kg	9.8	U							9.8	U					9.8	UJ		
SW8082	53469-21-9	Aroclor-1242	ug/kg	9.8	U							9.8	U					9.8	UJ		
SW8082	12672-29-6	Aroclor-1248	ug/kg	131								95						14.4	J-		
SW8082	11097-69-1	Aroclor-1254	ug/kg	216								78.3						11.8	J-		
SW8082	11096-82-5	Aroclor-1260	ug/kg	156								50.2						7.2	J		
SW8082	11100-14-4	Aroclor-1268	ug/kg	9.8	U							9.8	U					9.8	UJ		
SW8082	PCB	Total PCBs	ug/kg	503								224						33.4	J-		
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g							0.181	U										
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g							0.263	U										
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g							0.361	U										
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g							0.252	U										
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g							0.136	U										
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g							0.228	U										
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g							0.13	U										
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g								R										
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g							0.193	U										
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g							0.154	U										
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g							0.104	U										
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g							0.15	U										
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g							0.43	J										
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g							0.178	U										
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g							0.62	J										
SW8290	3268-87-9	OCDD	pg/g							0.234	UJ										
SW8290	39001-02-0	OCDF	pg/g							0.352	U										
SW8290	HpCDD	Total Hepta-Dixons	pg/g							0.181	U										
SW8290	HpCDF	Total HPCDF	pg/g							0.301	U										
SW8290	HxCDD	Total HxCDD	pg/g							0.237	U										
SW8290	HxCDF	Total HxCDF	pg/g							0.148	U										
SW8290	PeCDD	Total PECDD	pg/g							0.154	U										
SW8290	PeCDF	Total PECDF	pg/g							0.43	J										
SW8290	TCDD	Total TCDD	pg/g							0.178	U										
SW8290	TCDF	Total TCDF	pg/g							0.62	J										

			Location ID	OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A	
			Field Sample ID	OL-F-3311-05F		OL-F-3311-05F		OL-F-3311-05F		OL-F-3311-06F		OL-F-3311-06F		OL-F-3311-06F		OL-F-3316-02F		OL-F-3316-02F		OL-F-3316-02F	
			Sample Name	OL-F-2A-21-CCP-02		OL-F-2A-21-CCP-02		OL-F-2A-21-CCP-02		OL-F-2A-21-CCP-03		OL-F-2A-21-CCP-03		OL-F-2A-21-CCP-03		OL-F-2A-21-SMB-02		OL-F-2A-21-SMB-02		OL-F-2A-21-SMB-02	
			Sampled	6/15/2021		6/15/2021		6/15/2021		6/15/2021		6/15/2021		6/15/2021		7/19/2021		7/19/2021		7/19/2021	
			Lab Sample ID	B7553_20758_017		553_20953_DF_017-		JD78163-17		B7557_008		B7557_20841_008		JD81415-8		B7557_018		B7557_20841_018		JD81415-18	
			Taxonomic	CCP		CCP		CCP		CCP		CCP		CCP		SMB		SMB		SMB	
			Age (yrs)	2+		2+		2+		3		3		3		8		8		8	
			Gender	F		F		F		M		M		M		F		F		F	
			Length (mm)	536		536		536		435		435		435		449		449		449	
			Weight (g)	2090		2090		2090		1362		1362		1362		1485		1485		1485	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%							74.91						73.04					
SW3540	LIPIDS	%Lipids Determination	%	4.624								2.103						1.695			
SW7471	7439-97-6	Mercury	mg/kg					0.048						0.059						0.79	
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.67						0.11	J					0.084	J
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.8	U					9.8	UJ					9.6	UJ
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.8	U					9.8	UJ					9.6	UJ
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.8	U					9.8	UJ					9.6	UJ
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.8	U					9.8	UJ					9.6	UJ
SW8082	12672-29-6	Aroclor-1248	ug/kg					82.4						17.8	J-					35.8	J-
SW8082	11097-69-1	Aroclor-1254	ug/kg					51						10.9	J-					49.7	J-
SW8082	11096-82-5	Aroclor-1260	ug/kg					22.7						6.7	J					43	J-
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.8	U					9.8	UJ					9.6	UJ
SW8082	PCB	Total PCBs	ug/kg					156						35.4	J-					128	J-
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g			1.01	J														
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g			0.122	U														
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g			0.149	U														
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g			0.208	U														
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g			0.192	U														
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g			0.227	U														
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g			0.187	U														
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g			0.218	U														
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g			0.222	U														
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g			0.211	U														
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g			0.141	U														
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g			0.177	U														
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g			0.134	U														
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g			0.245	U														
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g			1.23	J														
SW8290	3268-87-9	OCDD	pg/g			1.61	J														
SW8290	39001-02-0	OCDF	pg/g			0.394	U														
SW8290	HpCDD	Total Hepta-Dixons	pg/g			1.01															
SW8290	HpCDF	Total HPCDF	pg/g			0.134	U														
SW8290	HxCDD	Total HxCDD	pg/g			0.217	U														
SW8290	HxCDF	Total HxCDF	pg/g			0.194	U														
SW8290	PeCDD	Total PECDD	pg/g			0.211	U														
SW8290	PeCDF	Total PECDF	pg/g			0.137	U														
SW8290	TCDD	Total TCDD	pg/g			0.245	U														
SW8290	TCDF	Total TCDF	pg/g			1.23	J														

			Location ID	OL-F-2A		OL-F-2A		OL-F-2A		OL-F-2A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A	
			Field Sample ID	OL-F-3316-03F		OL-F-3316-03F		OL-F-3316-03F		OL-F-3316-03F		OL-F-3303-09F		OL-F-3303-09F		OL-F-3303-09F		OL-F-3303-10F		OL-F-3303-10F	
			Sample Name	OL-F-2A-21-SMB-03		OL-F-2A-21-SMB-03		OL-F-2A-21-SMB-03		OL-F-2A-21-SMB-03		OL-F-3A-21-CCP-01		OL-F-3A-21-CCP-01		OL-F-3A-21-CCP-01		OL-F-3A-21-CCP-02		OL-F-3A-21-CCP-02	
			Sampled	7/19/2021		7/19/2021		7/19/2021		7/19/2021		5/26/2021		5/26/2021		5/26/2021		5/26/2021		5/26/2021	
			Lab Sample ID	B7556_019		B7556_21016_019		'556_21016_DF_019-		JD85967-19		B7556_003		B7556_21016_003		JD85967-3		B7554_003		B7554_20790_003	
			Taxonomic	SMB		SMB		SMB		SMB		CCP		CCP		CCP		CCP		CCP	
			Age (yrs)	7		7		7		7		8		8		8		3		3	
			Gender	F		F		F		F		F		F		F		F		F	
			Length (mm)	452		452		452		452		674		674		674		415		415	
			Weight (g)	1620		1620		1620		1620		2644		2644		2644		1265		1265	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%	75.63								84.42						73.96			
SW3540	LIPIDS	%Lipids Determination	%			1.684								0.23						4.144	J-
SW7471	7439-97-6	Mercury	mg/kg							0.68						0.48					
SW8081	118-74-1	Hexachlorobenzene	ug/kg							0.3						0.19	U				
SW8082	12674-11-2	Aroclor-1016	ug/kg							9.4	U					9.6	U				
SW8082	11104-28-2	Aroclor-1221	ug/kg							9.4	U					9.6	U				
SW8082	11141-16-5	Aroclor-1232	ug/kg							9.4	U					9.6	U				
SW8082	53469-21-9	Aroclor-1242	ug/kg							9.4	U					9.6	U				
SW8082	12672-29-6	Aroclor-1248	ug/kg							73.7						9.6	U				
SW8082	11097-69-1	Aroclor-1254	ug/kg							97						4.5	J				
SW8082	11096-82-5	Aroclor-1260	ug/kg							93.3						7.5	J				
SW8082	11100-14-4	Aroclor-1268	ug/kg							9.4	U					9.6	U				
SW8082	PCB	Total PCBs	ug/kg							264						11.9					
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g					0.189	U												
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g					0.134	U												
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g					0.187	U												
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g					0.209	U												
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g					0.135	U												
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g					0.197	U												
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g					0.131	U												
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g					0.219	U												
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g					0.164	U												
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g					0.22	UJ												
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g					0.151	U												
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g					0.129	U												
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g					0.589	J												
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g					0.318	U												
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g					0.895	J												
SW8290	3268-87-9	OCDD	pg/g					0.233	UJ												
SW8290	39001-02-0	OCDF	pg/g					0.246	U												
SW8290	HpCDD	Total Hepta-Dixons	pg/g					0.189	U												
SW8290	HpCDF	Total HPCDF	pg/g					0.157	U												
SW8290	HxCDD	Total HxCDD	pg/g					0.208	U												
SW8290	HxCDF	Total HxCDF	pg/g					0.138	U												
SW8290	PeCDD	Total PECDD	pg/g					0.22	U												
SW8290	PeCDF	Total PECDF	pg/g					0.589													
SW8290	TCDD	Total TCDD	pg/g					0.318	U												
SW8290	TCDF	Total TCDF	pg/g					0.895	J												

			Location ID	OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A	
			Field Sample ID	OL-F-3303-10F		OL-F-3303-10F		OL-F-3303-11F		OL-F-3303-11F		OL-F-3307-06F		OL-F-3307-06F		OL-F-3307-06F		OL-F-3307-06F		OL-F-3307-07F	
			Sample Name	OL-F-3A-21-CCP-02		OL-F-3A-21-CCP-02		OL-F-3A-21-PKSD-01		OL-F-3A-21-PKSD-01		OL-F-3A-21-PKSD-02		OL-F-3A-21-PKSD-02		OL-F-3A-21-PKSD-02		OL-F-3A-21-PKSD-02		OL-F-3A-21-PKSD-03	
			Sampled	5/26/2021		5/26/2021		5/26/2021		5/26/2021		6/4/2021		6/4/2021		6/4/2021		6/4/2021		6/4/2021	
			Lab Sample ID	554_20957_DF_003-		JD80342-3		B7555_21051_011		JD87136-11		B7553_006		B7553_20758_006		553_20972_DF_006-		JD78163-6		B7553_007	
			Taxonomic	CCP		CCP		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD	
			Age (yrs)	3		3		4+		4+		5+		5+		5+		5+		4+	
			Gender	F		F		M		M		F		F		F		F		F	
			Length (mm)	415		415		141		141		197		197		197		197		190	
			Weight (g)	1265		1265		50		50		162		162		162		162		143	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%									77.15								77.44	
SW3540	LIPIDS	%Lipids Determination	%					0.193						0.326							
SW7471	7439-97-6	Mercury	mg/kg			0.085				0.078								0.15			
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.21	J			0.19	UJ							0.2	U		
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.6	U			9.8	U							10	U		
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.6	U			9.8	U							10	U		
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.6	U			9.8	U							10	U		
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.6	U			9.8	U							10	U		
SW8082	12672-29-6	Aroclor-1248	ug/kg			42.3				9.8	U							10	U		
SW8082	11097-69-1	Aroclor-1254	ug/kg			31.6				6.3	J							2.7	J		
SW8082	11096-82-5	Aroclor-1260	ug/kg			17.7				9.8	U							10	U		
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.6	U			9.8	U							10	U		
SW8082	PCB	Total PCBs	ug/kg			91.6				6.3	J							2.7	J		
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g	0.214	U											0.245	U				
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g	0.203	U											0.14	U				
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g	0.263	U											0.177	U				
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g	0.239	U											0.342	U				
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g	0.113	U											0.161	U				
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g	0.224	U											0.347	U				
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g	0.12	U											0.165	U				
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g		R											0.347	UJ				
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g	0.156	U											0.222	U				
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g	0.194	U											0.307	U				
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g	0.126	U											0.164	U				
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g	0.114	U											0.195	U				
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g	0.114	U											0.174	U				
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g	0.185	U											0.198	U				
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g	0.998												0.188	U				
SW8290	3268-87-9	OCDD	pg/g	0.32	UJ											0.284	U				
SW8290	39001-02-0	OCDF	pg/g	0.301	U											0.279	U				
SW8290	HpCDD	Total Hepta-Dixons	pg/g	0.214	U											0.245	U				
SW8290	HpCDF	Total HPCDF	pg/g	0.229	U											0.156	U				
SW8290	HxCDD	Total HxCDD	pg/g	0.233	U											0.345	U				
SW8290	HxCDF	Total HxCDF	pg/g	0.124	U											0.183	U				
SW8290	PeCDD	Total PECDD	pg/g	0.194	U											0.307	U				
SW8290	PeCDF	Total PECDF	pg/g	0.12	U											0.169	U				
SW8290	TCDD	Total TCDD	pg/g	0.185	U											0.198	U				
SW8290	TCDF	Total TCDF	pg/g	0.998												0.188	U				

			Location ID	OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A	
			Field Sample ID	OL-F-3307-07F		OL-F-3307-07F		OL-F-3307-07F		OL-F-3309-03F		OL-F-3309-03F		OL-F-3309-03F		OL-F-3309-03F		OL-F-3309-04F		OL-F-3309-04F	
			Sample Name	OL-F-3A-21-PKSD-03		OL-F-3A-21-PKSD-03		OL-F-3A-21-PKSD-03		OL-F-3A-21-SMB-01		OL-F-3A-21-SMB-01		OL-F-3A-21-SMB-01		OL-F-3A-21-SMB-01		OL-F-3A-21-WALL-01		OL-F-3A-21-WALL-01	
			Sampled	6/4/2021		6/4/2021		6/4/2021		6/4/2021		6/4/2021		6/4/2021		6/4/2021		6/4/2021		6/4/2021	
			Lab Sample ID	B7553_20758_007		553_20972_DF_007-		JD78163-7		B7553_012		B7553_20758_012		553_20953_DF_012-		JD78163-12		B7555_013		B7555_21051_013	
			Taxonomic	PKSD		PKSD		PKSD		SMB		SMB		SMB		SMB		WALL		WALL	
			Age (yrs)	4+		4+		4+		6+		6+		6+		6+		9+		9+	
			Gender	F		F		F		M		M		M		M		F		F	
			Length (mm)	190		190		190		440		440		440		440		548		548	
			Weight (g)	143		143		143		1200		1200		1200		1200		2515		2515	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%							75.33								74.58			
SW3540	LIPIDS	%Lipids Determination	%	0.358								0.506								3.488	
SW7471	7439-97-6	Mercury	mg/kg					0.24								0.38					
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.2	U							0.062	J				
SW8082	12674-11-2	Aroclor-1016	ug/kg					10	U							10	U				
SW8082	11104-28-2	Aroclor-1221	ug/kg					10	U							10	U				
SW8082	11141-16-5	Aroclor-1232	ug/kg					10	U							10	U				
SW8082	53469-21-9	Aroclor-1242	ug/kg					10	U							10	U				
SW8082	12672-29-6	Aroclor-1248	ug/kg					10	U							14					
SW8082	11097-69-1	Aroclor-1254	ug/kg					3.1	J							11.5					
SW8082	11096-82-5	Aroclor-1260	ug/kg					10	U							7.3	J				
SW8082	11100-14-4	Aroclor-1268	ug/kg					10	U							10	U				
SW8082	PCB	Total PCBs	ug/kg					3.1	J							32.8					
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g			0.21	U							0.197	U						
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g			0.121	U							0.251	U						
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g			0.163	U							0.269	U						
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g			0.261	U							0.312	U						
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g			0.199	U							0.195	U						
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g			0.258	U							0.331	U						
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g			0.197	U							0.194	U						
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g			0.268	UJ							0.332	U						
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g			0.241	U							0.232	U						
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g			0.23	U							0.246	U						
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g			0.14	U							0.226	U						
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g			0.222	U							0.196	U						
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g			0.147	U							0.527	J						
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g			0.133	U							0.325	U						
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g			0.178	U							0.641	J						
SW8290	3268-87-9	OCDD	pg/g			0.402	U							0.358	U						
SW8290	39001-02-0	OCDF	pg/g			0.214	U							0.495	U						
SW8290	HpCDD	Total Hepta-Dixons	pg/g			0.21	U							0.197	U						
SW8290	HpCDF	Total HPCDF	pg/g			0.14	U							0.259	U						
SW8290	HxCDD	Total HxCDD	pg/g			0.262	U							0.324	U						
SW8290	HxCDF	Total HxCDF	pg/g			0.213	U							0.203	U						
SW8290	PeCDD	Total PECDD	pg/g			0.23	U							0.246	U						
SW8290	PeCDF	Total PECDF	pg/g			0.143	U							0.527	J						
SW8290	TCDD	Total TCDD	pg/g			0.133	U							0.325	U						
SW8290	TCDF	Total TCDF	pg/g			0.178	U							0.641	J						

			Location ID	OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A	
			Field Sample ID	OL-F-3309-04F		OL-F-3309-05F		OL-F-3309-05F		OL-F-3309-05F		OL-F-3309-05F		OL-F-3309-06F		OL-F-3309-06F		OL-F-3309-06F		OL-F-3312-01F	
			Sample Name	OL-F-3A-21-WALL-01		OL-F-3A-21-WALL-02		OL-F-3A-21-WALL-02		OL-F-3A-21-WALL-02		OL-F-3A-21-WALL-02		OL-F-3A-21-WALL-03		OL-F-3A-21-WALL-03		OL-F-3A-21-WALL-03		OL-F-3A-21-CCP-03	
			Sampled	6/4/2021		6/4/2021		6/4/2021		6/4/2021		6/4/2021		6/4/2021		6/4/2021		6/4/2021		6/22/2021	
			Lab Sample ID	JD87136-13		B7554_019		B7554_20790_019		554_20957_DF_019-		JD80342-19		B7555_016		B7555_21051_016		JD87136-16		B7557_009	
			Taxonomic	WALL		WALL		WALL		WALL		WALL		WALL		WALL		WALL		CCP	
			Age (yrs)	9+		10+		10+		10+		10+		7		7		7		3	
			Gender	F		F		F		F		F		F		F		F		M	
			Length (mm)	548		530		530		530		530		562		562		562		432	
			Weight (g)	2515		1838		1838		1838		1838		2484		2484		2484		1223	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%			74.18								73.87						74.23	
SW3540	LIPIDS	%Lipids Determination	%					3.081	J-							3.403					
SW7471	7439-97-6	Mercury	mg/kg	1.8								0.78						1.2			
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.44	J-							0.36						0.57	J-		
SW8082	12674-11-2	Aroclor-1016	ug/kg	9.6	U							9.4	U					9.8	U		
SW8082	11104-28-2	Aroclor-1221	ug/kg	9.6	U							9.4	U					9.8	U		
SW8082	11141-16-5	Aroclor-1232	ug/kg	9.6	U							9.4	U					9.8	U		
SW8082	53469-21-9	Aroclor-1242	ug/kg	9.6	U							9.4	U					9.8	U		
SW8082	12672-29-6	Aroclor-1248	ug/kg	67.4								124						151			
SW8082	11097-69-1	Aroclor-1254	ug/kg	160								125						229			
SW8082	11096-82-5	Aroclor-1260	ug/kg	77.4								83.8						106			
SW8082	11100-14-4	Aroclor-1268	ug/kg	9.6	U							9.4	U					9.8	U		
SW8082	PCB	Total PCBs	ug/kg	305								332						486			
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g							0.331	U										
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g							0.343	U										
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g							0.514	U										
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g							0.318	U										
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g							0.178	U										
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g							0.32	U										
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g							0.138	U										
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g								R										
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g							0.244	U										
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g							0.265	J										
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g							0.178	U										
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g							0.165	U										
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g							0.5	J										
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g							0.19	U										
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g							1.11											
SW8290	3268-87-9	OCDD	pg/g							0.57	UJ										
SW8290	39001-02-0	OCDF	pg/g							0.486	U										
SW8290	HpCDD	Total Hepta-Dixons	pg/g							0.331	U										
SW8290	HpCDF	Total HPCDF	pg/g							0.405	U										
SW8290	HxCDD	Total HxCDD	pg/g							0.308	U										
SW8290	HxCDF	Total HxCDF	pg/g							0.174	U										
SW8290	PeCDD	Total PECDD	pg/g							0.265	J										
SW8290	PeCDF	Total PECDF	pg/g							0.5	J										
SW8290	TCDD	Total TCDD	pg/g							0.19	U										
SW8290	TCDF	Total TCDF	pg/g							1.72	J										

			Location ID	OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-3A		OL-F-4A	
			Field Sample ID	OL-F-3312-01F		OL-F-3312-01F		OL-F-3312-02F		OL-F-3312-02F		OL-F-3312-02F		OL-F-3312-03F		OL-F-3312-03F		OL-F-3312-03F		OL-F-3302-12F	
			Sample Name	OL-F-3A-21-CCP-03		OL-F-3A-21-CCP-03		OL-F-3A-21-SMB-02		OL-F-3A-21-SMB-02		OL-F-3A-21-SMB-02		OL-F-3A-21-SMB-03		OL-F-3A-21-SMB-03		OL-F-3A-21-SMB-03		OL-F-4A-21-PKSD-01	
			Sampled	6/22/2021		6/22/2021		6/22/2021		6/22/2021		6/22/2021		6/22/2021		6/22/2021		6/22/2021		5/20/2021	
			Lab Sample ID	B7557_20841_009		JD81415-9		B7557_010		B7557_20841_010		JD81415-10		B7557_011		B7557_20841_011		JD81415-11		B7554_004	
			Taxonomic	CCP		CCP		SMB		SMB		SMB		SMB		SMB		SMB		PKSD	
			Age (yrs)	3		3		8+		8+		8+		6		6		6		3+	
			Gender	M		M		F		F		F		M		M		M		M	
			Length (mm)	432		432		453		453		453		380		380		380		170	
			Weight (g)	1223		1223		1389		1389		1389		1081		1081		1081		109	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%					75.73						73.91						78.18	
SW3540	LIPIDS	%Lipids Determination	%	2.321						0.895						3.016					
SW7471	7439-97-6	Mercury	mg/kg			0.099						0.65						0.32			
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.19	UJ					0.17	J					0.18	J		
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.6	UJ					9.8	UJ					9.8	UJ		
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.6	UJ					9.8	UJ					9.8	UJ		
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.6	UJ					9.8	UJ					9.8	UJ		
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.6	UJ					9.8	UJ					9.8	UJ		
SW8082	12672-29-6	Aroclor-1248	ug/kg			9.6	UJ					29.9	J-					28.5	J-		
SW8082	11097-69-1	Aroclor-1254	ug/kg			2.1	J					22.2	J-					31.4	J-		
SW8082	11096-82-5	Aroclor-1260	ug/kg			9.6	UJ					13.5	J-					9.8	UJ		
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.6	UJ					9.8	UJ					9.8	UJ		
SW8082	PCB	Total PCBs	ug/kg			2.1	J					65.6	J-					84.8	J-		
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g																		
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g																		
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g																		
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g																		
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g																		
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g																		
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g																		
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g																		
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g																		
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g																		
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g																		
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g																		
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g																		
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g																		
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g																		
SW8290	3268-87-9	OCDD	pg/g																		
SW8290	39001-02-0	OCDF	pg/g																		
SW8290	HpCDD	Total Hepta-Dixons	pg/g																		
SW8290	HpCDF	Total HPCDF	pg/g																		
SW8290	HxCDD	Total HxCDD	pg/g																		
SW8290	HxCDF	Total HxCDF	pg/g																		
SW8290	PeCDD	Total PECDD	pg/g																		
SW8290	PeCDF	Total PECDF	pg/g																		
SW8290	TCDD	Total TCDD	pg/g																		
SW8290	TCDF	Total TCDF	pg/g																		

			Location ID	OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A	
			Field Sample ID	OL-F-3302-12F		OL-F-3302-12F		OL-F-3302-12F		OL-F-3302-16F		OL-F-3302-16F		OL-F-3302-16F		OL-F-3302-17F		OL-F-3302-17F		OL-F-3302-17F	
			Sample Name	OL-F-4A-21-PKSD-01		OL-F-4A-21-PKSD-01		OL-F-4A-21-PKSD-01		OL-F-4A-21-CCP-01		OL-F-4A-21-CCP-01		OL-F-4A-21-CCP-01		OL-F-4A-21-CCP-02		OL-F-4A-21-CCP-02		OL-F-4A-21-CCP-02	
			Sampled	5/20/2021		5/20/2021		5/20/2021		5/21/2021		5/21/2021		5/21/2021		5/21/2021		5/21/2021		5/21/2021	
			Lab Sample ID	B7554_20790_004		554_20972_DF_004-		JD80342-4		B7556_016		B7556_21016_016		JD85967-16		B7553_003		B7553_20758_003		553_20953_DF_003-	
			Taxonomic	PKSD		PKSD		PKSD		CCP		CCP		CCP		CCP		CCP		CCP	
			Age (yrs)	3+		3+		3+		3+		3+		3+		2+		2+		2+	
			Gender	M		M		M		F		F		F		M		M		M	
			Length (mm)	170		170		170		507		507		507		442		442		442	
			Weight (g)	109		109		109		1984		1984		1984		1430		1430		1430	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%							70						74.12					
SW3540	LIPIDS	%Lipids Determination	%	0.477	J-							7.739						3.875			
SW7471	7439-97-6	Mercury	mg/kg					0.18						0.076							
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.2	U					0.67	J						
SW8082	12674-11-2	Aroclor-1016	ug/kg					10	U					9.8	U						
SW8082	11104-28-2	Aroclor-1221	ug/kg					10	U					9.8	U						
SW8082	11141-16-5	Aroclor-1232	ug/kg					10	U					9.8	U						
SW8082	53469-21-9	Aroclor-1242	ug/kg					10	U					9.8	U						
SW8082	12672-29-6	Aroclor-1248	ug/kg					10	U					26.9							
SW8082	11097-69-1	Aroclor-1254	ug/kg					2.4	J					26.3	J						
SW8082	11096-82-5	Aroclor-1260	ug/kg					10	U					21.7							
SW8082	11100-14-4	Aroclor-1268	ug/kg					10	U					9.8	U						
SW8082	PCB	Total PCBs	ug/kg					2.4	J					74.9							
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g			0.266	U													0.313	U
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g			0.218	U													0.318	U
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g			0.289	U													0.25	U
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g			0.279	U													0.469	UJ
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g			0.216	U													0.312	UJ
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g			0.298	U													0.493	UJ
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g			0.212	U													0.298	UJ
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g			0.412	UJ													0.396	U
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g			0.308	U													0.31	U
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g			0.312	U													0.336	UJ
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g			0.215	U													0.27	UJ
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g			0.271	U													0.273	UJ
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g			0.197	U													0.261	UJ
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g			0.237	U													0.427	UJ
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g			0.201	U													0.901	J
SW8290	3268-87-9	OCDD	pg/g			1.03	UJ													0.667	U
SW8290	39001-02-0	OCDF	pg/g			0.816	U													0.537	U
SW8290	HpCDD	Total Hepta-Dixons	pg/g			0.266	U													0.313	U
SW8290	HpCDF	Total HPCDF	pg/g			0.252	U													0.283	U
SW8290	HxCDD	Total HxCDD	pg/g			0.323	U													0.444	U
SW8290	HxCDF	Total HxCDF	pg/g			0.246	U													0.298	U
SW8290	PeCDD	Total PECDD	pg/g			0.312	U													0.336	U
SW8290	PeCDF	Total PECDF	pg/g			0.206	U													0.266	U
SW8290	TCDD	Total TCDD	pg/g			0.237	U													0.427	U
SW8290	TCDF	Total TCDF	pg/g			0.397														0.901	J

Method	Parameter Code	Parameter Name	Units	OL-F-4A	OL-F-4A	OL-F-4A	OL-F-4A	OL-F-4A	OL-F-4A	OL-F-4A	OL-F-4A	OL-F-4A
			Field Sample ID	OL-F-3302-17F	OL-F-3302-18F	OL-F-3302-18F	OL-F-3302-18F	OL-F-3302-19F	OL-F-3302-19F	OL-F-3302-20F	OL-F-3302-20F	OL-F-3302-20F
			Sample Name	OL-F-4A-21-CCP-02	OL-F-4A-21-PKSD-02	OL-F-4A-21-PKSD-02	OL-F-4A-21-PKSD-02	OL-F-4A-21-PKSD-03	OL-F-4A-21-PKSD-03	OL-F-4A-21-WALL-01	OL-F-4A-21-WALL-01	OL-F-4A-21-WALL-01
			Sampled	5/21/2021	5/21/2021	5/21/2021	5/21/2021	5/21/2021	5/21/2021	5/21/2021	5/21/2021	5/21/2021
			Lab Sample ID	JD78163-3	B7555_004	B7555_21051_004	JD87136-4	B7555_21051_005	JD87136-5	B7555_002	B7555_21051_002	JD87136-2
			Taxonomic	CCP	PKSD	PKSD	PKSD	PKSD	PKSD	WALL	WALL	WALL
			Age (yrs)	2+	5	5	5	4+	4+	5+	5+	5+
			Gender	M	M	M	M	M	M	M	M	M
			Length (mm)	442	153	153	153	135	135	535	535	535
			Weight (g)	1430	76	76	76	53	53	1499	1499	1499
ASTM D2216	MOISTURE-%	Percent Moisture	%		75.61					73.41		
SW3540	LIPIDS	%Lipids Determination	%			0.326		0.689			3.019	
SW7471	7439-97-6	Mercury	mg/kg	0.054			0.12		0.05			0.44
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.3			0.19 UJ		0.19 UJ			0.32 J-
SW8082	12674-11-2	Aroclor-1016	ug/kg	10 U			9.4 U		9.8 U			10 U
SW8082	11104-28-2	Aroclor-1221	ug/kg	10 U			9.4 U		9.8 U			10 U
SW8082	11141-16-5	Aroclor-1232	ug/kg	10 U			9.4 U		9.8 U			10 U
SW8082	53469-21-9	Aroclor-1242	ug/kg	10 U			9.4 U		9.8 U			10 U
SW8082	12672-29-6	Aroclor-1248	ug/kg	159			9.4 U		9.8 U			70.8
SW8082	11097-69-1	Aroclor-1254	ug/kg	42.7			9.4 U		12.9			81.1
SW8082	11096-82-5	Aroclor-1260	ug/kg	17.4			9.4 U		8.2 J			30.8
SW8082	11100-14-4	Aroclor-1268	ug/kg	10 U			9.4 U		9.8 U			10 U
SW8082	PCB	Total PCBs	ug/kg	219			9.4 U		21.1			183
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g									
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g									
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g									
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g									
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g									
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g									
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g									
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g									
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g									
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g									
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g									
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g									
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g									
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g									
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g									
SW8290	3268-87-9	OCDD	pg/g									
SW8290	39001-02-0	OCDF	pg/g									
SW8290	HpCDD	Total Hepta-Dixons	pg/g									
SW8290	HpCDF	Total HPCDF	pg/g									
SW8290	HxCDD	Total HxCDD	pg/g									
SW8290	HxCDF	Total HxCDF	pg/g									
SW8290	PeCDD	Total PECDD	pg/g									
SW8290	PeCDF	Total PECDF	pg/g									
SW8290	TCDD	Total TCDD	pg/g									
SW8290	TCDF	Total TCDF	pg/g									

			Location ID	OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A	
			Field Sample ID	OL-F-3307-08F		OL-F-3307-08F		OL-F-3307-08F		OL-F-3307-08F		OL-F-3309-16F		OL-F-3309-16F		OL-F-3309-16F		OL-F-3309-16F		OL-F-3309-17F	
			Sample Name	OL-F-4A-21-CCP-03		OL-F-4A-21-CCP-03		OL-F-4A-21-CCP-03		OL-F-4A-21-CCP-03		OL-F-4A-21-SMB-01		OL-F-4A-21-SMB-01		OL-F-4A-21-SMB-01		OL-F-4A-21-SMB-01		OL-F-4A-21-WALL-02	
			Sampled	6/4/2021		6/4/2021		6/4/2021		6/4/2021		6/9/2021		6/9/2021		6/9/2021		6/9/2021		6/9/2021	
			Lab Sample ID	B7554_008		B7554_20790_008		554_20957_DF_008-		JD80342-8		B7554_014		B7554_20790_014		554_20957_DF_014-		JD80342-14		B7556_014	
			Taxonomic	CCP		CCP		CCP		CCP		SMB		SMB		SMB		SMB		WALL	
			Age (yrs)	3		3		3		3		7		7		7		7		7+	
			Gender	M		M		M		M		F		F		F		F		M	
			Length (mm)	452		452		452		452		450		450		450		450		520	
			Weight (g)	1106		1106		1106		1106		1455		1455		1455		1455		1696	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%	74.55								75.98								75.2	
SW3540	LIPIDS	%Lipids Determination	%			2.016	J-							1.555	J-						
SW7471	7439-97-6	Mercury	mg/kg							0.11								0.79			
SW8081	118-74-1	Hexachlorobenzene	ug/kg							0.16	J							0.14	J		
SW8082	12674-11-2	Aroclor-1016	ug/kg							9.8	U							10	U		
SW8082	11104-28-2	Aroclor-1221	ug/kg							9.8	U							10	U		
SW8082	11141-16-5	Aroclor-1232	ug/kg							9.8	U							10	U		
SW8082	53469-21-9	Aroclor-1242	ug/kg							9.8	U							10	U		
SW8082	12672-29-6	Aroclor-1248	ug/kg							80.2								59.7			
SW8082	11097-69-1	Aroclor-1254	ug/kg							26.4								87.9			
SW8082	11096-82-5	Aroclor-1260	ug/kg							14								79.1			
SW8082	11100-14-4	Aroclor-1268	ug/kg							9.8	U							10	U		
SW8082	PCB	Total PCBs	ug/kg							121								227			
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g					0.202	U							0.27	U				
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g					0.115	U							0.343	U				
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g					0.157	U							0.517	U				
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g					0.259	U							0.276	U				
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g					0.137	U							0.175	U				
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g					0.243	U							0.263	U				
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g					0.128	U							0.158	U				
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g						R								R				
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g					0.181	U							0.213	U				
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g					0.243	U							0.226	J				
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g					0.129	U							0.162	U				
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g					0.16	U							0.181	U				
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g					0.172	J							0.406	J				
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g					0.179	U							0.552	U				
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g					0.613	J							0.674	J				
SW8290	3268-87-9	OCDD	pg/g					0.413	UJ							0.359	UJ				
SW8290	39001-02-0	OCDF	pg/g					0.255	U							0.244	U				
SW8290	HpCDD	Total Hepta-Dixons	pg/g					0.202	U							0.27	U				
SW8290	HpCDF	Total HPCDF	pg/g					0.133	U							0.419	U				
SW8290	HxCDD	Total HxCDD	pg/g					0.256	U							0.272	U				
SW8290	HxCDF	Total HxCDF	pg/g					0.149	U							0.179	U				
SW8290	PeCDD	Total PECDD	pg/g					0.243	U							0.226	J				
SW8290	PeCDF	Total PECDF	pg/g					0.172	J							0.406	J				
SW8290	TCDD	Total TCDD	pg/g					0.179	U							0.552	U				
SW8290	TCDF	Total TCDF	pg/g					0.613	J							1.33	J				

Method	Parameter Code	Parameter Name	Units																		
			Location ID	OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A	
			Field Sample ID	OL-F-3309-17F		OL-F-3309-17F		OL-F-3309-17F		OL-F-3309-18F		OL-F-3309-18F		OL-F-3309-18F		OL-F-3312-05F		OL-F-3312-05F		OL-F-3312-05F	
			Sample Name	OL-F-4A-21-WALL-02		OL-F-4A-21-WALL-02		OL-F-4A-21-WALL-02		OL-F-4A-21-WALL-03		OL-F-4A-21-WALL-03		OL-F-4A-21-WALL-03		OL-F-4A-21-SMB-02		OL-F-4A-21-SMB-02		OL-F-4A-21-SMB-02	
			Sampled	6/9/2021		6/9/2021		6/9/2021		6/9/2021		6/9/2021		6/9/2021		6/23/2021		6/23/2021		6/23/2021	
			Lab Sample ID	B7556_21016_014		556_21016_DF_014-		JD85967-14		B7555_020		B7555_21051_020		JD87136-20		B7557_012		B7557_20841_012		JD81415-12	
			Taxonomic	WALL		WALL		WALL		WALL		WALL		WALL		SMB		SMB		SMB	
			Age (yrs)	7+		7+		7+		9		9		9		6		6		6	
			Gender	M		M		M		F		F		F		F		F		F	
			Length (mm)	520		520		520		532		532		532		420		420		420	
			Weight (g)	1696		1696		1696		1806		1806		1806		1174		1174		1174	
ASTM D2216	MOISTURE-%	Percent Moisture	%							75.54						75.23					
SW3540	LIPIDS	%Lipids Determination	%	2.906								1.899						1.535			
SW7471	7439-97-6	Mercury	mg/kg					0.99						0.45						0.57	
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.37						0.14	J					0.1	J
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.6	U					9.8	U					9.4	UJ
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.6	U					9.8	U					9.4	UJ
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.6	U					9.8	U					9.4	UJ
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.6	U					9.8	U					9.4	UJ
SW8082	12672-29-6	Aroclor-1248	ug/kg					45.3						32.2						23.8	J-
SW8082	11097-69-1	Aroclor-1254	ug/kg					58.2						47.8						32	J-
SW8082	11096-82-5	Aroclor-1260	ug/kg					41.2						24.3						25.1	J-
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.6	U					9.8	U					9.4	UJ
SW8082	PCB	Total PCBs	ug/kg					145						104						80.9	J-
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g			0.258	U														
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g			0.183	U														
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g			0.245	U														
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g			0.214	U														
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g			0.146	U														
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g			0.232	U														
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g			0.133	U														
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g			0.23	U														
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g			0.167	U														
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g			0.219	UJ														
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g			0.216	U														
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g			0.149	U														
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g			0.419	J														
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g			0.494	U														
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g			0.613															
SW8290	3268-87-9	OCDD	pg/g			0.253	UJ														
SW8290	39001-02-0	OCDF	pg/g			0.272	U														
SW8290	HpCDD	Total Hepta-Dixons	pg/g			0.258	U														
SW8290	HpCDF	Total HPCDF	pg/g			0.211	U														
SW8290	HxCDD	Total HxCDD	pg/g			0.225	U														
SW8290	HxCDF	Total HxCDF	pg/g			0.148	U														
SW8290	PeCDD	Total PECDD	pg/g			0.219	U														
SW8290	PeCDF	Total PECDF	pg/g			0.419	J														
SW8290	TCDD	Total TCDD	pg/g			0.494	U														
SW8290	TCDF	Total TCDF	pg/g			0.613															

			Location ID	OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-4A		OL-F-5A		OL-F-5A	
			Field Sample ID	OL-F-3312-06F		OL-F-3312-06F		OL-F-3312-06F		OL-F-3317-02F		OL-F-3317-02F		OL-F-3317-02F		OL-F-3317-02F		OL-F-3302-05F		OL-F-3302-05F	
			Sample Name	OL-F-4A-21-SMB-03		OL-F-4A-21-SMB-03		OL-F-4A-21-SMB-03		OL-F-4A-21-CCP-04		OL-F-4A-21-CCP-04		OL-F-4A-21-CCP-04		OL-F-4A-21-CCP-04		OL-F-5A-21-PKSD-01		OL-F-5A-21-PKSD-01	
			Sampled	6/23/2021		6/23/2021		6/23/2021		7/28/2021		7/28/2021		7/28/2021		7/28/2021		5/19/2021		5/19/2021	
			Lab Sample ID	B7557_013		B7557_20841_013		JD81415-13		B7554_020		B7554_20790_020		554_20957_DF_020-		JD80342-20		B7556_21016_007		JD85967-7	
			Taxonomic	SMB		SMB		SMB		CCP		CCP		CCP		CCP		PKSD		PKSD	
			Age (yrs)	5+		5+		5+		4		4		4		4		4+		4+	
			Gender	F		F		F		F		F		F		F		F		F	
			Length (mm)	416		416		416		507		507		507		507		144		144	
			Weight (g)	1116		1116		1116		2058		2058		2058		2058		49		49	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%	75.27						74.15											
SW3540	LIPIDS	%Lipids Determination	%			1.625						3.541	J-					0.366			
SW7471	7439-97-6	Mercury	mg/kg					0.29								0.11				0.14	
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.11	J							0.16	J			0.19	U
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.8	UJ							9.6	U			9.6	U
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.8	UJ							9.6	U			9.6	U
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.8	UJ							9.6	U			9.6	U
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.8	UJ							9.6	U			9.6	U
SW8082	12672-29-6	Aroclor-1248	ug/kg					7.3	J							64.2				9.6	U
SW8082	11097-69-1	Aroclor-1254	ug/kg					17.5	J-							30.5				2.5	J
SW8082	11096-82-5	Aroclor-1260	ug/kg					13	J-							22.1				9.6	U
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.8	UJ							9.6	U			9.6	U
SW8082	PCB	Total PCBs	ug/kg					37.8	J-							117				2.5	J
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g											0.267	U						
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g											0.152	U						
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g											0.227	U						
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g											0.244	U						
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g											0.12	U						
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g											0.226	U						
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g											0.114	U						
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g												R						
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g											0.151	U						
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g											0.179	U						
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g											0.19	U						
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g											0.122	U						
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g											0.313	J						
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g											0.206	U						
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g											0.985							
SW8290	3268-87-9	OCDD	pg/g											0.516	J						
SW8290	39001-02-0	OCDF	pg/g											0.318	U						
SW8290	HpCDD	Total Hepta-Dixons	pg/g											0.267	U						
SW8290	HpCDF	Total HPCDF	pg/g											0.185	U						
SW8290	HxCDD	Total HxCDD	pg/g											0.237	U						
SW8290	HxCDF	Total HxCDF	pg/g											0.125	U						
SW8290	PeCDD	Total PECDD	pg/g											0.179	U						
SW8290	PeCDF	Total PECDF	pg/g											0.313							
SW8290	TCDD	Total TCDD	pg/g											0.206	U						
SW8290	TCDF	Total TCDF	pg/g											2.05							

			Location ID	OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A	
			Field Sample ID	OL-F-3302-06F		OL-F-3302-06F		OL-F-3302-06F		OL-F-3302-10F		OL-F-3302-10F		OL-F-3302-11F		OL-F-3302-11F		OL-F-3302-11F		OL-F-3302-13F	
			Sample Name	OL-F-5A-21-PKSD-02		OL-F-5A-21-PKSD-02		OL-F-5A-21-PKSD-02		OL-F-5A-21-PKSD-03		OL-F-5A-21-PKSD-03		OL-F-5A-21-PKSD-04		OL-F-5A-21-PKSD-04		OL-F-5A-21-PKSD-04		OL-F-5A-21-CCP-01	
			Sampled	5/18/2021		5/18/2021		5/18/2021		5/19/2021		5/19/2021		5/19/2021		5/19/2021		5/19/2021		5/20/2021	
			Lab Sample ID	B7556_008		B7556_21016_008		JD85967-8		B7555_21051_003		JD87136-3		B7556_009		B7556_21016_009		JD85967-9		B7553_001	
			Taxonomic	PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		CCP	
			Age (yrs)	3+		3+		3+		3+		3+		3		3		3		5	
			Gender	F		F		F		M		M		M		M		M		M	
			Length (mm)	144		144		144		148		148		153		153		153		705	
			Weight (g)	61		61		61		59		59		78		78		78		5376	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%	75.24										75.47						63.19	
SW3540	LIPIDS	%Lipids Determination	%			1.476				0.706						1.07					
SW7471	7439-97-6	Mercury	mg/kg					0.089				0.089						0.18			
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.11	J			0.1	J					0.26			
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.3	U			10	U					9.3	U		
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.3	U			10	U					9.3	U		
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.3	U			10	U					9.3	U		
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.3	U			10	U					9.3	U		
SW8082	12672-29-6	Aroclor-1248	ug/kg					6.6	J			4.1	J					5.8	J		
SW8082	11097-69-1	Aroclor-1254	ug/kg					6.8	J			8.4	J					10.9	J		
SW8082	11096-82-5	Aroclor-1260	ug/kg					6.2	J			6.8	J					15.6			
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.3	U			10	U					9.3	U		
SW8082	PCB	Total PCBs	ug/kg					19.6				19.3						32.3			
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g																		
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g																		
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g																		
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g																		
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g																		
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g																		
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g																		
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g																		
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g																		
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g																		
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g																		
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g																		
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g																		
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g																		
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g																		
SW8290	3268-87-9	OCDD	pg/g																		
SW8290	39001-02-0	OCDF	pg/g																		
SW8290	HpCDD	Total Hepta-Dixons	pg/g																		
SW8290	HpCDF	Total HPCDF	pg/g																		
SW8290	HxCDD	Total HxCDD	pg/g																		
SW8290	HxCDF	Total HxCDF	pg/g																		
SW8290	PeCDD	Total PECDD	pg/g																		
SW8290	PeCDF	Total PECDF	pg/g																		
SW8290	TCDD	Total TCDD	pg/g																		
SW8290	TCDF	Total TCDF	pg/g																		

			Location ID	OL-F-5A	OL-F-5A	OL-F-5A	OL-F-5A	OL-F-5A	OL-F-5A	OL-F-5A	OL-F-5A	OL-F-5A
			Field Sample ID	OL-F-3302-13F	OL-F-3302-13F	OL-F-3302-13F	OL-F-3302-14F	OL-F-3302-14F	OL-F-3302-14F	OL-F-3302-14F	OL-F-3309-07F	OL-F-3309-07F
			Sample Name	OL-F-5A-21-CCP-01	OL-F-5A-21-CCP-01	OL-F-5A-21-CCP-01	OL-F-5A-21-WALL-01	OL-F-5A-21-WALL-01	OL-F-5A-21-WALL-01	OL-F-5A-21-WALL-01	OL-F-5A-21-CCP-02	OL-F-5A-21-CCP-02
			Sampled	5/20/2021	5/20/2021	5/20/2021	5/20/2021	5/20/2021	5/20/2021	5/20/2021	6/7/2021	6/7/2021
			Lab Sample ID	B7553_20758_001	553_20972_DF_001-	JD78163-1	B7553_004	B7553_20758_004	553_20953_DF_004-	JD78163-4	B7557_004	B7557_20841_004
			Taxonomic	CCP	CCP	CCP	WALL	WALL	WALL	WALL	CCP	CCP
			Age (yrs)	5	5	5	6	6	6	6	4	4
			Gender	M	M	M	M	M	M	M	M	M
			Length (mm)	705	705	705	510	510	510	510	656	656
			Weight (g)	5376	5376	5376	1909	1909	1909	1909	3586	3586
Method	Parameter Code	Parameter Name	Units									
ASTM D2216	MOISTURE-%	Percent Moisture	%				75.81				72.53	
SW3540	LIPIDS	%Lipids Determination	%	15.364				2.247				4.389
SW7471	7439-97-6	Mercury	mg/kg			0.29				0.55		
SW8081	118-74-1	Hexachlorobenzene	ug/kg			1.7				0.47		
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.8 U				10 U		
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.8 U				10 U		
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.8 U				10 U		
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.8 U				10 U		
SW8082	12672-29-6	Aroclor-1248	ug/kg			158				127		
SW8082	11097-69-1	Aroclor-1254	ug/kg			521				151		
SW8082	11096-82-5	Aroclor-1260	ug/kg			212				66.2		
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.8 U				10 U		
SW8082	PCB	Total PCBs	ug/kg			891				344		
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g		3.28 J				0.399 U			
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g		0.367 U				0.212 U			
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g		0.474 U				0.287 U			
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g		0.464 U				0.254 U			
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g		0.297 U				0.186 U			
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g		1.21 J				0.266 U			
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g		0.272 U				0.171 U			
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g		0.515 UJ				0.243 U			
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g		0.347 U				0.256 U			
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g		0.815 J				0.228 U			
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g		0.764 J				0.186 U			
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g		0.3 U				0.204 U			
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g		2.4 J				0.322 J			
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g		0.395 U				0.241 U			
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g		5.39				0.693			
SW8290	3268-87-9	OCDD	pg/g		3.33 J				0.291 U			
SW8290	39001-02-0	OCDF	pg/g		0.537 U				0.227 U			
SW8290	HpCDD	Total Hepta-Dixons	pg/g		3.28				0.399 U			
SW8290	HpCDF	Total HPCDF	pg/g		0.415 U				0.246 U			
SW8290	HxCDD	Total HxCDD	pg/g		1.21 J				0.253 U			
SW8290	HxCDF	Total HxCDF	pg/g		0.301 U				0.201 U			
SW8290	PeCDD	Total PECDD	pg/g		0.815 J				0.228 U			
SW8290	PeCDF	Total PECDF	pg/g		3.17 J				0.322 J			
SW8290	TCDD	Total TCDD	pg/g		0.395 U				0.241 U			
SW8290	TCDF	Total TCDF	pg/g		6.28 J				0.693			

			Location ID	OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A	
			Field Sample ID	OL-F-3309-07F		OL-F-3309-11F		OL-F-3309-11F		OL-F-3309-11F		OL-F-3309-12F		OL-F-3309-12F		OL-F-3309-12F		OL-F-3309-12F		OL-F-3309-13F	
			Sample Name	OL-F-5A-21-CCP-02		OL-F-5A-21-SMB-01		OL-F-5A-21-SMB-01		OL-F-5A-21-SMB-01		OL-F-5A-21-SMB-02		OL-F-5A-21-SMB-02		OL-F-5A-21-SMB-02		OL-F-5A-21-SMB-02		OL-F-5A-21-SMB-03	
			Sampled	6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021	
			Lab Sample ID	JD81415-4		B7556_012		B7556_21016_012		JD85967-12		B7554_012		B7554_20790_012		554_20957_DF_012-		JD80342-12		B7553_010	
			Taxonomic	CCP		SMB		SMB		SMB		SMB		SMB		SMB		SMB		SMB	
			Age (yrs)	4		9+		9+		9+		5+		5+		5+		5+		11	
			Gender	M		M		M		M		F		F		F		F		F	
			Length (mm)	656		456		456		456		434		434		434		434		469	
			Weight (g)	3586		1446		1446		1446		1221		1221		1221		1221		1403	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%			77.45						74.35								76.88	
SW3540	LIPIDS	%Lipids Determination	%					1.379						2.174	J-						
SW7471	7439-97-6	Mercury	mg/kg	0.32						1.6								0.67			
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.24	J-					0.2								0.25			
SW8082	12674-11-2	Aroclor-1016	ug/kg	9.8	UJ					10	U							9.6	U		
SW8082	11104-28-2	Aroclor-1221	ug/kg	9.8	UJ					10	U							9.6	U		
SW8082	11141-16-5	Aroclor-1232	ug/kg	9.8	UJ					10	U							9.6	U		
SW8082	53469-21-9	Aroclor-1242	ug/kg	9.8	UJ					10	U							9.6	U		
SW8082	12672-29-6	Aroclor-1248	ug/kg	55.4	J-					46.3								98			
SW8082	11097-69-1	Aroclor-1254	ug/kg	78.6	J					141								136			
SW8082	11096-82-5	Aroclor-1260	ug/kg	60.1	J					138								103			
SW8082	11100-14-4	Aroclor-1268	ug/kg	9.8	UJ					10	U							9.6	U		
SW8082	PCB	Total PCBs	ug/kg	194	J-					325								337			
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g													0.239	U				
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g													0.58	U				
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g													0.833	U				
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g													0.308	U				
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g													0.133	U				
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g													0.284	U				
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g													0.126	U				
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g														R				
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g													0.166	U				
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g													0.292	J				
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g													0.198	U				
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g													0.141	U				
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g													0.224	J				
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g													0.175	U				
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g													1.47	J				
SW8290	3268-87-9	OCDD	pg/g													0.326	UJ				
SW8290	39001-02-0	OCDF	pg/g													0.343	U				
SW8290	HpCDD	Total Hepta-Dixons	pg/g													0.239	U				
SW8290	HpCDF	Total HPCDF	pg/g													0.688	U				
SW8290	HxCDD	Total HxCDD	pg/g													0.3	U				
SW8290	HxCDF	Total HxCDF	pg/g													0.14	U				
SW8290	PeCDD	Total PECDD	pg/g													0.292	J				
SW8290	PeCDF	Total PECDF	pg/g													0.224	J				
SW8290	TCDD	Total TCDD	pg/g													0.175	U				
SW8290	TCDF	Total TCDF	pg/g													4.75	J				

		Location ID		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A		OL-F-5A	
		Field Sample ID		OL-F-3309-13F		OL-F-3309-13F		OL-F-3309-13F		OL-F-3309-14F		OL-F-3309-14F		OL-F-3309-14F		OL-F-3309-14F		OL-F-3309-15F		OL-F-3309-15F	
		Sample Name		OL-F-5A-21-SMB-03		OL-F-5A-21-SMB-03		OL-F-5A-21-SMB-03		OL-F-5A-21-WALL-02		OL-F-5A-21-WALL-02		OL-F-5A-21-WALL-02		OL-F-5A-21-WALL-02		OL-F-5A-21-WALL-03		OL-F-5A-21-WALL-03	
		Sampled		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021	
		Lab Sample ID		B7553_20758_010		553_20953_DF_010-		JD78163-10		B7554_013		B7554_20790_013		554_20957_DF_013-		JD80342-13		B7555_014		B7555_21051_014	
		Taxonomic		SMB		SMB		SMB		WALL		WALL		WALL		WALL		WALL		WALL	
		Age (yrs)		11		11		11		5+		5+		5+		5+		5+		5+	
		Gender		F		F		F		M		M		M		M		F		F	
		Length (mm)		469		469		469		501		501		501		501		535		535	
		Weight (g)		1403		1403		1403		1868		1868		1868		1868		1977		1977	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%							72.23								76.01			
SW3540	LIPIDS	%Lipids Determination	%	0.691								4.668	J-							1.589	
SW7471	7439-97-6	Mercury	mg/kg					0.99								1.1					
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.13	J							0.57					
SW8082	12674-11-2	Aroclor-1016	ug/kg					10	U							10	U				
SW8082	11104-28-2	Aroclor-1221	ug/kg					10	U							10	U				
SW8082	11141-16-5	Aroclor-1232	ug/kg					10	U							10	U				
SW8082	53469-21-9	Aroclor-1242	ug/kg					10	U							10	U				
SW8082	12672-29-6	Aroclor-1248	ug/kg					35.9								189					
SW8082	11097-69-1	Aroclor-1254	ug/kg					82.9								235					
SW8082	11096-82-5	Aroclor-1260	ug/kg					85.5								149					
SW8082	11100-14-4	Aroclor-1268	ug/kg					10	U							10	U				
SW8082	PCB	Total PCBs	ug/kg					204								573					
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g			0.244	U							0.53	U						
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g			0.164	U							0.728	U						
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g			0.177	U							0.964	U						
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g			0.296	U							0.583	UJ						
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g			0.155	U							0.378	UJ						
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g			0.284	U							0.637	UJ						
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g			0.164	U							0.34	U						
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g			0.279	U								R						
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g			0.209	U							0.6	UJ						
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g			0.251	J							0.505	UJ						
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g			0.232	U							0.353	UJ						
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g			0.165	U							0.41	UJ						
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g			0.581	J							0.517	J						
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g			0.354	U							0.408	UJ						
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g			0.828								1.39	J						
SW8290	3268-87-9	OCDD	pg/g			0.363	J							0.834	UJ						
SW8290	39001-02-0	OCDF	pg/g			0.31	U							0.818	U						
SW8290	HpCDD	Total Hepta-Dixons	pg/g			0.244	U							0.53	U						
SW8290	HpCDF	Total HPCDF	pg/g			0.17	U							0.821	U						
SW8290	HxCDD	Total HxCDD	pg/g			0.285	U							0.618	U						
SW8290	HxCDF	Total HxCDF	pg/g			0.172	U							0.416	U						
SW8290	PeCDD	Total PECDD	pg/g			0.251	J							0.505	U						
SW8290	PeCDF	Total PECDF	pg/g			0.581	J							0.517	J						
SW8290	TCDD	Total TCDD	pg/g			0.354	U							0.408	U						
SW8290	TCDF	Total TCDF	pg/g			0.828								1.39	J						

			Location ID	OL-F-5A	OL-F-5A	OL-F-5A	OL-F-5A	OL-F-5A	OL-F-5B	OL-F-5B	OL-F-5B	OL-F-5B
			Field Sample ID	OL-F-3309-15F	OL-F-3314-01F	OL-F-3314-01F	OL-F-3314-01F	OL-F-3314-01F	OL-F-3302-15F	OL-F-3302-15F	OL-F-3302-15F	OL-F-3306-01F
			Sample Name	OL-F-5A-21-WALL-03	OL-F-5A-21-CCP-03	OL-F-5A-21-CCP-03	OL-F-5A-21-CCP-03	OL-F-5A-21-CCP-03	OL-F-5B-21-WALL-01	OL-F-5B-21-WALL-01	OL-F-5B-21-WALL-01	OL-F-5B-21-CCP-01
			Sampled	6/7/2021	6/24/2021	6/24/2021	6/24/2021	6/24/2021	5/20/2021	5/20/2021	5/20/2021	6/3/2021
			Lab Sample ID	JD87136-14	B7553_018	B7553_20758_018	553_20953_DF_018-	JD78163-18	B7555_017	B7555_21051_017	JD87136-17	B7556_013
			Taxonomic	WALL	CCP	CCP	CCP	CCP	WALL	WALL	WALL	CCP
			Age (yrs)	5+	3+	3+	3+	3+	6+	6+	6+	5
			Gender	F	M	M	M	M	F	F	F	F
			Length (mm)	535	422	422	422	422	540	540	540	590
			Weight (g)	1977	1079	1079	1079	1079	2167	2167	2167	3140
Method	Parameter Code	Parameter Name	Units									
ASTM D2216	MOISTURE-%	Percent Moisture	%		71.58				75.38			75.24
SW3540	LIPIDS	%Lipids Determination	%			5.112				2.548		
SW7471	7439-97-6	Mercury	mg/kg	0.52				0.048			0.5	
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.21 J-				0.54			0.27 J-	
SW8082	12674-11-2	Aroclor-1016	ug/kg	10 U				10 U			9.8 U	
SW8082	11104-28-2	Aroclor-1221	ug/kg	10 U				10 U			9.8 U	
SW8082	11141-16-5	Aroclor-1232	ug/kg	10 U				10 U			9.8 U	
SW8082	53469-21-9	Aroclor-1242	ug/kg	10 U				10 U			9.8 U	
SW8082	12672-29-6	Aroclor-1248	ug/kg	45.7				168			114	
SW8082	11097-69-1	Aroclor-1254	ug/kg	67.7				75			126	
SW8082	11096-82-5	Aroclor-1260	ug/kg	29.5				45			59.2	
SW8082	11100-14-4	Aroclor-1268	ug/kg	10 U				10 U			9.8 U	
SW8082	PCB	Total PCBs	ug/kg	143				288			299	
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g				0.769 J					
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g				0.156 U					
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g				0.169 U					
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g				0.299 U					
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g				0.166 U					
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g				0.338 U					
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g				0.163 U					
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g				0.324 U					
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g				0.232 U					
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g				0.173 U					
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g				0.199 U					
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g				0.174 U					
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g				0.181 U					
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g				0.307 U					
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g				1.3					
SW8290	3268-87-9	OCDD	pg/g				0.914 J					
SW8290	39001-02-0	OCDF	pg/g				0.36 U					
SW8290	HpCDD	Total Hepta-Dixons	pg/g				0.769					
SW8290	HpCDF	Total HPCDF	pg/g				0.162 U					
SW8290	HxCDD	Total HxCDD	pg/g				0.32 U					
SW8290	HxCDF	Total HxCDF	pg/g				0.181 U					
SW8290	PeCDD	Total PECDD	pg/g				0.173 U					
SW8290	PeCDF	Total PECDF	pg/g				0.19 U					
SW8290	TCDD	Total TCDD	pg/g				0.307 U					
SW8290	TCDF	Total TCDF	pg/g				1.3					

			Location ID	OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B	
			Field Sample ID	OL-F-3306-01F		OL-F-3306-01F		OL-F-3306-01F		OL-F-3306-02F		OL-F-3306-02F		OL-F-3306-02F		OL-F-3306-03F		OL-F-3306-03F		OL-F-3306-03F	
			Sample Name	OL-F-5B-21-CCP-01		OL-F-5B-21-CCP-01		OL-F-5B-21-CCP-01		OL-F-5B-21-CCP-02		OL-F-5B-21-CCP-02		OL-F-5B-21-CCP-02		OL-F-5B-21-CCP-03		OL-F-5B-21-CCP-03		OL-F-5B-21-CCP-03	
			Sampled	6/3/2021		6/3/2021		6/3/2021		6/3/2021		6/3/2021		6/3/2021		6/3/2021		6/3/2021		6/3/2021	
			Lab Sample ID	B7556_21016_013		7556_21016_DF_013-		JD85967-13		B7557_002		B7557_20841_002		JD81415-2		B7557_003		B7557_20841_003		JD81415-3	
			Taxonomic	CCP		CCP		CCP		CCP		CCP		CCP		CCP		CCP		CCP	
			Age (yrs)	5		5		5		4+		4+		4+		3		3		3	
			Gender	F		F		F		F		F		F		M		M		M	
			Length (mm)	590		590		590		590		590		590		551		551		551	
			Weight (g)	3140		3140		3140		3133		3133		3133		2051		2051		2051	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%							68.11						72.41					
SW3540	LIPIDS	%Lipids Determination	%	2.787								9.298						4.793			
SW7471	7439-97-6	Mercury	mg/kg					0.17						0.084						0.12	
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.13	J					0.44	J-					0.28	J-
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.8	U					9.6	UJ					9.3	UJ
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.8	U					9.6	UJ					9.3	UJ
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.8	U					9.6	UJ					9.3	UJ
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.8	U					9.6	UJ					9.3	UJ
SW8082	12672-29-6	Aroclor-1248	ug/kg					6.7	J					22.4	J-					48.1	J-
SW8082	11097-69-1	Aroclor-1254	ug/kg					9.1	J					29.3	J-					38.4	J-
SW8082	11096-82-5	Aroclor-1260	ug/kg					9.8	U					18.4	J-					31.1	J-
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.8	U					9.6	UJ					9.3	UJ
SW8082	PCB	Total PCBs	ug/kg					15.8						70.1	J-					118	J-
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g			0.336	J														
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g			0.0912	U														
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g			0.124	U														
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g			0.225	U														
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g			0.119	U														
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g			0.26	U														
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g			0.121	U														
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g			0.224	U														
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g			0.152	U														
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g			0.222	UJ														
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g			0.138	U														
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g			0.124	U														
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g			0.135	U														
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g			0.385	U														
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g			0.67	J														
SW8290	3268-87-9	OCDD	pg/g			0.509	J														
SW8290	39001-02-0	OCDF	pg/g			0.165	U														
SW8290	HpCDD	Total Hepta-Dixons	pg/g			0.336	J														
SW8290	HpCDF	Total HPCDF	pg/g			0.106	U														
SW8290	HxCDD	Total HxCDD	pg/g			0.236	U														
SW8290	HxCDF	Total HxCDF	pg/g			0.128	U														
SW8290	PeCDD	Total PECDD	pg/g			0.222	U														
SW8290	PeCDF	Total PECDF	pg/g			0.136	U														
SW8290	TCDD	Total TCDD	pg/g			0.385	U														
SW8290	TCDF	Total TCDF	pg/g			0.874	J														

			Location ID	OL-F-5B	OL-F-5B	OL-F-5B	OL-F-5B	OL-F-5B	OL-F-5B	OL-F-5B	OL-F-5B	OL-F-5B
			Field Sample ID	OL-F-3309-01F	OL-F-3309-01F	OL-F-3309-01F	OL-F-3309-01F	OL-F-3309-02F	OL-F-3309-02F	OL-F-3309-02F	OL-F-3309-08F	OL-F-3309-08F
			Sample Name	OL-F-5B-21-WALL-02	OL-F-5B-21-WALL-02	OL-F-5B-21-WALL-02	OL-F-5B-21-WALL-02	OL-F-5B-21-WALL-03	OL-F-5B-21-WALL-03	OL-F-5B-21-WALL-03	OL-F-5B-21-PKSD-01	OL-F-5B-21-PKSD-01
			Sampled	6/4/2021	6/4/2021	6/4/2021	6/4/2021	6/4/2021	6/4/2021	6/4/2021	6/7/2021	6/7/2021
			Lab Sample ID	B7553_011	B7553_20758_011	553_20953_DF_011-	JD78163-11	B7555_015	B7555_21051_015	JD87136-15	B7553_008	B7553_20758_008
			Taxonomic	WALL	WALL	WALL	WALL	WALL	WALL	WALL	PKSD	PKSD
			Age (yrs)	5	5	5	5	8+	8+	8+	5+	5+
			Gender	F	F	F	F	M	M	M	M	M
			Length (mm)	524	524	524	524	535	535	535	203	203
			Weight (g)	1748	1748	1748	1748	1997	1997	1997	202	202
Method	Parameter Code	Parameter Name	Units									
ASTM D2216	MOISTURE-%	Percent Moisture	%	72.5				69.07			79.26	
SW3540	LIPIDS	%Lipids Determination	%		3.799				4.012			0.315
SW7471	7439-97-6	Mercury	mg/kg				0.53			1.4		
SW8081	118-74-1	Hexachlorobenzene	ug/kg				0.76			0.61 J-		
SW8082	12674-11-2	Aroclor-1016	ug/kg				10 U			10 U		
SW8082	11104-28-2	Aroclor-1221	ug/kg				10 U			10 U		
SW8082	11141-16-5	Aroclor-1232	ug/kg				10 U			10 U		
SW8082	53469-21-9	Aroclor-1242	ug/kg				10 U			10 U		
SW8082	12672-29-6	Aroclor-1248	ug/kg				191			287		
SW8082	11097-69-1	Aroclor-1254	ug/kg				237			465		
SW8082	11096-82-5	Aroclor-1260	ug/kg				132			202		
SW8082	11100-14-4	Aroclor-1268	ug/kg				10 U			10 U		
SW8082	PCB	Total PCBs	ug/kg				560			954		
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g			0.184 U						
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g			0.148 U						
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g			0.169 U						
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g			0.284 U						
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g			0.164 U						
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g			0.277 U						
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g			0.163 U						
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g			0.229 U						
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g			0.191 U						
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g			0.421 J						
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g			0.213 U						
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g			0.165 U						
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g			0.759 J						
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g			0.307 U						
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g			1.06 J						
SW8290	3268-87-9	OCDD	pg/g			0.325 U						
SW8290	39001-02-0	OCDF	pg/g			0.265 U						
SW8290	HpCDD	Total Hepta-Dixons	pg/g			0.184 U						
SW8290	HpCDF	Total HPCDF	pg/g			0.158 U						
SW8290	HxCDD	Total HxCDD	pg/g			0.26 U						
SW8290	HxCDF	Total HxCDF	pg/g			0.171 U						
SW8290	PeCDD	Total PECDD	pg/g			0.421 J						
SW8290	PeCDF	Total PECDF	pg/g			0.759						
SW8290	TCDD	Total TCDD	pg/g			0.307 U						
SW8290	TCDF	Total TCDF	pg/g			1.06 J						

		Location ID		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B	
		Field Sample ID		OL-F-3309-08F		OL-F-3309-08F		OL-F-3309-09F		OL-F-3309-09F		OL-F-3309-09F		OL-F-3309-09F		OL-F-3309-10F		OL-F-3309-10F		OL-F-3309-10F	
		Sample Name		OL-F-5B-21-PKSD-01		OL-F-5B-21-PKSD-01		OL-F-5B-21-PKSD-02		OL-F-5B-21-PKSD-02		OL-F-5B-21-PKSD-02		OL-F-5B-21-PKSD-02		OL-F-5B-21-PKSD-03		OL-F-5B-21-PKSD-03		OL-F-5B-21-PKSD-03	
		Sampled		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021		6/7/2021	
		Lab Sample ID		553_20972_DF_008-		JD78163-8		B7554_011		B7554_20790_011		554_20972_DF_011-		JD80342-11		B7553_009		B7553_20758_009		553_20972_DF_009-	
		Taxonomic		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD		PKSD	
		Age (yrs)		5+		5+		3+		3+		3+		3+		4		4		4	
		Gender		M		M		M		M		M		M		M		M		M	
		Length (mm)		203		203		167		167		167		167		172		172		172	
		Weight (g)		202		202		123		123		123		123		127		127		127	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%					78.25								78.06					
SW3540	LIPIDS	%Lipids Determination	%							0.345	J-							0.44			
SW7471	7439-97-6	Mercury	mg/kg			0.25								0.29							
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.2	U							0.2	U						
SW8082	12674-11-2	Aroclor-1016	ug/kg			10	U							10	U						
SW8082	11104-28-2	Aroclor-1221	ug/kg			10	U							10	U						
SW8082	11141-16-5	Aroclor-1232	ug/kg			10	U							10	U						
SW8082	53469-21-9	Aroclor-1242	ug/kg			10	U							10	U						
SW8082	12672-29-6	Aroclor-1248	ug/kg			10	U							10	U						
SW8082	11097-69-1	Aroclor-1254	ug/kg			7.9	J							10	U						
SW8082	11096-82-5	Aroclor-1260	ug/kg			7.8	J							10	U						
SW8082	11100-14-4	Aroclor-1268	ug/kg			10	U							10	U						
SW8082	PCB	Total PCBs	ug/kg			15.7								10	U						
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g	0.189	U							0.323	U							0.148	U
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g	0.717	J							0.198	U							0.126	U
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g	0.226	U							0.281	U							0.182	U
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g	0.279	U							0.298	U							0.247	U
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g	0.203	U							0.191	U							0.164	U
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g	0.288	U							0.283	U							0.239	U
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g	0.2	U							0.205	U							0.167	U
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g	0.288	UJ							0.265	UJ							0.245	UJ
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g	0.259	U							0.246	U							0.191	U
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g	0.235	U							0.34	U							0.228	U
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g	0.158	U							0.24	U							0.148	U
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g	0.218	U							0.207	U							0.173	U
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g	0.159	U							0.222	U							0.147	U
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g	0.177	U							0.208	U							0.17	U
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g	0.14	U							0.246	U							0.194	U
SW8290	3268-87-9	OCDD	pg/g	0.294	U							0.5	UJ							0.336	U
SW8290	39001-02-0	OCDF	pg/g	0.228	U							0.368	U							0.389	U
SW8290	HpCDD	Total Hepta-Dixons	pg/g	0.189	U							0.323	U							0.148	U
SW8290	HpCDF	Total HPCDF	pg/g	0.717	J							0.235	U							0.151	U
SW8290	HxCDD	Total HxCDD	pg/g	0.285	U							0.28	U							0.243	U
SW8290	HxCDF	Total HxCDF	pg/g	0.218	U							0.211	U							0.173	U
SW8290	PeCDD	Total PECDD	pg/g	0.235	U							0.34	U							0.228	U
SW8290	PeCDF	Total PECDF	pg/g	0.158	U							0.231	U							0.147	U
SW8290	TCDD	Total TCDD	pg/g	0.177	U							0.208	U							0.17	U
SW8290	TCDF	Total TCDF	pg/g	0.14	U							0.246	U							0.194	U

			Location ID	OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B	
			Field Sample ID	OL-F-3309-10F		OL-F-3314-05F		OL-F-3314-05F		OL-F-3314-05F		OL-F-3314-05F		OL-F-3314-06F		OL-F-3314-06F		OL-F-3314-06F		OL-F-3314-06F	
			Sample Name	OL-F-5B-21-PKSD-03		OL-F-5B-21-SMB-01		OL-F-5B-21-SMB-01		OL-F-5B-21-SMB-01		OL-F-5B-21-SMB-01		OL-F-5B-21-SMB-02		OL-F-5B-21-SMB-02		OL-F-5B-21-SMB-02		OL-F-5B-21-SMB-02	
			Sampled	6/7/2021		7/16/2021		7/16/2021		7/16/2021		7/16/2021		7/16/2021		7/16/2021		7/16/2021		7/16/2021	
			Lab Sample ID	JD78163-9		B7553_019		B7553_20758_019		553_20953_DF_019-		JD78163-19		B7553_020		B7553_20758_020		553_20953_DF_020-		JD78163-20	
			Taxonomic	PKSD		SMB		SMB		SMB		SMB		SMB		SMB		SMB		SMB	
			Age (yrs)	4		9		9		9		9		9+		9+		9+		9+	
			Gender	M		M		M		M		M		M		M		M		M	
			Length (mm)	172		490		490		490		490		490		490		490		490	
			Weight (g)	127		2021		2021		2021		2021		1771		1771		1771		1771	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%			72.79								74.13							
SW3540	LIPIDS	%Lipids Determination	%					2.812								2.925					
SW7471	7439-97-6	Mercury	mg/kg	0.2								0.45								0.8	
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.2	U							0.34								0.4	
SW8082	12674-11-2	Aroclor-1016	ug/kg	10	U							9.8	U							9.8	U
SW8082	11104-28-2	Aroclor-1221	ug/kg	10	U							9.8	U							9.8	U
SW8082	11141-16-5	Aroclor-1232	ug/kg	10	U							9.8	U							9.8	U
SW8082	53469-21-9	Aroclor-1242	ug/kg	10	U							9.8	U							9.8	U
SW8082	12672-29-6	Aroclor-1248	ug/kg	10	U							103								168	
SW8082	11097-69-1	Aroclor-1254	ug/kg	10.5								191								435	
SW8082	11096-82-5	Aroclor-1260	ug/kg	8.4	J							145								277	
SW8082	11100-14-4	Aroclor-1268	ug/kg	10	U							9.8	U							9.8	U
SW8082	PCB	Total PCBs	ug/kg	18.9								439								880	
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g							0.391	U							0.283	U		
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g							0.325	U							0.299	J		
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g							0.332	U							0.256	U		
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g							0.435	U							0.265	U		
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g							0.288	U							0.165	U		
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g							0.432	U							0.269	U		
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g							0.243	U							0.147	U		
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g							0.417	U							0.276	U		
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g							0.281	U							0.202	U		
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g							0.569	J							0.275	J		
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g							0.297	U							0.175	U		
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g							0.236	U							0.161	U		
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g							0.494	J							0.701	J		
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g							0.459	U							0.157	U		
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g							1.22								0.576	J		
SW8290	3268-87-9	OCDD	pg/g							0.658	U							0.364	U		
SW8290	39001-02-0	OCDF	pg/g							0.444	U							0.325	U		
SW8290	HpCDD	Total Hepta-Dixons	pg/g							0.391	U							0.283	U		
SW8290	HpCDF	Total HPCDF	pg/g							0.329	U							0.299	J		
SW8290	HxCDD	Total HxCDD	pg/g							0.426	U							0.269	U		
SW8290	HxCDF	Total HxCDF	pg/g							0.261	U							0.167	U		
SW8290	PeCDD	Total PECDD	pg/g							0.569	J							0.275	J		
SW8290	PeCDF	Total PECDF	pg/g							0.494	J							0.701			
SW8290	TCDD	Total TCDD	pg/g							0.459	U							0.157	U		
SW8290	TCDF	Total TCDF	pg/g							1.22								0.576	J		

Location ID	OL-F-5B		OL-F-5B		OL-F-5B		OL-F-5B		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A	
Field Sample ID	OL-F-3314-07F		OL-F-3314-07F		OL-F-3314-07F		OL-F-3314-07F		OL-F-3303-03F		OL-F-3303-03F		OL-F-3303-03F		OL-F-3303-07F		OL-F-3303-07F	
Sample Name	OL-F-5B-21-SMB-03		OL-F-5B-21-SMB-03		OL-F-5B-21-SMB-03		OL-F-5B-21-SMB-03		OL-F-6A-21-WALL-01		OL-F-6A-21-WALL-01		OL-F-6A-21-WALL-01		OL-F-6A-21-PKSD-01		OL-F-6A-21-PKSD-01	
Sampled	7/16/2021		7/16/2021		7/16/2021		7/16/2021		5/24/2021		5/24/2021		5/24/2021		5/25/2021		5/25/2021	
Lab Sample ID	B7554_018		B7554_20790_018		554_20957_DF_018-		JD80342-18		B7555_001		B7555_21051_001		JD87136-1		B7555_21051_009		JD87136-9	
Taxonomic	SMB		SMB		SMB		SMB		WALL		WALL		WALL		PKSD		PKSD	
Age (yrs)	7+		7+		7+		7+		9+		9+		9+		3+		3+	
Gender	F		F		F		F		F		F		F		M		M	
Length (mm)	495		495		495		495		540		540		540		130		130	
Weight (g)	2087		2087		2087		2087		1710		1710		1710		41		41	

Method	Parameter Code	Parameter Name	Units	OL-F-5B-21-SMB-03 (B7554_018)		OL-F-5B-21-SMB-03 (B7554_20790_018)		OL-F-5B-21-SMB-03 (554_20957_DF_018-)		OL-F-5B-21-SMB-03 (JD80342-18)	
ASTM D2216	MOISTURE-%	Percent Moisture	%	72.6							
SW3540	LIPIDS	%Lipids Determination	%			3.378	J-				
SW7471	7439-97-6	Mercury	mg/kg							0.65	
SW8081	118-74-1	Hexachlorobenzene	ug/kg							0.37	
SW8082	12674-11-2	Aroclor-1016	ug/kg							9.8	U
SW8082	11104-28-2	Aroclor-1221	ug/kg							9.8	U
SW8082	11141-16-5	Aroclor-1232	ug/kg							9.8	U
SW8082	53469-21-9	Aroclor-1242	ug/kg							9.8	U
SW8082	12672-29-6	Aroclor-1248	ug/kg							139	
SW8082	11097-69-1	Aroclor-1254	ug/kg							180	
SW8082	11096-82-5	Aroclor-1260	ug/kg							151	
SW8082	11100-14-4	Aroclor-1268	ug/kg							9.8	U
SW8082	PCB	Total PCBs	ug/kg							470	
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g					0.229	U		
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g					0.292	U		
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g					0.412	U		
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g					0.306	U		
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g					0.134	U		
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g					0.265	U		
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g					0.135	U		
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g						R		
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g					0.184	U		
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g					0.183	J		
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g					0.129	U		
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g					0.144	U		
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g					0.843	J		
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g					0.164	U		
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g					0.916	J		
SW8290	3268-87-9	OCDD	pg/g					0.371	UJ		
SW8290	39001-02-0	OCDF	pg/g					0.361	U		
SW8290	HpCDD	Total Hepta-Dixons	pg/g					0.229	U		
SW8290	HpCDF	Total HPCDF	pg/g					0.341	U		
SW8290	HxCDD	Total HxCDD	pg/g					0.286	U		
SW8290	HxCDF	Total HxCDF	pg/g					0.147	U		
SW8290	PeCDD	Total PECDD	pg/g					0.183	J		
SW8290	PeCDF	Total PECDF	pg/g					0.843			
SW8290	TCDD	Total TCDD	pg/g					0.164	U		
SW8290	TCDF	Total TCDF	pg/g					1.33	J		

Method	Parameter Code	Parameter Name	Units	OL-F-6A-21-WALL-01 (B7555_001)		OL-F-6A-21-WALL-01 (B7555_21051_001)		OL-F-6A-21-WALL-01 (JD87136-1)		OL-F-6A-21-PKSD-01 (B7555_21051_009)		OL-F-6A-21-PKSD-01 (JD87136-9)	
ASTM D2216	MOISTURE-%	Percent Moisture	%	77.01									
SW3540	LIPIDS	%Lipids Determination	%			1.179				0.416			
SW7471	7439-97-6	Mercury	mg/kg					0.76				0.04	
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.15	J			0.08	J
SW8082	12674-11-2	Aroclor-1016	ug/kg					10	U			9.8	U
SW8082	11104-28-2	Aroclor-1221	ug/kg					10	U			9.8	U
SW8082	11141-16-5	Aroclor-1232	ug/kg					10	U			9.8	U
SW8082	53469-21-9	Aroclor-1242	ug/kg					10	U			9.8	U
SW8082	12672-29-6	Aroclor-1248	ug/kg					30.7				14	
SW8082	11097-69-1	Aroclor-1254	ug/kg					60.7				18.3	
SW8082	11096-82-5	Aroclor-1260	ug/kg					41				7.9	J
SW8082	11100-14-4	Aroclor-1268	ug/kg					10	U			9.8	U
SW8082	PCB	Total PCBs	ug/kg					132				40.2	
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g										
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g										
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g										
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g										
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g										
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g										
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g										
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g										
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g										
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g										
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g										
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g										
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g										
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g										
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g										
SW8290	3268-87-9	OCDD	pg/g										
SW8290	39001-02-0	OCDF	pg/g										
SW8290	HpCDD	Total Hepta-Dixons	pg/g										
SW8290	HpCDF	Total HPCDF	pg/g										
SW8290	HxCDD	Total HxCDD	pg/g										
SW8290	HxCDF	Total HxCDF	pg/g										
SW8290	PeCDD	Total PECDD	pg/g										
SW8290	PeCDF	Total PECDF	pg/g										
SW8290	TCDD	Total TCDD	pg/g										
SW8290	TCDF	Total TCDF	pg/g										

			Location ID	OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A	
			Field Sample ID	OL-F-3303-08F		OL-F-3303-08F		OL-F-3305-01F		OL-F-3305-01F		OL-F-3305-01F		OL-F-3305-01F		OL-F-3305-02F		OL-F-3305-02F		OL-F-3305-02F	
			Sample Name	OL-F-6A-21-PKSD-02		OL-F-6A-21-PKSD-02		OL-F-6A-21-CCP-01		OL-F-6A-21-CCP-01		OL-F-6A-21-CCP-01		OL-F-6A-21-CCP-01		OL-F-6A-21-CCP-02		OL-F-6A-21-CCP-02		OL-F-6A-21-CCP-02	
			Sampled	5/25/2021		5/25/2021		6/1/2021		6/1/2021		6/1/2021		6/1/2021		6/1/2021		6/1/2021		6/1/2021	
			Lab Sample ID	B7555_21051_010		JD87136-10		B7553_014		B7553_20758_014		553_20953_DF_014-		JD78163-14		B7556_011		B7556_21016_011		JD85967-11	
			Taxonomic	PKSD		PKSD		CCP		CCP		CCP		CCP		CCP		CCP		CCP	
			Age (yrs)	4		4		6+		6+		6+		6+		3+		3+		3+	
			Gender	M		M		F		F		F		F		F		F		F	
			Length (mm)	135		135		677		677		677		677		625		625		625	
			Weight (g)	46		46		5067		5067		5067		5067		3753		3753		3753	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%					67.32								68.36					
SW3540	LIPIDS	%Lipids Determination	%	0.184						9.798								10.5			
SW7471	7439-97-6	Mercury	mg/kg			0.054								0.17						0.093	
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.19	UJ							0.78						0.89	
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.6	U							9.8	U					9.8	U
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.6	U							9.8	U					9.8	U
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.6	U							9.8	U					9.8	U
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.6	U							9.8	U					9.8	U
SW8082	12672-29-6	Aroclor-1248	ug/kg			12.2								107						247	
SW8082	11097-69-1	Aroclor-1254	ug/kg			10								193						121	
SW8082	11096-82-5	Aroclor-1260	ug/kg			3.8	J							229						140	J
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.6	U							9.8	U					9.8	U
SW8082	PCB	Total PCBs	ug/kg			26								529						508	
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g									2.02	J								
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g									0.808	J								
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g									0.159	U								
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g									0.629	J								
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g									0.177	U								
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g									0.791	J								
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g									0.156	U								
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g									0.246	J								
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g									0.158	U								
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g									0.367	J								
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g									0.175	U								
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g									0.185	U								
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g									1.05	J								
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g									0.217	U								
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g									2.12									
SW8290	3268-87-9	OCDD	pg/g									2.29	J								
SW8290	39001-02-0	OCDF	pg/g									0.304	U								
SW8290	HpCDD	Total Hepta-Dixons	pg/g									2.02									
SW8290	HpCDF	Total HPCDF	pg/g									0.808									
SW8290	HxCDD	Total HxCDD	pg/g									1.67	J								
SW8290	HxCDF	Total HxCDF	pg/g									0.168	U								
SW8290	PeCDD	Total PECDD	pg/g									0.367	J								
SW8290	PeCDF	Total PECDF	pg/g									1.05	J								
SW8290	TCDD	Total TCDD	pg/g									0.217	U								
SW8290	TCDF	Total TCDF	pg/g									2.12									

Location ID				OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A	
Field Sample ID				OL-F-3305-03F		OL-F-3305-03F		OL-F-3305-03F		OL-F-3305-04F		OL-F-3305-04F		OL-F-3305-04F		OL-F-3305-04F		OL-F-3305-05F		OL-F-3305-05F	
Sample Name				OL-F-6A-21-CCP-03		OL-F-6A-21-CCP-03		OL-F-6A-21-CCP-03		OL-F-6A-21-SMB-01		OL-F-6A-21-SMB-01		OL-F-6A-21-SMB-01		OL-F-6A-21-SMB-01		OL-F-6A-21-WALL-02		OL-F-6A-21-WALL-02	
Sampled				6/1/2021		6/1/2021		6/1/2021		6/1/2021		6/1/2021		6/1/2021		6/1/2021		6/1/2021		6/1/2021	
Lab Sample ID				B7557_001		B7557_20841_001		JD81415-1		B7554_009		B7554_20790_009		554_20957_DF_009-		JD80342-9		B7554_015		B7554_20790_015	
Taxonomic				CCP		CCP		CCP		SMB		SMB		SMB		SMB		WALL		WALL	
Age (yrs)				3		3		3		6		6		6		6		3+		3+	
Gender				M		M		M		F		F		F		F		F		F	
Length (mm)				378		378		378		436		436		436		436		543		543	
Weight (g)				828		828		828		1252		1252		1252		1252		1921		1921	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%	75.41						74.54								73.88			
SW3540	LIPIDS	%Lipids Determination	%			2.597						2.072	J-							3.419	J-
SW7471	7439-97-6	Mercury	mg/kg					0.068								0.55					
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.23	J-							0.25					
SW8082	12674-11-2	Aroclor-1016	ug/kg					10	UJ							9.6	U				
SW8082	11104-28-2	Aroclor-1221	ug/kg					10	UJ							9.6	U				
SW8082	11141-16-5	Aroclor-1232	ug/kg					10	UJ							9.6	U				
SW8082	53469-21-9	Aroclor-1242	ug/kg					10	UJ							9.6	U				
SW8082	12672-29-6	Aroclor-1248	ug/kg					155	J-							131					
SW8082	11097-69-1	Aroclor-1254	ug/kg					57.7	J-							145					
SW8082	11096-82-5	Aroclor-1260	ug/kg					23.4	J-							105					
SW8082	11100-14-4	Aroclor-1268	ug/kg					10	UJ							9.6	U				
SW8082	PCB	Total PCBs	ug/kg					236	J-							381					
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g											0.317	U						
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g											0.495	U						
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g											0.761	U						
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g											0.248	U						
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g											0.154	U						
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g											0.266	U						
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g											0.148	U						
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g												R						
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g											0.196	U						
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g											0.326	J						
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g											0.125	U						
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g											0.165	U						
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g											0.595	J						
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g											0.222	U						
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g											1.13							
SW8290	3268-87-9	OCDD	pg/g											0.359	UJ						
SW8290	39001-02-0	OCDF	pg/g											0.249	U						
SW8290	HpCDD	Total Hepta-Dixons	pg/g											0.317	U						
SW8290	HpCDF	Total HPCDF	pg/g											0.612	U						
SW8290	HxCDD	Total HxCDD	pg/g											0.261	U						
SW8290	HxCDF	Total HxCDF	pg/g											0.163	U						
SW8290	PeCDD	Total PECDD	pg/g											0.326	J						
SW8290	PeCDF	Total PECDF	pg/g											0.595							
SW8290	TCDD	Total TCDD	pg/g											0.222	U						
SW8290	TCDF	Total TCDF	pg/g											1.69							

			Location ID	OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A	
			Field Sample ID	OL-F-3305-05F		OL-F-3305-05F		OL-F-3305-06F		OL-F-3305-06F		OL-F-3305-06F		OL-F-3312-04F		OL-F-3312-04F		OL-F-3316-04F		OL-F-3316-04F	
			Sample Name	OL-F-6A-21-WALL-02		OL-F-6A-21-WALL-02		OL-F-6A-21-WALL-03		OL-F-6A-21-WALL-03		OL-F-6A-21-WALL-03		OL-F-6A-21-PKSD-03		OL-F-6A-21-PKSD-03		OL-F-6A-21-SMB-02		OL-F-6A-21-SMB-02	
			Sampled	6/1/2021		6/1/2021		6/1/2021		6/1/2021		6/1/2021		6/23/2021		6/23/2021		7/19/2021		7/19/2021	
			Lab Sample ID	554_20957_DF_015-		JD80342-15		B7555_018		B7555_21051_018		JD87136-18		B7555_21051_019		JD87136-19		B7556_020		B7556_21016_020	
			Taxonomic	WALL		WALL		WALL		WALL		WALL		PKSD		PKSD		SMB		SMB	
			Age (yrs)	3+		3+		3+		3+		3+		3+		3+		10		10	
			Gender	F		F		F		F		F		M		M		F		F	
			Length (mm)	543		543		508		508		508		137		137		476		476	
			Weight (g)	1921		1921		1891		1891		1891		51		51		1791		1791	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%					75.58										74.95			
SW3540	LIPIDS	%Lipids Determination	%							2.148				0.116						2.704	
SW7471	7439-97-6	Mercury	mg/kg			0.88						0.012	U			0.014	U				
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.33						0.34	J-			0.2	UJ				
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.4	U					10	U			9.8	U				
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.4	U					10	U			9.8	U				
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.4	U					10	U			9.8	U				
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.4	U					10	U			9.8	U				
SW8082	12672-29-6	Aroclor-1248	ug/kg			120						83.6				29.8					
SW8082	11097-69-1	Aroclor-1254	ug/kg			124						126				9.8	U				
SW8082	11096-82-5	Aroclor-1260	ug/kg			83.2						52.5				9.8	U				
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.4	U					10	U			9.8	U				
SW8082	PCB	Total PCBs	ug/kg			327						262				29.8					
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g	0.483	U																
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g	0.722	U																
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g	0.92	U																
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g	0.757	U																
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g	0.459	U																
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g	0.676	U																
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g	0.409	U																
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g		R																
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g	0.55	U																
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g	0.319	J																
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g	0.31	U																
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g	0.431	U																
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g	0.43	J																
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g	0.422	U																
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g	1.1																	
SW8290	3268-87-9	OCDD	pg/g	1.19	UJ																
SW8290	39001-02-0	OCDF	pg/g	0.552	U																
SW8290	HpCDD	Total Hepta-Dixons	pg/g	0.483	U																
SW8290	HpCDF	Total HPCDF	pg/g	0.807	U																
SW8290	HxCDD	Total HxCDD	pg/g	0.74	U																
SW8290	HxCDF	Total HxCDF	pg/g	0.454	U																
SW8290	PeCDD	Total PECDD	pg/g	0.319	J																
SW8290	PeCDF	Total PECDF	pg/g	0.43	J																
SW8290	TCDD	Total TCDD	pg/g	0.422	U																
SW8290	TCDF	Total TCDF	pg/g	3.64																	

Location ID				OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-6A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A	
Field Sample ID				OL-F-3316-04F		OL-F-3316-04F		OL-F-3316-05F		OL-F-3316-05F		OL-F-3316-05F		OL-F-3302-01F		OL-F-3302-01F		OL-F-3302-01F		OL-F-3302-01F	
Sample Name				OL-F-6A-21-SMB-02		OL-F-6A-21-SMB-02		OL-F-6A-21-SMB-03		OL-F-6A-21-SMB-03		OL-F-6A-21-SMB-03		OL-F-7A-21-WALL-01		OL-F-7A-21-WALL-01		OL-F-7A-21-WALL-01		OL-F-7A-21-WALL-01	
Sampled				7/19/2021		7/19/2021		7/19/2021		7/19/2021		7/19/2021		5/17/2021		5/17/2021		5/17/2021		5/17/2021	
Lab Sample ID				556_21016_DF_020-		JD85967-20		B7557_019		B7557_20841_019		JD81415-19		B7556_005		B7556_21016_005		556_21016_DF_005-		JD85967-5	
Taxonomic				SMB		SMB		SMB		SMB		SMB		WALL		WALL		WALL		WALL	
Age (yrs)				10		10		8		8		8		7+		7+		7+		7+	
Gender				F		F		M		M		M		M		M		M		M	
Length (mm)				476		476		435		435		435		555		555		555		555	
Weight (g)				1791		1791		1365		1365		1365		2293		2293		2293		2293	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%					73.42						75.29							
SW3540	LIPIDS	%Lipids Determination	%							1.034						3.302					
SW7471	7439-97-6	Mercury	mg/kg			0.84						0.57								0.95	
SW8081	118-74-1	Hexachlorobenzene	ug/kg			0.35						0.2	UJ							0.37	
SW8082	12674-11-2	Aroclor-1016	ug/kg			9.6	U					9.8	UJ							9.8	U
SW8082	11104-28-2	Aroclor-1221	ug/kg			9.6	U					9.8	UJ							9.8	U
SW8082	11141-16-5	Aroclor-1232	ug/kg			9.6	U					9.8	UJ							9.8	U
SW8082	53469-21-9	Aroclor-1242	ug/kg			9.6	U					9.8	UJ							9.8	U
SW8082	12672-29-6	Aroclor-1248	ug/kg			162						21.9	J-							87.1	
SW8082	11097-69-1	Aroclor-1254	ug/kg			190	J					28.4	J-							95.9	
SW8082	11096-82-5	Aroclor-1260	ug/kg			165						22.1	J-							96.8	
SW8082	11100-14-4	Aroclor-1268	ug/kg			9.6	U					9.8	UJ							9.8	U
SW8082	PCB	Total PCBs	ug/kg			517						72.5	J-							280	
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g	0.294	U													0.239	U		
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g	0.234	U													0.175	U		
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g	0.291	U													0.285	U		
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g	0.244	J													0.491	U		
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g	0.123	U													0.284	U		
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g	0.486	J													0.52	U		
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g	0.108	U													0.301	U		
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g	0.199	U													0.581	U		
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g	0.132	U													0.383	U		
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g	0.554	J													0.456	UJ		
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g	0.125	U													0.312	U		
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g	0.123	U													0.326	U		
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g	0.87	J													0.593	J		
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g	0.256	U													0.644	U		
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g	0.687	J													1.13	J		
SW8290	3268-87-9	OCDD	pg/g	0.275	UJ													0.547	UJ		
SW8290	39001-02-0	OCDF	pg/g	0.243	U													0.509	U		
SW8290	HpCDD	Total Hepta-Dixons	pg/g	0.294	U													0.239	U		
SW8290	HpCDF	Total HPCDF	pg/g	0.26	U													0.222	U		
SW8290	HxCDD	Total HxCDD	pg/g	0.729	J													0.531	U		
SW8290	HxCDF	Total HxCDF	pg/g	0.121	U													0.32	U		
SW8290	PeCDD	Total PECDD	pg/g	0.554	J													0.456	U		
SW8290	PeCDF	Total PECDF	pg/g	0.87														0.593	J		
SW8290	TCDD	Total TCDD	pg/g	0.256	U													0.644	U		
SW8290	TCDF	Total TCDF	pg/g	0.934	J													1.13	J		

			Location ID	OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A	
			Field Sample ID	OL-F-3302-02F		OL-F-3302-02F		OL-F-3302-02F		OL-F-3302-03F		OL-F-3302-03F		OL-F-3302-03F		OL-F-3302-03F		OL-F-3302-04F		OL-F-3302-04F	
			Sample Name	OL-F-7A-21-WALL-02		OL-F-7A-21-WALL-02		OL-F-7A-21-WALL-02		OL-F-7A-21-WALL-03		OL-F-7A-21-WALL-03		OL-F-7A-21-WALL-03		OL-F-7A-21-WALL-03		OL-F-7A-21-WALL-04		OL-F-7A-21-WALL-04	
			Sampled	5/17/2021		5/17/2021		5/17/2021		5/17/2021		5/17/2021		5/17/2021		5/17/2021		5/17/2021		5/17/2021	
			Lab Sample ID	B7556_006		B7556_21016_006		JD85967-6		B7553_002		B7553_20758_002		553_20953_DF_002-		JD78163-2		B7556_001		B7556_21016_001	
			Taxonomic	WALL		WALL		WALL		WALL		WALL		WALL		WALL		WALL		WALL	
			Age (yrs)	6+		6+		6+		9+		9+		9+		9+		7		7	
			Gender	M		M		M		M		M		M		M		M		M	
			Length (mm)	545		545		545		567		567		567		567		557		557	
			Weight (g)	2205		2205		2205		2234		2234		2234		2234		2144		2144	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%	72.78						74.46								74.95			
SW3540	LIPIDS	%Lipids Determination	%			3.887						4.089								3.759	
SW7471	7439-97-6	Mercury	mg/kg					0.8								0.73					
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.46								0.56					
SW8082	12674-11-2	Aroclor-1016	ug/kg					10	U							10	U				
SW8082	11104-28-2	Aroclor-1221	ug/kg					10	U							10	U				
SW8082	11141-16-5	Aroclor-1232	ug/kg					10	U							10	U				
SW8082	53469-21-9	Aroclor-1242	ug/kg					10	U							10	U				
SW8082	12672-29-6	Aroclor-1248	ug/kg					120								151					
SW8082	11097-69-1	Aroclor-1254	ug/kg					120								176					
SW8082	11096-82-5	Aroclor-1260	ug/kg					112								94.1					
SW8082	11100-14-4	Aroclor-1268	ug/kg					10	U							10	U				
SW8082	PCB	Total PCBs	ug/kg					352								421					
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g											0.194	U						
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g											0.094	U						
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g											0.105	U						
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g											0.256	U						
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g											0.143	U						
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g											0.261	U						
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g											0.14	U						
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g											0.248	U						
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g											0.157	U						
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g											0.209	U						
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g											0.224	J						
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g											0.142	U						
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g											0.475	J						
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g											0.193	U						
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g											0.97							
SW8290	3268-87-9	OCDD	pg/g											0.329	U						
SW8290	39001-02-0	OCDF	pg/g											0.228	U						
SW8290	HpCDD	Total Hepta-Dixons	pg/g											0.194	U						
SW8290	HpCDF	Total HPCDF	pg/g											0.0991	U						
SW8290	HxCDD	Total HxCDD	pg/g											0.254	U						
SW8290	HxCDF	Total HxCDF	pg/g											0.145	U						
SW8290	PeCDD	Total PECDD	pg/g											0.209	U						
SW8290	PeCDF	Total PECDF	pg/g											0.699	J						
SW8290	TCDD	Total TCDD	pg/g											0.193	U						
SW8290	TCDF	Total TCDF	pg/g											0.97							

			Location ID	OL-F-7A	OL-F-7A	OL-F-7A	OL-F-7A	OL-F-7A	OL-F-7A	OL-F-7A	OL-F-7A	OL-F-7A
			Field Sample ID	OL-F-3302-04F	OL-F-3303-04F	OL-F-3303-04F	OL-F-3303-05F	OL-F-3303-05F	OL-F-3303-06F	OL-F-3303-06F	OL-F-3303-06F	OL-F-3305-07F
			Sample Name	OL-F-7A-21-WALL-04	OL-F-7A-21-PKSD-01	OL-F-7A-21-PKSD-01	OL-F-7A-21-PKSD-02	OL-F-7A-21-PKSD-02	OL-F-7A-21-PKSD-03	OL-F-7A-21-PKSD-03	OL-F-7A-21-PKSD-03	OL-F-7A-21-CCP-01
			Sampled	5/17/2021	5/25/2021	5/25/2021	5/25/2021	5/25/2021	5/25/2021	5/25/2021	5/25/2021	6/2/2021
			Lab Sample ID	JD85967-1	B7555_21051_006	JD87136-6	B7555_21051_007	JD87136-7	B7555_008	B7555_21051_008	JD87136-8	B7554_010
			Taxonomic	WALL	PKSD	PKSD	PKSD	PKSD	PKSD	PKSD	PKSD	CCP
			Age (yrs)	7	4+	4+	4	4	4+	4+	4+	6+
			Gender	M	F	F	F	F	F	F	F	F
			Length (mm)	557	134	134	140	140	151	151	151	660
			Weight (g)	2144	45	45	52	52	67	67	67	4417
Method	Parameter Code	Parameter Name	Units									
ASTM D2216	MOISTURE-%	Percent Moisture	%						76.25			66.6
SW3540	LIPIDS	%Lipids Determination	%		0.385		0.271			0.294		
SW7471	7439-97-6	Mercury	mg/kg	1		0.065		0.1			0.094	
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.43		0.058 J		0.2 UJ			0.094 J	
SW8082	12674-11-2	Aroclor-1016	ug/kg	9.4 U		9.6 U		9.6 U			9.8 U	
SW8082	11104-28-2	Aroclor-1221	ug/kg	9.4 U		9.6 U		9.6 U			9.8 U	
SW8082	11141-16-5	Aroclor-1232	ug/kg	9.4 U		9.6 U		9.6 U			9.8 U	
SW8082	53469-21-9	Aroclor-1242	ug/kg	9.4 U		9.6 U		9.6 U			9.8 U	
SW8082	12672-29-6	Aroclor-1248	ug/kg	95.7		9.6 U		9.6 U			9.8 U	
SW8082	11097-69-1	Aroclor-1254	ug/kg	101		8.9 J		9.6 U			9.8	
SW8082	11096-82-5	Aroclor-1260	ug/kg	97		8.4 J		9.6 U			6.1 J	
SW8082	11100-14-4	Aroclor-1268	ug/kg	9.4 U		9.6 U		9.6 U			9.8 U	
SW8082	PCB	Total PCBs	ug/kg	294		17.3		9.6 U			15.9	
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g									
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g									
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g									
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g									
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g									
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g									
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g									
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g									
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g									
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g									
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g									
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g									
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g									
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g									
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g									
SW8290	3268-87-9	OCDD	pg/g									
SW8290	39001-02-0	OCDF	pg/g									
SW8290	HpCDD	Total Hepta-Dixons	pg/g									
SW8290	HpCDF	Total HPCDF	pg/g									
SW8290	HxCDD	Total HxCDD	pg/g									
SW8290	HxCDF	Total HxCDF	pg/g									
SW8290	PeCDD	Total PECDD	pg/g									
SW8290	PeCDF	Total PECDF	pg/g									
SW8290	TCDD	Total TCDD	pg/g									
SW8290	TCDF	Total TCDF	pg/g									

Location ID				OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A	
Field Sample ID				OL-F-3305-07F		OL-F-3305-07F		OL-F-3305-07F		OL-F-3307-01F		OL-F-3307-01F		OL-F-3307-01F		OL-F-3307-01F		OL-F-3314-03F		OL-F-3314-03F	
Sample Name				OL-F-7A-21-CCP-01		OL-F-7A-21-CCP-01		OL-F-7A-21-CCP-01		OL-F-7A-21-SMB-01		OL-F-7A-21-SMB-01		OL-F-7A-21-SMB-01		OL-F-7A-21-SMB-01		OL-F-7A-21-SMB-02		OL-F-7A-21-SMB-02	
Sampled				6/2/2021		6/2/2021		6/2/2021		6/3/2021		6/3/2021		6/3/2021		6/3/2021		7/15/2021		7/15/2021	
Lab Sample ID				B7554_20790_010		554_20957_DF_010-		JD80342-10		B7554_006		B7554_20790_006		554_20957_DF_006-		JD80342-6		B7557_015		B7557_20841_015	
Taxonomic				CCP		CCP		CCP		SMB		SMB		SMB		SMB		SMB		SMB	
Age (yrs)				6+		6+		6+		11+		11+		11+		11+		6		6	
Gender				F		F		F		M		M		M		M		F		F	
Length (mm)				660		660		660		452		452		452		452		427		427	
Weight (g)				4417		4417		4417		1081		1081		1081		1081		1457		1457	
Method	Parameter Code	Parameter Name	Units																		
ASTM D2216	MOISTURE-%	Percent Moisture	%							79.25								73.65			
SW3540	LIPIDS	%Lipids Determination	%	10.76	J-							0.425	J-							1.142	
SW7471	7439-97-6	Mercury	mg/kg					0.3								1.2					
SW8081	118-74-1	Hexachlorobenzene	ug/kg					0.62	J							0.19	U				
SW8082	12674-11-2	Aroclor-1016	ug/kg					9.6	U							9.4	U				
SW8082	11104-28-2	Aroclor-1221	ug/kg					9.6	U							9.4	U				
SW8082	11141-16-5	Aroclor-1232	ug/kg					9.6	U							9.4	U				
SW8082	53469-21-9	Aroclor-1242	ug/kg					9.6	U							9.4	U				
SW8082	12672-29-6	Aroclor-1248	ug/kg					63.2								13.7					
SW8082	11097-69-1	Aroclor-1254	ug/kg					224								27.6					
SW8082	11096-82-5	Aroclor-1260	ug/kg					137								26.4					
SW8082	11100-14-4	Aroclor-1268	ug/kg					9.6	U							9.4	U				
SW8082	PCB	Total PCBs	ug/kg					424								67.7					
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g			2.69								0.202	U						
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g			0.446	J							0.573	U						
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g			0.354	U							0.756	U						
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g			0.536	J							0.268	U						
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g			0.148	U							0.128	U						
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g			0.984	J							0.299	U						
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g			0.16	U							0.128	U						
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g				R								R						
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g			0.196	U							0.167	U						
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g			0.567	J							0.208	U						
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g			0.417	J							0.122	U						
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g			0.172	U							0.14	U						
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g			0.896	J							0.29	J						
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g			0.341	J							0.162	U						
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g			4.05								0.17	U						
SW8290	3268-87-9	OCDD	pg/g			2.01	J							0.369	UJ						
SW8290	39001-02-0	OCDF	pg/g			0.28	U							0.219	U						
SW8290	HpCDD	Total Hepta-Dixons	pg/g			2.69								0.202	U						
SW8290	HpCDF	Total HPCDF	pg/g			0.446								0.653	U						
SW8290	HxCDD	Total HxCDD	pg/g			1.52	J							0.282	U						
SW8290	HxCDF	Total HxCDF	pg/g			0.168	U							0.139	U						
SW8290	PeCDD	Total PECDD	pg/g			0.567	J							0.208	U						
SW8290	PeCDF	Total PECDF	pg/g			1.71	J							0.732	J						
SW8290	TCDD	Total TCDD	pg/g			0.341	J							0.162	U						
SW8290	TCDF	Total TCDF	pg/g			4.94	J							1.52							

			Location ID	OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A		OL-F-7A	
			Field Sample ID	OL-F-3314-03F		OL-F-3314-04F		OL-F-3314-04F		OL-F-3314-04F		OL-F-3317-01F		OL-F-3317-01F		OL-F-3317-01F	
			Sample Name	OL-F-7A-21-SMB-02		OL-F-7A-21-SMB-03		OL-F-7A-21-SMB-03		OL-F-7A-21-SMB-03		OL-F-7A-21-CCP-02		OL-F-7A-21-CCP-02		OL-F-7A-21-CCP-02	
			Sampled	7/15/2021		7/15/2021		7/15/2021		7/15/2021		7/27/2021		7/27/2021		7/27/2021	
			Lab Sample ID	JD81415-15		B7557_016		B7557_20841_016		JD81415-16		B7557_020		B7557_20841_020		JD81415-20	
			Taxonomic	SMB		SMB		SMB		SMB		CCP		CCP		CCP	
			Age (yrs)	6		6+		6+		6+		3		3		3	
			Gender	F		F		F		F		M		M		M	
			Length (mm)	427		440		440		440		498		498		498	
			Weight (g)	1457		1464		1464		1464		1978		1978		1978	
Method	Parameter Code	Parameter Name	Units														
ASTM D2216	MOISTURE-%	Percent Moisture	%			73.68						75					
SW3540	LIPIDS	%Lipids Determination	%					1.697						1.355			
SW7471	7439-97-6	Mercury	mg/kg	0.54						0.55						0.083	
SW8081	118-74-1	Hexachlorobenzene	ug/kg	0.2	UJ					0.058	J					0.33	J-
SW8082	12674-11-2	Aroclor-1016	ug/kg	10	UJ					9.3	UJ					9.8	UJ
SW8082	11104-28-2	Aroclor-1221	ug/kg	10	UJ					9.3	UJ					9.8	UJ
SW8082	11141-16-5	Aroclor-1232	ug/kg	10	UJ					9.3	UJ					9.8	UJ
SW8082	53469-21-9	Aroclor-1242	ug/kg	10	UJ					9.3	UJ					9.8	UJ
SW8082	12672-29-6	Aroclor-1248	ug/kg	13	J-					22	J-					12	J-
SW8082	11097-69-1	Aroclor-1254	ug/kg	18.2	J-					28.8	J-					9.4	J
SW8082	11096-82-5	Aroclor-1260	ug/kg	15.6	J-					19.4	J-					5.9	J
SW8082	11100-14-4	Aroclor-1268	ug/kg	10	UJ					9.3	UJ					9.8	UJ
SW8082	PCB	Total PCBs	ug/kg	46.7	J-					70.2	J-					27.3	J-
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g														
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g														
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g														
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g														
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g														
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g														
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g														
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g														
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g														
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g														
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g														
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g														
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g														
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g														
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g														
SW8290	3268-87-9	OCDD	pg/g														
SW8290	39001-02-0	OCDF	pg/g														
SW8290	HpCDD	Total Hepta-Dixons	pg/g														
SW8290	HpCDF	Total HPCDF	pg/g														
SW8290	HxCDD	Total HxCDD	pg/g														
SW8290	HxCDF	Total HxCDF	pg/g														
SW8290	PeCDD	Total PECDD	pg/g														
SW8290	PeCDF	Total PECDF	pg/g														
SW8290	TCDD	Total TCDD	pg/g														
SW8290	TCDF	Total TCDF	pg/g														

ATTACHMENT A-2 – VALIDATED LABORATORY DATA FOR ZOOPLANKTON SAMPLES

							Parameter	MERCURY		METHYL MERCURY	
							Method	E1631		E1630	
							Filtered	N		N	
							Units	mg/kg		ng/g	
Location ID	Field Sample ID	Depth (ft)	Sampled	SDG	Matrix	Purpose	Sample Type				
W1	OL-3603-01	6.6 - 6.6	05/11/2021	1E00073	TISSUE	REG	T-ZP			2.0	J
W1	OL-3611-01	6.6 - 6.6	06/15/2021	1F00105	TISSUE	REG	T-ZP			7.7	
W1	OL-3619-01	6.6 - 6.6	07/07/2021	1G00034	TISSUE	REG	T-ZP			6.1	
W1	OL-3626-01	6.6 - 6.6	07/20/2021	1G00116	TISSUE	REG	T-ZP			10.4	
W1	OL-3633-01	6.6 - 6.6	08/03/2021	1H00019	TISSUE	REG	T-ZP	0.0251		7.2	J-
W1	OL-3640-01	6.6 - 6.6	08/17/2021	1H00105	TISSUE	REG	T-ZP	0.0245		7.0	J-
W1	OL-3647-01	6.6 - 6.6	08/31/2021	1I00005	TISSUE	REG	T-ZP	0.0676		7.8	
W1	OL-3652-01	6.6 - 6.6	09/08/2021	1I00036	TISSUE	REG	T-ZP	0.0421		5.7	
W1	OL-3656-01	6.6 - 6.6	09/14/2021	1I00068	TISSUE	REG	T-ZP	0.0815		5.3	
W1	OL-3660-01	6.6 - 6.6	09/21/2021	1I00123	TISSUE	REG	T-ZP			14.8	
W1	OL-3664-01	6.6 - 6.6	09/28/2021	1I00166	TISSUE	REG	T-ZP			14.6	
W1	OL-3668-01	6.6 - 6.6	10/05/2021	1J00033	TISSUE	REG	T-ZP	0.0132		10.5	
W1	OL-3672-01	6.6 - 6.6	10/12/2021	1J00074	TISSUE	REG	T-ZP	0.0169		5.7	
W1	OL-3676-01	6.6 - 6.6	10/19/2021	1J00117	TISSUE	REG	T-ZP	0.0583		3.4	
W1	OL-3680-01	6.6 - 6.6	10/27/2021	1J00175	TISSUE	REG	T-ZP			6.7	
W1	OL-3684-01	6.6 - 6.6	11/02/2021	1K00017	TISSUE	REG	T-ZP			1.9	J
W1	OL-3688-01	6.6 - 6.6	11/10/2021	1K00073	TISSUE	REG	T-ZP			1.2	U
W1	OL-3692-01	6.6 - 6.6	11/16/2021	1K00135	TISSUE	REG	T-ZP			7.1	J
W1	OL-3696-01	6.6 - 6.6	11/23/2021	1K00168	TISSUE	REG	T-ZP	0.133		3.0	

ATTACHMENT B – LCS SRM AND DUPLICATE RESULTS

SDG	Fish Grouping	Analytical Method	Analytical Parameter	LCS SRM Result	LCS SRM True Value	LCS SRM Units	LCS SRM %R	Lower LCS SRM QC Limit (%R)	Upper LCS SRM QC Limit (%R)
JD78424	Prey 01	SW7471	Mercury	0.28	0.316	mg/kg	88.6	80	120
JD78426	Prey 02	SW7471	Mercury	0.26	0.316	mg/kg	82.3	80	120
JD77878	Prey 03	SW7471	Mercury	0.26	0.316	mg/kg	82.3	80	120
JD78163	Sport 01	SW7471	Mercury	0.26	0.316	mg/kg	82.3	80	120
JD80342	Sport 02	SW7471	Mercury	0.27	0.316	mg/kg	85.4	80	120
JD85967	Sport 03	SW7471	Mercury	0.29	0.316	mg/kg	91.8	80	120
JD87136	Sport 04	SW7471	Mercury	0.26	0.316	mg/kg	82.3	80	120
JD81415	Sport 05	SW7471	Mercury	0.3	0.316	mg/kg	94.9	80	120
JD78424	Prey 01	SW8082	Total PCBs	1350	2093	ug/kg	64.5	70	130
JD78426	Prey 02	SW8082	Total PCBs	1600	2093	ug/kg	76.4	70	130
JD77878	Prey 03	SW8082	Total PCBs	1410	2093	ug/kg	67.4	70	130
JD78163	Sport 01	SW8082	Total PCBs	1790	2093	ug/kg	85.5	70	130
JD80342	Sport 02	SW8082	Total PCBs	2670	2093	ug/kg	127.6	70	130
JD85967	Sport 03	SW8082	Total PCBs	1870	2093	ug/kg	89.3	70	130
JD87136	Sport 04	SW8082	Total PCBs	1790	2093	ug/kg	85.5	70	130
JD81415	Sport 05	SW8082	Total PCBs	1140	2093	ug/kg	54.5	70	130
JD78424	Prey 01	SW8081	Hexachlorobenzene	3.5	7.48	ug/kg	46.8	70	130
JD78426	Prey 02	SW8081	Hexachlorobenzene	3.9	7.48	ug/kg	52.1	70	130
JD77878	Prey 03	SW8081	Hexachlorobenzene	3.1	7.48	ug/kg	41.4	70	130
JD78163	Sport 01	SW8081	Hexachlorobenzene	6.3	7.48	ug/kg	84.2	70	130
JD80342	Sport 02	SW8081	Hexachlorobenzene	6	7.48	ug/kg	80.2	70	130
JD85967	Sport 03	SW8081	Hexachlorobenzene	5.3	7.48	ug/kg	70.9	70	130
JD87136	Sport 04	SW8081	Hexachlorobenzene	4.5	7.48	ug/kg	60.2	70	130
JD81415	Sport 05	SW8081	Hexachlorobenzene	2.1	7.48	ug/kg	28.1	70	130
JD78424	Prey 01	SW8081	4,4'-DDD	23.4	45.9	ug/kg	51.0	70	130
JD78426	Prey 02	SW8081	4,4'-DDD	29.1	45.9	ug/kg	63.4	70	130
JD77878	Prey 03	SW8081	4,4'-DDD	23.3	45.9	ug/kg	50.8	70	130
JD78424	Prey 01	SW8081	4,4'-DDE	420	720	ug/kg	58.3	70	130
JD78426	Prey 02	SW8081	4,4'-DDE	527	720	ug/kg	73.2	70	130
JD77878	Prey 03	SW8081	4,4'-DDE	583	720	ug/kg	81.0	70	130
JD78424	Prey 01	SW8081	4,4'-DDT	54.6	59.5	ug/kg	91.8	70	130
JD78426	Prey 02	SW8081	4,4'-DDT	67.6	59.5	ug/kg	113.6	70	130
JD77878	Prey 03	SW8081	4,4'-DDT	73.3	59.5	ug/kg	123.2	70	130
B7550	Prey 01	SW3540	%Lipids Determination	6.59	7*	%	94.1	70	130
B7551	Prey 02	SW3540	%Lipids Determination	6.28	7*	%	89.7	70	130
B7552	Prey 03	SW3540	%Lipids Determination	7.214	7*	%	103.1	70	130
B7553	Sport 01	SW3540	%Lipids Determination	6.563	7*	%	93.8	70	130
B7554	Sport 02	SW3540	%Lipids Determination	4.701	7*	%	67.2	70	130
B7556	Sport 03	SW3540	%Lipids Determination	6.938	7*	%	99.1	70	130
B7555	Sport 04	SW3540	%Lipids Determination	7.263	7*	%	103.8	70	130
B7557	Sport 05	SW3540	%Lipids Determination	4.915	7*	%	70.2	70	130

NOTES:

SDG - Sample Delivery Group
LCS - Laboratory Control Sample
SRM - Standard Reference Material
%R - Percent Recovery
* - SRM used for %Lipids (CARP-2) has approximate true value

SDG	Fish Grouping	Analytical Method	Analytical Parameter	LCS SRM Result	LCS SRM True Value	LCS SRM Units	LCS SRM %R	Lower LCS SRM QC Limit (%R)	Upper LCS SRM QC Limit (%R)
B7553	Sport 01	SW8290	1,2,3,4,6,7,8-HpCDD	6.39	6.4	pg/g	99.8	70	130
B7554 (Batch 20957)	Sport 02	SW8290	1,2,3,4,6,7,8-HpCDD	5.58	6.4	pg/g	87.2	70	130
B7554 (Batch 20972)	Sport 02	SW8290	1,2,3,4,6,7,8-HpCDD	4.74	6.4	pg/g	74.1	70	130
B7556	Sport 03	SW8290	1,2,3,4,6,7,8-HpCDD	4.92	6.4	pg/g	76.9	70	130
B7553	Sport 01	SW8290	1,2,3,4,7,8-HxCDD	3.22	1.6	pg/g	201.3	70	130
B7554 (Batch 20957)	Sport 02	SW8290	1,2,3,4,7,8-HxCDD	2.16	1.6	pg/g	135.0	70	130
B7554 (Batch 20972)	Sport 02	SW8290	1,2,3,4,7,8-HxCDD	1.59	1.6	pg/g	99.4	70	130
B7556	Sport 03	SW8290	1,2,3,4,7,8-HxCDD	1.61	1.6	pg/g	100.6	70	130
B7553	Sport 01	SW8290	1,2,3,6,7,8-HxCDD	5.64	5.8	pg/g	97.2	70	130
B7554 (Batch 20957)	Sport 02	SW8290	1,2,3,6,7,8-HxCDD	4.19	5.8	pg/g	72.2	70	130
B7554 (Batch 20972)	Sport 02	SW8290	1,2,3,6,7,8-HxCDD	4.56	5.8	pg/g	78.6	70	130
B7556	Sport 03	SW8290	1,2,3,6,7,8-HxCDD	4.2	5.8	pg/g	72.4	70	130
B7553	Sport 01	SW8290	1,2,3,7,8,9-HxCDD	0.852	0.78	pg/g	109.2	70	130
B7554 (Batch 20957)	Sport 02	SW8290	1,2,3,7,8,9-HxCDD	0.461	0.78	pg/g	0.0	70	130
B7554 (Batch 20972)	Sport 02	SW8290	1,2,3,7,8,9-HxCDD	0.511	0.78	pg/g	65.5	70	130
B7556	Sport 03	SW8290	1,2,3,7,8,9-HxCDD	0.592	0.78	pg/g	75.9	70	130
B7553	Sport 01	SW8290	1,2,3,7,8-PeCDD	4.28	5.3	pg/g	80.8	70	130
B7554 (Batch 20957)	Sport 02	SW8290	1,2,3,7,8-PeCDD	4.03	5.3	pg/g	76.0	70	130
B7554 (Batch 20972)	Sport 02	SW8290	1,2,3,7,8-PeCDD	3.79	5.3	pg/g	71.5	70	130
B7556	Sport 03	SW8290	1,2,3,7,8-PeCDD	3.37	5.3	pg/g	63.6	70	130
B7553	Sport 01	SW8290	1,2,3,7,8-PeCDF	7.1	5.6	pg/g	126.8	70	130
B7554 (Batch 20957)	Sport 02	SW8290	1,2,3,7,8-PeCDF	6.01	5.6	pg/g	107.3	70	130
B7554 (Batch 20972)	Sport 02	SW8290	1,2,3,7,8-PeCDF	5.31	5.6	pg/g	94.8	70	130
B7556	Sport 03	SW8290	1,2,3,7,8-PeCDF	5.4	5.6	pg/g	96.4	70	130
B7553	Sport 01	SW8290	2,3,7,8-TCDD	7.98	7.4	pg/g	107.8	70	130
B7554 (Batch 20957)	Sport 02	SW8290	2,3,7,8-TCDD	6.61	7.4	pg/g	89.3	70	130
B7554 (Batch 20972)	Sport 02	SW8290	2,3,7,8-TCDD	6.26	7.4	pg/g	84.6	70	130
B7556	Sport 03	SW8290	2,3,7,8-TCDD	5.76	7.4	pg/g	77.8	70	130
B7553	Sport 01	SW8290	2,3,7,8-Tcdf	19.6	18.2	pg/g	107.7	70	130
B7554 (Batch 20957)	Sport 02	SW8290	2,3,7,8-Tcdf	15.3	18.2	pg/g	84.1	70	130
B7554 (Batch 20972)	Sport 02	SW8290	2,3,7,8-Tcdf	15.3	18.2	pg/g	84.1	70	130
B7556	Sport 03	SW8290	2,3,7,8-Tcdf	13.8	18.2	pg/g	75.8	70	130
B7553	Sport 01	SW8290	OCDD	8.39	9.4	pg/g	89.3	70	130
B7554 (Batch 20957)	Sport 02	SW8290	OCDD	6.15	9.4	pg/g	65.4	70	130
B7554 (Batch 20972)	Sport 02	SW8290	OCDD	6.67	9.4	pg/g	71.0	70	130
B7556	Sport 03	SW8290	OCDD	6.49	9.4	pg/g	69.0	70	130

NOTES:
SDG - Sample Delivery Group
LCS - Laboratory Control Sample
SRM - Standard Reference Material
%R - Percent Recovery
* - SRM used for %Lipids (CARP-2) has approximate true value

					2021_Prey-01														
				Location ID	OL-F-5B		OL-F-5B			OL-F-5B		OL-F-5B			OL-F-5B		OL-F-5B		
				Field Sample ID	OL-F-3304-02		OL-F-3304-02DUP			OL-F-3304-02		OL-F-3304-02DUP			OL-F-3304-02		OL-F-3304-02-DUP		
				Sample Name	OL-F-5B-21-SHRH-01		OL-F-5B-21-SHRH-01			OL-F-5B-21-SHRH-01		OL-F-5B-21-SHRH-01			OL-F-5B-21-SHRH-01		OL-F-5B-21-SHRH-01		
				Sampled	5/20/2021		5/20/2021			5/20/2021		5/20/2021			5/20/2021		5/20/2021		
				SDG	B7550		B7550			B7550		B7550			JD78424		JD78424		
				Lab Sample ID	B7550_002		B7550_002DUP			B7550_21027_002-R3		B7550_21027_002DUP			JD78424-2		JD78424-21		
				Medium	Tissue		Tissue			Tissue		Tissue			Tissue		Tissue		
				Sample Type	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)
				Matrix	T-FT		TQ			T-FT		TQ			T-FT		TQ		
Method	Parameter Code	Parameter Name	Units	Fraction															
ASTM D2216	MOISTURE-%	Percent Moisture	%	NA	67.18		66.43		1.12										
SW3540	LIPIDS	%Lipids Determination	%	NA						7.26		7.2		0.83					
SW7471	7439-97-6	Mercury	mg/kg	T											0.18		0.17		5.71
SW8081	72-54-8	4,4'-DDD	ug/kg	T											7.8	J	9.5		19.65
SW8081	72-55-9	4,4'-DDE	ug/kg	T											73.2	J	74.3		1.49
SW8081	50-29-3	4,4'-DDT	ug/kg	T											7.7	JN	7.4		3.97
SW8081	118-74-1	Hexachlorobenzene	ug/kg	T											1	J-	1		0.00
SW8082	12674-11-2	Aroclor-1016	ug/kg	T											9.4	UJ	10	U	
SW8082	11104-28-2	Aroclor-1221	ug/kg	T											9.4	UJ	10	U	
SW8082	11141-16-5	Aroclor-1232	ug/kg	T											9.4	UJ	10	U	
SW8082	53469-21-9	Aroclor-1242	ug/kg	T											9.4	UJ	10	U	
SW8082	12672-29-6	Aroclor-1248	ug/kg	T											286	J-	292		2.08
SW8082	11097-69-1	Aroclor-1254	ug/kg	T											388	J-	372		4.21
SW8082	11096-82-5	Aroclor-1260	ug/kg	T											233	J-	236		1.28
SW8082	11100-14-4	Aroclor-1268	ug/kg	T											9.4	UJ	10	U	
SW8082	PCB	Total PCBs	ug/kg	T											907	J-	900		0.77

					2021_Prey-02														
				Location ID	OL-F-5B		OL-F-5B			OL-F-5A		OL-F-5A			OL-F-7A		OL-F-7A		
				Field Sample ID	OL-F-3318-03		OL-F-3318-03-DUP			OL-F-3318-06		OL-F-3318-06DUP			OL-F-3318-14		OL-F-3318-14DUP		
				Sample Name	OL-F-5B-21-RG-01		OL-F-5B-21-RG-01			OL-F-5A-21-MIN-03		OL-F-5A-21-MIN-03			OL-F-7A-21-MIN-02		OL-F-7A-21-MIN-02		
				Sampled	8/2/2021		8/2/2021			8/3/2021		12/15/2023			8/4/2021		12/15/2023		
				SDG	JD78426		JD78426			B7551		B7551			B7551		B7551		
				Lab Sample ID	JD78426-2		JD78426-21			B7551_005-R2		B7551_005 DUP-R2			B7551_012		B7551_012DUP		
				Medium	Tissue		Tissue			Tissue		Tissue			Tissue		Tissue		
				Sample Type	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)
				Matrix	T-FT		TQ			T-FT		TQ			T-FT		TQ		
Method	Parameter Code	Parameter Name	Units	Fraction															
ASTM D2216	MOISTURE-%	Percent Moisture	%	NA											75.69444		75.76792		0.10
SW3540	LIPIDS	%Lipids Determination	%	NA						1.082118		0.879585		20.65					
SW7471	7439-97-6	Mercury	mg/kg	T	0.068		0.064	H	6.06										
SW8081	72-54-8	4,4'-DDD	ug/kg	T	0.14	J	0.12	J	15.38										
SW8081	72-55-9	4,4'-DDE	ug/kg	T	0.7		0.54		25.81										
SW8081	50-29-3	4,4'-DDT	ug/kg	T	0.31	JN	0.3		3.28										
SW8081	118-74-1	Hexachlorobenzene	ug/kg	T	0.069	J	0.062	J	10.69										
SW8082	12674-11-2	Aroclor-1016	ug/kg	T	9.1	U	9.4	U											
SW8082	11104-28-2	Aroclor-1221	ug/kg	T	9.1	U	9.4	U											
SW8082	11141-16-5	Aroclor-1232	ug/kg	T	9.1	U	9.4	U											
SW8082	53469-21-9	Aroclor-1242	ug/kg	T	9.1	U	9.4	U											
SW8082	12672-29-6	Aroclor-1248	ug/kg	T	11.1	J	7.6	J	37.43										
SW8082	11097-69-1	Aroclor-1254	ug/kg	T	18.4	J	13.5		30.72										
SW8082	11096-82-5	Aroclor-1260	ug/kg	T	8	J	6.4	J	22.22										
SW8082	11100-14-4	Aroclor-1268	ug/kg	T	9.1	U	9.4	U											
SW8082	PCB	Total PCBs	ug/kg	T	37.5	J	27.5		30.77										

					2021_Prey-03														
				Location ID	OL-F-1A		OL-F-1A			OL-F-1A		OL-F-1A			OL-F-1A		OL-F-1A		
				Field Sample ID	OL-F-3320-02		OL-F-3320-02DUP			OL-F-3320-02		OL-F-3320-02DUP			OL-F-3320-02		OL-F-3320-02 DUP		
				Sample Name	OL-F-1A-21-WHS-01		OL-F-1A-21-WHS-01			OL-F-1A-21-WHS-01		OL-F-1A-21-WHS-01			OL-F-1A-21-WHS-01		OL-F-1A-21-WHS-01		
				Sampled	10/4/2021		10/4/2021			10/4/2021		10/4/2021			10/4/2021		10/4/2021		
				SDG	B7552		B7552			B7552		B7552			JD77878		JD77878		
				Lab Sample ID	B7552_006		B7552_006_DUP			B7552_20680_006		B7552_20680_006DUP			JD77878-6		JD77878-9		
				Medium	Tissue		Tissue		Relative Percent Difference (RPD)	Tissue		Tissue		Relative Percent Difference (RPD)	Tissue		Tissue		Relative Percent Difference (RPD)
				Sample Type	REG		LR			REG		LR			REG		LR		
				Matrix	T-FT		TQ			T-FT		TQ			T-FT		TQ		
Method	Parameter Code	Parameter Name	Units	Fraction															
ASTM D2216	MOISTURE-%	Percent Moisture	%	NA	72.95		73.18		0.31										
SW3540	LIPIDS	%Lipids Determination	%	NA						4.597		4.154		10.12					
SW7471	7439-97-6	Mercury	mg/kg	T											0.11		0.12		8.70
SW8081	72-54-8	4,4'-DDD	ug/kg	T											3.5	J-	3.5		0.00
SW8081	72-55-9	4,4'-DDE	ug/kg	T											18.9	J	18.6		1.60
SW8081	50-29-3	4,4'-DDT	ug/kg	T											10.4	JN	9.6		8.00
SW8081	118-74-1	Hexachlorobenzene	ug/kg	T											0.55	J-	0.58		5.31
SW8082	12674-11-2	Aroclor-1016	ug/kg	T											10	UJ	9.8	U	
SW8082	11104-28-2	Aroclor-1221	ug/kg	T											10	UJ	9.8	U	
SW8082	11141-16-5	Aroclor-1232	ug/kg	T											10	UJ	9.8	U	
SW8082	53469-21-9	Aroclor-1242	ug/kg	T											10	UJ	9.8	U	
SW8082	12672-29-6	Aroclor-1248	ug/kg	T											196	J-	192		2.06
SW8082	11097-69-1	Aroclor-1254	ug/kg	T											188	J-	199		5.68
SW8082	11096-82-5	Aroclor-1260	ug/kg	T											261	J-	232		11.76
SW8082	11100-14-4	Aroclor-1268	ug/kg	T											10	UJ	9.8	U	
SW8082	PCB	Total PCBs	ug/kg	T											645	J-	623		3.47

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					2021_Sport-01																								
				Location ID	OL-F-5A		OL-F-5A			OL-F-6A		OL-F-6A			OL-F-6A		OL-F-6A			OL-F-6A		OL-F-6A			OL-F-5A		OL-F-5A		
				Field Sample ID	OL-F-3302-13F		OL-F-3302-13F-DUP			OL-F-3305-01F		OL-F-3305-01FDUP			OL-F-3305-01F		OL-F-3305-01FDUP			OL-F-3305-01F		OL-F-3305-01F-DUP			OL-F-3309-13F		OL-F-3309-13F-DUP		
				Sample Name	OL-F-5A-21-CCP-01		OL-F-5A-21-CCP-01			OL-F-6A-21-CCP-01		OL-F-6A-21-CCP-01			OL-F-6A-21-CCP-01		OL-F-6A-21-CCP-01			OL-F-6A-21-CCP-01		OL-F-6A-21-CCP-01			OL-F-5A-21-SMB-03		OL-F-5A-21-SMB-03		
				Sampled	5/20/2021		5/20/2021			6/1/2021		6/1/2021			6/1/2021		6/1/2021			6/1/2021		6/1/2021			6/7/2021		6/7/2021		
				SDG	B7553		B7553			B7553		B7553			B7553		B7553			JD78163		JD78163			B7553		B7553		
				Lab Sample ID	B7553_20972_DF_001-R3		B7553_20972_DF_001-R3DUP			B7553_014		B7553_014DUP			B7553_20758_014		B7553_20758_014DUP			JD78163-14		JD78163-21			B7553_20953_DF_010-R2		B7553_20953_DF_010-R2DUP		
				Medium	Tissue		Tissue			Tissue		Tissue			Tissue		Tissue			Tissue		Tissue			Tissue		Tissue		
				Sample Type	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)
				Matrix	T-FT		TQ			T-FT		TQ			T-FT		TQ			T-FT		TQ			T-FT		TQ		
Method	Parameter Code	Parameter Name	Units	Fraction																									
ASTM D2216	MOISTURE-%	Percent Moisture	%	NA						67.32		67.79		0.70															
SW3540	LIPIDS	%Lipids Determination	%	NA											9.798		9.49		3.19										
SW7471	7439-97-6	Mercury	mg/kg	T																0.17		0.16	H	6.06					
SW8081	118-74-1	Hexachlorobenzene	ug/kg	T																0.78		0.78		0					
SW8082	12674-11-2	Aroclor-1016	ug/kg	T																9.8	U	9.8	U						
SW8082	11104-28-2	Aroclor-1221	ug/kg	T																9.8	U	9.8	U						
SW8082	11141-16-5	Aroclor-1232	ug/kg	T																9.8	U	9.8	U						
SW8082	53469-21-9	Aroclor-1242	ug/kg	T																9.8	U	9.8	U						
SW8082	12672-29-6	Aroclor-1248	ug/kg	T																107		103		3.81					
SW8082	11097-69-1	Aroclor-1254	ug/kg	T																193		186		3.69					
SW8082	11096-82-5	Aroclor-1260	ug/kg	T																229		222		3.10					
SW8082	11100-14-4	Aroclor-1268	ug/kg	T																9.8	U	9.8	U						
SW8082	PCB	Total PCBs	ug/kg	T																529		511		3.46					
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g	NA	3.28	J	2.81	J	15.44																0.244	U	0.233	U	
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g	NA	0.367	U	0.279	U																	0.164	U	0.199	U	
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g	NA	0.474	U	0.369	U																	0.177	U	0.226	U	
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g	NA	0.464	U	0.578	U																	0.296	U	0.25	U	
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g	NA	0.297	U	0.377	U																	0.155	U	0.19	U	
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g	NA	1.21	J	0.543	U																	0.284	U	0.262	U	
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g	NA	0.272	U	0.339	U																	0.164	U	0.193	U	
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g	NA	0.515	UJ	0.67	U																	0.279	U	0.309	U	
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g	NA	0.347	U	0.449	U																	0.209	U	0.247	U	
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g	NA	0.815	J	0.652		22.22																0.251	J	0.296	U	
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g	NA	0.764	J	0.618	J	21.13																0.232	U	0.176	U	
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g	NA	0.3	U	0.382	U																	0.165	U	0.199	U	
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g	NA	2.4	J	1.57	J	41.81																0.581	J	0.662		13.03
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g	NA	0.395	U	0.434	J																	0.354	U	0.249	U	
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g	NA	5.39		4.33		21.81																0.828		0.577		35.73
SW8290	3268-87-9	OCDD	pg/g	NA	3.33	J	3.23	JB	3.05																0.363	J	0.519	U	
SW8290	39001-02-0	OCDF	pg/g	NA	0.537	U	0.801	U																	0.31	U	0.288	U	
SW8290	HpCDD	Total Hepta-Dixons	pg/g	NA	3.28		2.81		15.44																0.244	U	0.233	U	
SW8290	HpCDF	Total HPCDF	pg/g	NA	0.415	U	0.32	U																	0.17	U	0.212	U	
SW8290	HxCDD	Total HxCDD	pg/g	NA	1.21	J	0.594	U																	0.285	U	0.274	U	
SW8290	HxCDF	Total HxCDF	pg/g	NA	0.301	U	0.383	U																	0.172	U	0.206	U	
SW8290	PeCDD	Total PECDD	pg/g	NA	0.815	J	0.652		22.22																0.251	J	0.296	U	
SW8290	PeCDF	Total PECDF	pg/g	NA	3.17	J	2.51		23.24																0.581	J	0.662		13.03
SW8290	TCDD	Total TCDD	pg/g	NA	0.395	U	0.434																		0.354	U	0.249	U	
SW8290	TCDF	Total TCDF	pg/g	NA	6.28	J	5.02		22.30																0.828		0.577		35.73

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				Location ID	OL-F-1A		OL-F-1A			OL-F-1A		OL-F-1A			OL-F-1A		OL-F-1A			OL-F-5A		OL-F-5A		
				Field Sample ID	OL-F-3303-13F		OL-F-3303-13F-DUP			OL-F-3303-13F		OL-F-3303-13F-DUP			OL-F-3303-13F		OL-F-3303-13F-DUP			OL-F-3309-12F		OL-F-3309-12F-DUP		
				Sample Name	OL-F-1A-21-CCP-02		OL-F-1A-21-CCP-02			OL-F-1A-21-CCP-02		OL-F-1A-21-CCP-02			OL-F-1A-21-CCP-02		OL-F-1A-21-CCP-02			OL-F-5A-21-SMB-02		OL-F-5A-21-SMB-02		
				Sampled	5/27/2021		5/27/2021			5/27/2021		5/27/2021			5/27/2021		5/27/2021			6/7/2021		3/7/2024		
				SDG	B7554		B7554			B7554		B7554			JD80342		JD80342			B7554		B7554		
				Lab Sample ID	B7554_001		B7554_001-DUP			B7554_20790_001		B7554_20790_001-DUP			JD80342-1		JD80342-21			B7554_20957_DF_012-R2		B7554_20957_DF_012-R2DUP		
				Medium	Tissue		Tissue			Tissue		Tissue			Tissue		Tissue			Tissue		Tissue		
				Sample Type	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)
				Matrix	T-FT		TQ			T-FT		TQ			T-FT		TQ			T-FT		TQ		
Method	Parameter Code	Parameter Name	Units	Fraction																				
ASTM D2216	MOISTURE-%	Percent Moisture	%	NA	76.29		76.05		0.32															
SW3540	LIPIDS	%Lipids Determination	%	NA						1.64	J-	1.528		7.07										
SW7471	7439-97-6	Mercury	mg/kg	T											0.4		0.4		0.00					
SW8081	118-74-1	Hexachlorobenzene	ug/kg	T											0.22		0.21		4.65					
SW8082	12674-11-2	Aroclor-1016	ug/kg	T											9.6	U	9.6	U						
SW8082	11104-28-2	Aroclor-1221	ug/kg	T											9.6	U	9.6	U						
SW8082	11141-16-5	Aroclor-1232	ug/kg	T											9.6	U	9.6	U						
SW8082	53469-21-9	Aroclor-1242	ug/kg	T											9.6	U	9.6	U						
SW8082	12672-29-6	Aroclor-1248	ug/kg	T											36.8	J	52.9		35.90					
SW8082	11097-69-1	Aroclor-1254	ug/kg	T											162		164		1.23					
SW8082	11096-82-5	Aroclor-1260	ug/kg	T											137		132		3.72					
SW8082	11100-14-4	Aroclor-1268	ug/kg	T											9.6	U	9.6	U						
SW8082	PCB	Total PCBs	ug/kg	T											336		350		4.08					
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g	NA																0.239	U	0.256	U	
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g	NA																0.58	U	0.238	U	
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g	NA																0.833	U	0.405	U	
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g	NA																0.308	U	0.325	U	
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g	NA																0.133	U	0.132	U	
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g	NA																0.284	U	0.316	U	
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g	NA																0.126	U	0.144	U	
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g	NA																	R	0.326	U	
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g	NA																0.166	U	0.21	U	
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g	NA																0.292	J	0.174		50.64
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g	NA																0.198	U	0.212	U	
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g	NA																0.141	U	0.178	U	
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g	NA																0.224	J	0.459	J	68.81
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g	NA																0.175	U	0.162	U	
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g	NA																1.47	J	0.806		58.35
SW8290	3268-87-9	OCDD	pg/g	NA																0.326	UJ	0.356	U	
SW8290	39001-02-0	OCDF	pg/g	NA																0.343	U	0.239	U	
SW8290	HpCDD	Total Hepta-Dixons	pg/g	NA																0.239	U	0.256	U	
SW8290	HpCDF	Total HPCDF	pg/g	NA																0.688	U	0.307	U	
SW8290	HxCDD	Total HxCDD	pg/g	NA																0.3	U	0.321	U	
SW8290	HxCDF	Total HxCDF	pg/g	NA																0.14	U	0.163	U	
SW8290	PeCDD	Total PECDD	pg/g	NA																0.292	J	0.174		50.64
SW8290	PeCDF	Total PECDF	pg/g	NA																0.224	J	0.459		68.81
SW8290	TCDD	Total TCDD	pg/g	NA																0.175	U	0.162	U	
SW8290	TCDF	Total TCDF	pg/g	NA																4.75	J	1.15		122.03

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				Location ID	OL-F-7A		OL-F-7A			OL-F-7A		OL-F-7A			OL-F-6A		OL-F-6A			OL-F-6A		OL-F-6A		
				Field Sample ID	OL-F-3302-01F		OL-F-3302-01F-DUP			OL-F-3302-01F		OL-F-3302-01F-DUP			OL-F-3305-02F		OL-F-3305-02F-DUP			OL-F-3305-02F		OL-F-3305-02F-DUP		
				Sample Name	OL-F-7A-21-WALL-01		OL-F-7A-21-WALL-01			OL-F-7A-21-WALL-01		OL-F-7A-21-WALL-01			OL-F-6A-21-CCP-02		OL-F-6A-21-CCP-02			OL-F-6A-21-CCP-02		OL-F-6A-21-CCP-02		
				Sampled	5/17/2021		5/17/2021			5/17/2021		5/17/2021			6/1/2021		6/1/2021			6/1/2021		6/1/2021		
				SDG	B7556		B7556			B7556		B7556			B7556		B7556			JD85967		JD85967		
				Lab Sample ID	B7556_21016_005		B7556_21016_005DUP			B7556_21016_DF_005-RJ		B7556_21016_DF_005DUP			B7556_011		B7556_011DUP			JD85967-11		JD85967-21		
				Medium	Tissue		Tissue			Tissue		Tissue			Tissue		Tissue			Tissue		Tissue		
				Sample Type	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)
				Matrix	T-FT		TQ			T-FT		TQ			T-FT		TQ			T-FT		TQ		
Method	Parameter Code	Parameter Name	Units	Fraction																				
ASTM D2216	MOISTURE-%	Percent Moisture	%	NA											68.36		68.8		0.64					
SW3540	LIPIDS	%Lipids Determination	%	NA	3.302		3.839		15.04															
SW7471	7439-97-6	Mercury	mg/kg	T																0.093		0.098		5.24
SW8081	118-74-1	Hexachlorobenzene	ug/kg	T																0.89		0.94		5.46
SW8082	12674-11-2	Aroclor-1016	ug/kg	T																9.8	U	10	U	
SW8082	11104-28-2	Aroclor-1221	ug/kg	T																9.8	U	10	U	
SW8082	11141-16-5	Aroclor-1232	ug/kg	T																9.8	U	10	U	
SW8082	53469-21-9	Aroclor-1242	ug/kg	T																9.8	U	10	U	
SW8082	12672-29-6	Aroclor-1248	ug/kg	T																247		210		16.19
SW8082	11097-69-1	Aroclor-1254	ug/kg	T																121		109		10.43
SW8082	11096-82-5	Aroclor-1260	ug/kg	T																140	J	102		31.40
SW8082	11100-14-4	Aroclor-1268	ug/kg	T																9.8	U	10	U	
SW8082	PCB	Total PCBs	ug/kg	T																508		420		18.97
SW8290	35822-46-9	1,2,3,4,6,7,8-HpCDD	pg/g	NA						0.239	U	0.358	U											
SW8290	67562-39-4	1,2,3,4,6,7,8-HpCDF	pg/g	NA						0.175	U	0.26	U											
SW8290	55673-89-7	1,2,3,4,7,8,9-HpCDF	pg/g	NA						0.285	U	0.317	U											
SW8290	39227-28-6	1,2,3,4,7,8-HxCDD	pg/g	NA						0.491	U	0.372	U											
SW8290	70648-26-9	1,2,3,4,7,8-HxCDF	pg/g	NA						0.284	U	0.178	U											
SW8290	57653-85-7	1,2,3,6,7,8-HxCDD	pg/g	NA						0.52	U	0.375	U											
SW8290	57117-44-9	1,2,3,6,7,8-HxCDF	pg/g	NA						0.301	U	0.163	U											
SW8290	19408-74-3	1,2,3,7,8,9-HxCDD	pg/g	NA						0.581	U	0.399	U											
SW8290	72918-21-9	1,2,3,7,8,9-HxCDF	pg/g	NA						0.383	U	0.257	U											
SW8290	40321-76-4	1,2,3,7,8-PeCDD	pg/g	NA						0.456	UJ	0.398	U											
SW8290	57117-41-6	1,2,3,7,8-PeCDF	pg/g	NA						0.312	U	0.234	U											
SW8290	60851-34-5	2,3,4,6,7,8-HxCDF	pg/g	NA						0.326	U	0.201	U											
SW8290	57117-31-4	2,3,4,7,8-PeCDF	pg/g	NA						0.593	J	0.581		2.04										
SW8290	1746-01-6	2,3,7,8-TCDD	pg/g	NA						0.644	U	0.567	U											
SW8290	51207-31-9	2,3,7,8-Tcdf	pg/g	NA						1.13	J	1.15		1.75										
SW8290	3268-87-9	OCDD	pg/g	NA						0.547	UJ	0.417	U											
SW8290	39001-02-0	OCDF	pg/g	NA						0.509	U	0.365	U											
SW8290	HpCDD	Total Hepta-Dixons	pg/g	NA						0.239	U	0.358	U											
SW8290	HpCDF	Total HPCDF	pg/g	NA						0.222	U	0.285	U											
SW8290	HxCDD	Total HxCDD	pg/g	NA						0.531	U	0.381	U											
SW8290	HxCDF	Total HxCDF	pg/g	NA						0.32	U	0.196	U											
SW8290	PeCDD	Total PECDD	pg/g	NA						0.456	U	0.398	U											
SW8290	PeCDF	Total PECDF	pg/g	NA						0.593	J	0.581		2.04										
SW8290	TCDD	Total TCDD	pg/g	NA						0.644	U	0.567	U											
SW8290	TCDF	Total TCDF	pg/g	NA						1.13	J	1.15		1.75										

					2021_Sport-04														
				Location ID	OL-F-2A		OL-F-2A			OL-F-2A		OL-F-2A			OL-F-2A		OL-F-2A		
				Field Sample ID	OL-F-3307-03F		OL-F-3307-03FDUP			OL-F-3307-03F		OL-F-3307-03FDUP			OL-F-3307-03F		OL-F-3307-03F-DUP		
				Sample Name	OL-F-2A-21-WALL-01		OL-F-2A-21-WALL-01			OL-F-2A-21-WALL-01		OL-F-2A-21-WALL-01			OL-F-2A-21-WALL-01		OL-F-2A-21-WALL-01		
				Sampled	6/3/2021		6/3/2021			6/3/2021		6/3/2021			6/3/2021		6/3/2021		
				SDG	B7555		B7555			B7555		B7555			JD87136		JD87136		
				Lab Sample ID	B7555_012		B7555_012			B7555_21051_012		B7555_21051_012DUP			JD87136-12		JD87136-21		
				Medium	Tissue		Tissue		Relative Percent Difference (RPD)	Tissue		Tissue		Relative Percent Difference (RPD)	Tissue		Tissue		Relative Percent Difference (RPD)
				Sample Type	REG		LR			REG		LR			REG		LR		
				Matrix	T-FT		TQ			T-FT		TQ			T-FT		TQ		
Method	Parameter Code	Parameter Name	Units	Fraction															
ASTM D2216	MOISTURE-%	Percent Moisture	%	NA	74.16		73.45		0.96										
SW3540	LIPIDS	%Lipids Determination	%	NA						3.302		3.811		14.31182					
SW7471	7439-97-6	Mercury	mg/kg	T											1.2		1.1		8.70
SW8081	118-74-1	Hexachlorobenzene	ug/kg	T											0.36	J-	0.32		11.76
SW8082	12674-11-2	Aroclor-1016	ug/kg	T											10	U	9.8	U	
SW8082	11104-28-2	Aroclor-1221	ug/kg	T											10	U	9.8	U	
SW8082	11141-16-5	Aroclor-1232	ug/kg	T											10	U	9.8	U	
SW8082	53469-21-9	Aroclor-1242	ug/kg	T											10	U	9.8	U	
SW8082	12672-29-6	Aroclor-1248	ug/kg	T											200		239		17.77
SW8082	11097-69-1	Aroclor-1254	ug/kg	T											292		332		12.82
SW8082	11096-82-5	Aroclor-1260	ug/kg	T											133		146		9.32
SW8082	11100-14-4	Aroclor-1268	ug/kg	T											10	U	9.8	U	
SW8082	PCB	Total PCBs	ug/kg	T											625		717		13.71

					2021_Sport-05														
Location ID					OL-F-5A		OL-F-5A			OL-F-5A		OL-F-5A			OL-F-5A		OL-F-5A		
Field Sample ID					OL-F-3309-07F		OL-F-3309-07FDUP			OL-F-3309-07F		OL-F-3309-07FDUP			OL-F-3309-07F		OL-F-3309-07F-DUP		
Sample Name					OL-F-5A-21-CCP-02		OL-F-5A-21-CCP-02			OL-F-5A-21-CCP-02		OL-F-5A-21-CCP-02			OL-F-5A-21-CCP-02		OL-F-5A-21-CCP-02		
Sampled					6/7/2021		6/7/2021			6/7/2021		6/7/2021			6/7/2021		6/7/2021		
SDG					B7557		B7557			B7557		B7557			JD81415		JD81415		
Lab Sample ID					B7557_004		B7557_004			B7557_20841_004		B7557_20841_004DUP			JD81415-4		JD81415-21		
Medium					Tissue		Tissue			Tissue		Tissue			Tissue		Tissue		
Sample Type					REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)	REG		LR		Relative Percent Difference (RPD)
Matrix					T-FT		TQ			T-FT		TQ			T-FT		TQ		
Method	Parameter Code	Parameter Name	Units	Fraction															
ASTM D2216	MOISTURE-%	Percent Moisture	%	NA	72.53		71.02		2.10										
SW3540	LIPIDS	%Lipids Determination	%	NA						4.389		4.454		1.47					
SW7471	7439-97-6	Mercury	mg/kg	T											0.32		0.33		3.08
SW8081	118-74-1	Hexachlorobenzene	ug/kg	T											0.24	J-	0.27		11.76
SW8082	12674-11-2	Aroclor-1016	ug/kg	T											9.8	UJ	9.8	U	
SW8082	11104-28-2	Aroclor-1221	ug/kg	T											9.8	UJ	9.8	U	
SW8082	11141-16-5	Aroclor-1232	ug/kg	T											9.8	UJ	9.8	U	
SW8082	53469-21-9	Aroclor-1242	ug/kg	T											9.8	UJ	9.8	U	
SW8082	12672-29-6	Aroclor-1248	ug/kg	T											55.4	J-	54.8		1.09
SW8082	11097-69-1	Aroclor-1254	ug/kg	T											78.6	J	115		37.60
SW8082	11096-82-5	Aroclor-1260	ug/kg	T											60.1	J	91.9		41.84
SW8082	11100-14-4	Aroclor-1268	ug/kg	T											9.8	UJ	9.8	U	
SW8082	PCB	Total PCBs	ug/kg	T											194	J-	262		29.82

ATTACHMENT C – SUPPLEMENTAL QC SUMMARY RESULTS

Supplemental Laboratory QC Results - PCBs

SDG	Fish Grouping	LCS %R (Spiking Aroclor)	MS %R (Spiking Aroclor)	MSD %R (Spiking Aroclor)	MS/MSD RPD (Spiking Aroclor)	Duplicate RPD (Aroclor 1248)	Duplicate RPD (Aroclor 1254)	Duplicate RPD (Aroclor 1260)	Duplicate RPD (Total PCBs)
JD78424	Prey 01	101% (1016)	380% (1016)	354% (1016)	7% (1016)	2%	4%	1%	0.80%
		102% (1260)	349% (1260)	275% (1260)	8% (1260)				
JD78426	Prey 02	103% (1016)	101% (1016)	84% (1016)	13% (1016)	37%	31%	22%	31.00%
		98% (1260)	69% (1260)	49% (1260)	13% (1260)				
JD77878	Prey 03	93% (1016)	362% (1016)	270% (1016)	29% (1016)	2%	6%	12%	3.47%
		94% (1260)	26% (1260)	-153% (1260)	30% (1260)				
JD78163	Sport 01	98% (1016)	244% (1016)	255% (1016)	6% (1016)	4%	4%	3%	3%
		99% (1260)	79% (1260)	110% (1260)	5% (1260)				
JD80342	Sport 02	86% (1254)	65% (1016)	56% (1016)	14% (1016)	36%	1%	4%	4.10%
			167% (1260)	70% (1260)	20% (1260)				
JD85967	Sport 03	80% (1254)	87% (1254)	86% (1254)	2% (1254)	16%	10%	31%	19%
JD87136	Sport 04	88% (1254)	112% (1254)	82% (1254)	34% (1254)	18%	13%	9%	13.70%
JD81415	Sport 05	65% (1248)	149% (1016)	155% (1016)	4% (1016)	1%	38%	42%	30%
			39% (1260)	46% (1260)	4% (1260)				

NOTES:

SDG - Sample Delivery Group

LCS - Laboratory Control Sample

MS - Matrix Spike

MSD - Matrix Spike Duplicate

%R - Percent Recovery

RPD - Relative Percent Difference

Supplemental Laboratory QC Results - Mercury

SDG	Fish Grouping	LCS %R	MS %R	MSD %R	MS/MSD RPD	Duplicate RPD
JD78424	Prey 01	111%	96%	94%	4%	6%
JD78426	Prey 02	102%	94%	90%	3%	6%
JD77878	Prey 03	102%	84%	113%	21%	9%
JD78163	Sport 01	105%	100%	91%	4%	6%
JD80342	Sport 02	114%	100%	110%	3%	0%
JD85967	Sport 03	99%	98%	106%	10%	5%
JD87136	Sport 04	111%	567%	504%	4%	9%
JD81415	Sport 05	111%	107%	112%	0%	3%

NOTES:
SDG - Sample Delivery Group
LCS - Laboratory Control Sample
MS - Matrix Spike
MSD - Matrix Spike Duplicate
%R - Percent Recovery
RPD - Relative Percent Difference

APPENDIX 3B – BIOTA ADDITIONAL INFORMATION

TABLE 3B.1
CALCULATED DIOXIN/FURAN HUMAN MAMMALIAN TEQs in 2021 FISH TISSUE SAMPLES

Location ID	Field Sample ID	Fish Species	Date Sampled	TEQ (full dl) (ng/kg)	TEQ (half dl) (ng/kg)	TEQ (ND=0) (ng/kg)
OL-F-1A	OL-F-3303-01F	CCP	5/24/2021	1.41	0.90	0.39
OL-F-1A	OL-F-3303-13F*	CCP	5/27/2021	2.57	2.28	1.98
OL-F-2A	OL-F-3311-05F	CCP	6/15/2021	0.78	0.46	0.13
OL-F-3A	OL-F-3303-10F*	CCP	5/26/2021	0.62	0.36	0.10
OL-F-4A	OL-F-3302-17F	CCP	5/21/2021	1.20	0.65	0.09
OL-F-4A	OL-F-3307-08F*	CCP	6/4/2021	0.65	0.38	0.11
OL-F-4A	OL-F-3317-02F*	CCP	7/28/2021	0.69	0.44	0.19
OL-F-5A	OL-F-3302-13F	CCP	5/20/2021	2.87	2.56	2.25
OL-F-5A	OL-F-3314-01F	CCP	6/24/2021	0.85	0.49	0.14
OL-F-5B	OL-F-3306-01F	CCP	6/3/2021	0.85	0.46	0.07
OL-F-6A	OL-F-3305-01F	CCP	6/1/2021	1.38	1.24	1.09
OL-F-7A	OL-F-3305-07F*	CCP	6/2/2021	1.85	1.81	1.78
OL-F-1A	OL-F-3301-01F	PKSD	4/13/2021	0.72	0.36	0.00
OL-F-1A	OL-F-3301-02F	PKSD	4/14/2021	1.34	0.67	0.00
OL-F-1A	OL-F-3301-03F*	PKSD	4/20/2021	0.90	0.45	0.00
OL-F-1A	OL-F-3301-04F	PKSD	4/20/2021	0.79	0.39	0.00
OL-F-2A	OL-F-3301-05F	PKSD	4/28/2021	0.60	0.30	0.00
OL-F-2A	OL-F-3303-12F	PKSD	5/26/2021	0.80	0.40	0.00
OL-F-3A	OL-F-3307-06F	PKSD	6/4/2021	0.76	0.38	0.00
OL-F-3A	OL-F-3307-07F	PKSD	6/4/2021	0.60	0.30	0.00
OL-F-4A	OL-F-3302-12F	PKSD	5/20/2021	0.84	0.42	0.00
OL-F-5B	OL-F-3309-08F	PKSD	6/7/2021	0.66	0.34	0.01
OL-F-5B	OL-F-3309-09F	PKSD	6/7/2021	0.82	0.41	0.00
OL-F-5B	OL-F-3309-10F	PKSD	6/7/2021	0.61	0.31	0.00

Notes:
*Rejected result for 1,2,3,7,8,9-HxCDD not included in total TEQ calculation. Per standard guidance from ATSDR, to confirm that the exclusion of rejected results do not have an unacceptably large influence on the total TEQ, total TEQs were calcualted for effected samples both with and without the rejected results. The relative percent difference (RPD) between total TEQs with and without unusable results were minimal, ranging from 0.7% to 5.8%. ATSDR recommends calculating TEQs without rejected data if RPDs are less than 50%

Acronyms:
TEQ = toxicity equivalent quotient (calculated using human and mammalian toxic equivalency factors)
dl = detection limit   ND = non-detect   ng/kg = nanograms per kilogram
CCP = Common Carp   SMB = Smallmouth Bass
PKSD = Pumpkinseed   WALL = Walleye

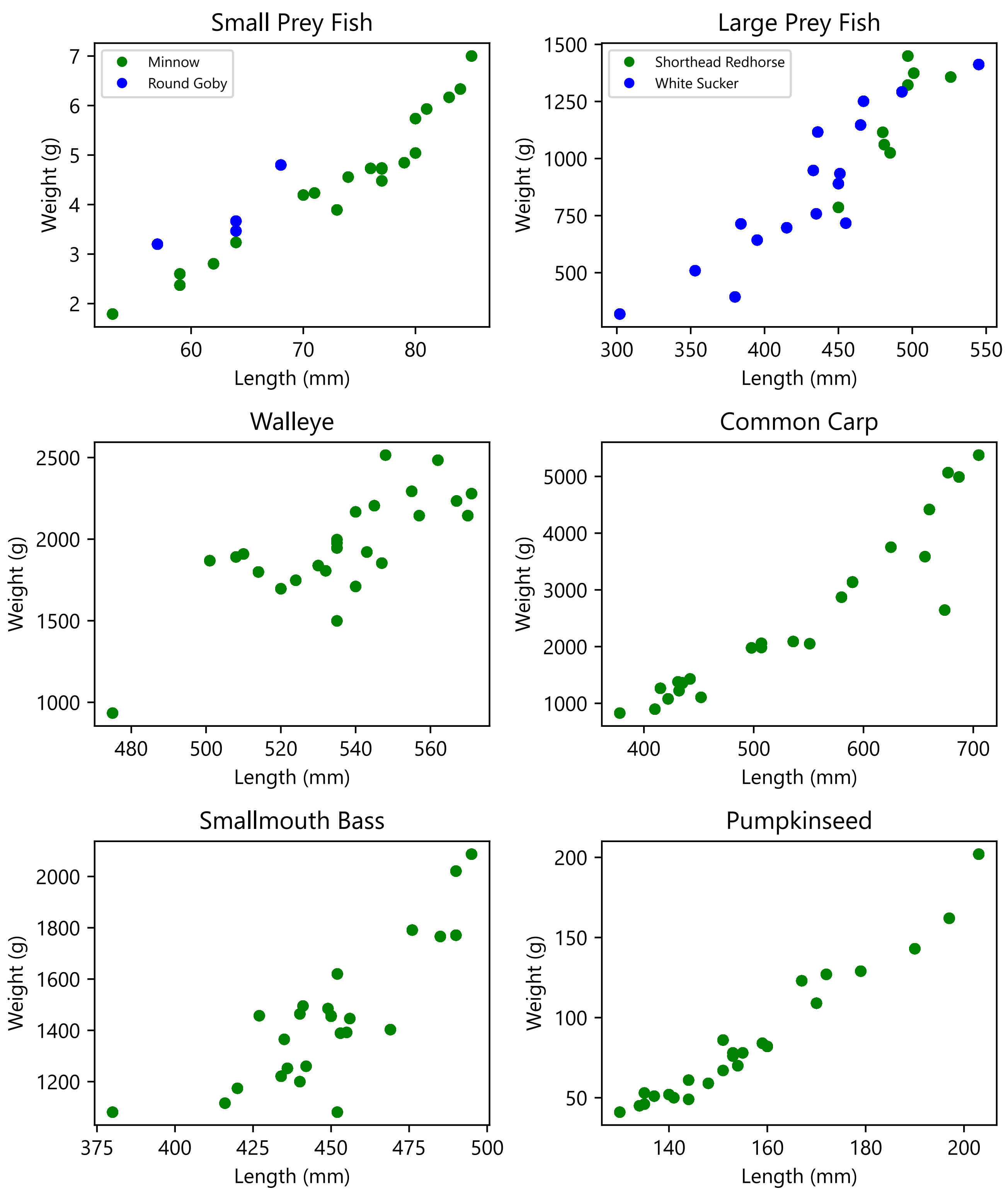
TABLE 3B.1
CALCULATED DIOXIN/FURAN HUMAN MAMMALIAN TEQs in 2021 FISH TISSUE SAMPLES

Location ID	Field Sample ID	Fish Species	Date Sampled	TEQ (full dl) (ng/kg)	TEQ (half dl) (ng/kg)	TEQ (ND=0) (ng/kg)
OL-F-6A	OL-F-3305-04F*	SMB	6/1/2021	0.98	0.80	0.62
OL-F-7A	OL-F-3307-01F*	SMB	6/3/2021	0.61	0.35	0.09
OL-F-3A	OL-F-3309-03F	SMB	6/4/2021	0.99	0.60	0.22
OL-F-5A	OL-F-3309-12F*	SMB	6/7/2021	0.82	0.66	0.51
OL-F-5A	OL-F-3309-13F	SMB	6/7/2021	1.03	0.77	0.51
OL-F-4A	OL-F-3309-16F*	SMB	6/9/2021	1.11	0.76	0.42
OL-F-1A	OL-F-3311-03F	SMB	6/15/2021	1.30	0.71	0.12
OL-F-5B	OL-F-3314-05F	SMB	7/16/2021	1.55	1.20	0.84
OL-F-5B	OL-F-3314-06F	SMB	7/16/2021	0.86	0.70	0.55
OL-F-5B	OL-F-3314-07F*	SMB	7/16/2021	0.82	0.67	0.53
OL-F-2A	OL-F-3316-03F	SMB	7/19/2021	0.93	0.60	0.27
OL-F-6A	OL-F-3316-04F	SMB	7/19/2021	1.29	1.12	0.96
OL-F-1A	OL-F-3302-08F*	WALL	5/19/2021	0.88	0.80	0.73
OL-F-1A	OL-F-3302-09F	WALL	5/19/2021	1.10	0.59	0.08
OL-F-2A	OL-F-3307-04F	WALL	6/3/2021	0.92	0.76	0.60
OL-F-2A	OL-F-3307-05F*	WALL	6/3/2021	0.64	0.42	0.19
OL-F-3A	OL-F-3309-05F*	WALL	6/4/2021	0.87	0.70	0.53
OL-F-4A	OL-F-3309-17F	WALL	6/9/2021	1.04	0.61	0.19
OL-F-5A	OL-F-3302-14F	WALL	5/20/2021	0.81	0.49	0.17
OL-F-5A	OL-F-3309-14F*	WALL	6/7/2021	1.54	0.91	0.29
OL-F-5B	OL-F-3309-01F	WALL	6/4/2021	1.22	0.99	0.75
OL-F-6A	OL-F-3305-05F*	WALL	6/1/2021	1.34	0.95	0.56
OL-F-7A	OL-F-3302-01F	WALL	5/17/2021	1.70	0.99	0.29
OL-F-7A	OL-F-3302-03F	WALL	5/17/2021	0.79	0.52	0.25

Notes:
*Rejected result for 1,2,3,7,8,9-HxCDD not included in total TEQ calculation. Per standard guidance from ATSDR, to confirm that the exclusion of rejected results do not have an unacceptably large influence on the total TEQ, total TEQs were calcualted for effected samples both with and without the rejected results. The relative percent difference (RPD) between total TEQs with and without unusable results were minimal, ranging from 0.7% to 5.8%. ATSDR recommends calculating TEQs without rejected data if RPDs are less than 50%

Acronyms:
TEQ = toxicity equivalent quotient (calculated using human and mammalian toxic equivalency factors)
dl = detection limit
ND = non-detect
ng/kg = nanograms per kilogram
CCP = Common Carp
SMB = Smallmouth Bass
PKSD = Pumpkinseed
WALL = Walleye

DRAFT



Small prey fish are whole-body composites; values shown are the average length and average weight of the individuals in each composite.
Large prey fish are whole-body samples. All other species are standard fillets.
The lengths and weights of these species are based on individual fish measurements.

Figure 3B.1
Weight versus Length for Onondaga Lake Fish (2021)

APPENDIX 4A - DATA USABILITY AND SUMMARY REPORT ONONDAGA LAKE 2021 MONITORED NATURAL RECOVERY

APPENDIX 4A:

DATA USABILITY SUMMARY REPORT

2021 MONITORED NATURAL RECOVERY ONONDAGA LAKE ONONDAGA COUNTY, NEW YORK

Prepared For:

Honeywell

301 Plainfield Road, Suite 330
Syracuse, Ny 13212

Prepared By:

PARSONS

301 Plainfield Road, Suite 350
Syracuse, New York 13212

APRIL 2022

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LIST OF ATTACHMENTS

SECTION 4A1 DATA USABILITY SUMMARY

Sediment trap and sediment samples were collected as part of the Monitored Natural Recovery efforts at Onondaga Lake from May 11, 2021 through November 16, 2021. Analytical results from these samples were validated and reviewed by Parsons for usability with respect to the following requirements:

- Onondaga Lake Natural Recovery Monitoring Work Plan for 2021 (Parsons and Anchor QEA 2021);
- Quality Assurance Project Plan (QAPP) for Onondaga Lake Construction and Post-Construction Media Monitoring (Surface Water, Biota and Sediment) (Parsons. Anchor QEA and Upstate Freshwater Institute [UFI] 2021); and
- USEPA Region II Standard Operating Procedures (SOPs) for inorganic data review.

The analytical laboratories for this project were Eurofins – Frontier, Eurofins – Lancaster, and Upstate Freshwater Institute (UFI). These laboratories are certified by the State of New York to conduct laboratory analyses for this project through the National Environmental Laboratory Accreditation Conference (NELAC) and the New State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP).

4A1.1 Laboratory Data Packages

The laboratory data package turnaround time, defined as the time from sample receipt by the laboratory to receipt of the analytical data packages by Parsons, was 10 to 56 days for the samples.

The data packages received from the laboratories were paginated, complete, and overall were of good quality. Comments on specific quality control (QC) and other requirements are discussed in detail in the attached data validation report which is summarized by sample media in Section 4A2.

4A1.2 Sampling and Chain-of-Custody

The samples were collected, properly preserved, shipped under a chain-of-custody (COC) record, and received at the laboratories within one day of sampling. All samples were received intact and in good condition at the laboratories.

4A1.3 Laboratory Analytical Methods

The sediment trap samples were collected from the site and analyzed for low level mercury, total suspended solids (TSS), and total fixed solids (TFS). The sediment samples were collected from the site and analyzed for mercury. Summaries of deviations from the Work Plan, QAPP, or USEPA Region II SOPs concerning these laboratory analyses are presented in Subsections 4A1.3.1 through 4A1.3.2. The data qualifications resulting from the data validation review and statements on the laboratory analytical precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) are discussed for each analytical method by media in Section 4A2. The laboratory data were reviewed and may be qualified with the following validation flags:

"U" - not detected at the value given
"UJ" - estimated and not detected at the value given
"J" - estimated at the value given

"J+" - estimated biased high at the value given
"J-" - estimated biased low at the value given
"N" - presumptive evidence at the value given
"R" - unusable value

The validated laboratory data were tabulated and are presented in Attachment A.

4A1.3.1 Mercury Analysis

Sediment trap samples were analyzed for low level mercury using the USEPA 1631E analytical method. Sediment samples were analyzed for mercury using the USEPA SW-846 7471B analytical method. Certain reported results for the mercury samples were qualified as not detected based upon blank contamination; and qualified as estimated based upon matrix spike/matrix spike duplicate (MS/MSD) recoveries, laboratory duplicate precision, and sample moisture content. The reported mercury analytical results were considered 100% complete (i.e., usable) for the data presented by Eurofins. PARCCS requirements were met.

4A1.3.2 Other Sediment Trap Analyses

Sediment trap samples were also analyzed TSS and TFS using the SM2540D and SM2540E analytical methods, respectively. The reported results for these samples did not require qualification resulting from data validation. The reported analytical results for these parameters were considered 100% complete (i.e., usable) for the data presented by UFI. PARCCS requirements were met.

SECTION 4A2 DATA VALIDATION REPORT

4A2.1 Sediment Trap Samples

Data review has been completed for data packages generated by Eurofins – Frontier (Eurofins) and UFI containing results for sediment trap samples collected from the site. The specific samples contained in these data packages, the analyses performed, and the validated laboratory data were tabulated and are presented in Attachment A-1. All of these samples were properly preserved, shipped under a COC record, and received intact by the analytical laboratory.

Data validation was performed for all samples in accordance with the project work plan and QAPP as well as the USEPA Region II SOP HW-2c, Revision 15 "Mercury and Cyanide Data Validation". This data validation and usability report is presented by analysis type.

4A2.1.1 Low Level Mercury

The following items were reviewed for compliancy in the low level mercury analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Initial and continuing calibration, and laboratory preparation blank contamination
- Matrix spike / matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- Field duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of blank contamination as discussed below.

<u>Blank Contamination</u>

The laboratory continuing calibration blank associated with the project samples contained low level mercury at a concentration of 0.09 ng/L; the laboratory initial calibration blanks associated with the project samples contained low level mercury at a concentration range of 0.03-0.09 ng/L; and the laboratory preparation blanks associated with the project samples contained low level mercury at a concentration range of 0.09-0.52 µg/L. Therefore, results for this analyte less than validation action concentrations were considered not detected and qualified "U" for the affected samples.

<u>Usability</u>

All low level mercury results for the sediment trap samples were considered usable following data validation.

<u>Summary</u>

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The low level mercury data presented by

Eurofins were 100% complete (i.e., usable). The validated low level mercury laboratory data are tabulated and presented in Attachment A-1.

4A2.1.2 TSS and TFS

All custody documentation, holding times, matrix spike recoveries, laboratory duplicate precision, laboratory control sample recoveries, laboratory method blank contamination, initial and continuing calibration verifications, field duplicate precision, and quantitation limits were reviewed for compliance. Validation qualification of the sample results for these parameters was not required. The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The data for these parameters presented by UFI were 100% complete (i.e., usable). The validated laboratory data are tabulated and presented in Attachment A-1.

4A2.2 Sediment Samples

Data review has been completed for data packages generated by Eurofins – Lancaster (Eurofins) containing results for sediment samples collected from the site. The specific samples contained in these data packages, the analyses performed, and the validated laboratory data were tabulated and are presented in Attachment A-2. All of these samples were properly preserved, shipped under a COC record, and received intact by the analytical laboratory.

Data validation was performed for all samples in accordance with the project work plan and QAPP as well as the USEPA Region II SOP HW-2c, Revision 15 “Mercury and Cyanide Data Validation”. This data validation and usability report is presented by analysis type.

4A2.2.1 Mercury

The following items were reviewed for compliancy in the mercury analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Initial and continuing calibration, laboratory preparation blank, and equipment blank contamination
- Matrix spike / matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- Field duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of MS/MSD recoveries and laboratory duplicate precision as discussed below.

MS/MSD Recoveries

All MS/MSD recoveries were considered acceptable and within the 80-120%R QC limit with the exception of the high MSD recovery for mercury (123%R) associated with sample OL-3701-05; the MS recovery for mercury (74%R) associated with sample OL-3703-19; and the high MS/MSD recoveries for mercury (251%R/202%R) associated with sample OL-3707-02. Therefore, results were considered estimated and qualified “J” for the affected samples.

Laboratory Duplicate Precision

All laboratory duplicate precision results were considered acceptable and within the 0-20%RPD QC limit with the exception of the laboratory duplicate precision for mercury (25%RPD, 36%RPD) associated with samples OL-3703-08 and OL-3704-05. Therefore, results were considered estimated and qualified “J” for the affected samples.

Usability

All mercury results for the sediment samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The mercury data presented by Eurofins were 100% complete (i.e., usable). The validated low level mercury laboratory data are tabulated and presented in Attachment A-2.

It was noted that all sediment samples except for sample OL-3701-18, OL-3706-02, OL-3707-02, -03, -04, -05, -07, -08, -09, and -10 contained less than 50% solids. Therefore, results were considered estimated and qualified “J” for the affected samples.

ATTACHMENT A – VALIDATED LABORATORY DATA

ATTACHMENT A-1 – VALIDATED LABORATORY DATA FOR SEDIMENT TRAP SAMPLES

								Parameter Name	Mercury		Total Fixed Solids		Total Suspended Solids	
								Method	E1631		SM2540E		SM2540D	
								Fraction	T		T		T	
								Units	ug/l		mg/L		mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix						
DEEP_S	OL-3649-01	33	33	5/11/2021	1I00038	Liquid	REG	SLURRY	0.5	U				
DEEP_S	OL-3649-02	33	33	5/25/2021	1I00038	Liquid	REG	SLURRY	0.5	U				
DEEP_S	OL-3649-03	33	33	6/7/2021	1I00038	Liquid	REG	SLURRY	0.05	U				
DEEP_S	OL-3649-04	33	33	6/21/2021	1I00038	Liquid	REG	SLURRY	0.05	U				
DEEP_S	OL-3649-05	33	33	7/7/2021	1I00038	Liquid	REG	SLURRY	0.05	U				
DEEP_S	OL-3649-06	33	33	7/20/2021	1I00038	Liquid	REG	SLURRY	0.5	U				
DEEP_S	OL-3649-07	33	33	8/3/2021	1I00038	Liquid	REG	SLURRY	0.5	U				
DEEP_S	OL-3649-08	33	33	8/17/2021	1I00038	Liquid	REG	SLURRY	0.05	U				
DEEP_S	OL-3649-09	33	33	8/24/2021	1I00038	Liquid	REG	SLURRY	0.62					
DEEP_S	OL-3649-10	33	33	8/31/2021	1I00038	Liquid	REG	SLURRY	0.5	U				
DEEP_S	OL-3694-01	33	33	9/8/2021	1K00169	Liquid	REG	SLURRY	0.5	U				
DEEP_S	OL-3694-02	33	33	9/14/2021	1K00169	Liquid	REG	SLURRY	0.5	U				
DEEP_S	OL-3694-03	33	33	9/21/2021	1K00169	Liquid	REG	SLURRY	0.05	U				
DEEP_S	OL-3694-04	33	33	9/28/2021	1K00169	Liquid	REG	SLURRY	0.5	U				
DEEP_S	OL-3694-05	33	33	10/5/2021	1K00169	Liquid	REG	SLURRY	0.5	U				
DEEP_S	OL-3694-06	33	33	10/12/2021	1K00169	Liquid	REG	SLURRY	0.05	U				
DEEP_S	OL-3694-07	33	33	10/19/2021	1K00169	Liquid	REG	SLURRY	0.5	U				
DEEP_S	OL-3694-08	33	33	10/27/2021	1K00169	Liquid	REG	SLURRY	0.5	U				
DEEP_S	OL-3694-09	33	33	11/2/2021	1K00169	Liquid	REG	SLURRY	0.5	U				
DEEP_S	OL-3694-10	33	33	11/16/2021	1K00169	Liquid	REG	SLURRY	0.5	U				
DEEP_S	OL-3602-01	33	33	5/11/2021	UFI CHM 2021-034	Liquid	REG	SLURRY			1164		1396	
DEEP_S	OL-3602-02	33	33	5/11/2021	UFI CHM 2021-034	Liquid	FD	SLURRY			1084		1300	
DEEP_S	OL-3602-03	33	33	5/11/2021	UFI CHM 2021-034	Liquid	FD2	SLURRY			1172		1404	
DEEP_S	OL-3605-01	33	33	5/20/2021	UFI CHM 2021-034	Liquid	REG	SLURRY			1300		1552	
DEEP_S	OL-3605-02	33	33	5/20/2021	UFI CHM 2021-034	Liquid	FD	SLURRY			1612		1928	
DEEP_S	OL-3605-03	33	33	5/20/2021	UFI CHM 2021-034	Liquid	FD2	SLURRY			1772		2100	
DEEP_S	OL-3606-01	33	33	5/25/2021	UFI CHM 2021-034	Liquid	REG	SLURRY			2384		2684	
DEEP_S	OL-3606-02	33	33	5/25/2021	UFI CHM 2021-034	Liquid	FD	SLURRY			1636		1860	
DEEP_S	OL-3606-03	33	33	5/25/2021	UFI CHM 2021-034	Liquid	FD2	SLURRY			1544		1740	
DEEP_S	OL-3607-01	33	33	6/1/2021	UFI CHM 2021-057	Liquid	REG	SLURRY			1964		2236	
DEEP_S	OL-3607-02	33	33	6/1/2021	UFI CHM 2021-057	Liquid	FD	SLURRY			1684		1924	
DEEP_S	OL-3607-03	33	33	6/1/2021	UFI CHM 2021-057	Liquid	FD2	SLURRY			2644		3024	
DEEP_S	OL-3608-01	33	33	6/7/2021	UFI CHM 2021-057	Liquid	REG	SLURRY			1848		2044	
DEEP_S	OL-3608-02	33	33	6/7/2021	UFI CHM 2021-057	Liquid	FD	SLURRY			2076		2320	
DEEP_S	OL-3608-03	33	33	6/7/2021	UFI CHM 2021-057	Liquid	FD2	SLURRY			2192		2416	
DEEP_S	OL-3610-01	33	33	6/15/2021	UFI CHM 2021-057	Liquid	REG	SLURRY			1544		1768	

									Mercury		Total Fixed Solids		Total Suspended Solids	
								Parameter Name	Mercury		Total Fixed Solids		Total Suspended Solids	
								Method	E1631		SM2540E		SM2540D	
								Fraction	T		T		T	
								Units	ug/l		mg/L		mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix						
DEEP_S	OL-3610-02	33	33	6/15/2021	UFI CHM 2021-057	Liquid	FD	SLURRY			1748		1972	
DEEP_S	OL-3610-03	33	33	6/15/2021	UFI CHM 2021-057	Liquid	FD2	SLURRY			2212		2476	
DEEP_S	OL-3613-01	33	33	6/21/2021	UFI CHM 2021-070	Liquid	REG	SLURRY			408		536	
DEEP_S	OL-3613-02	33	33	6/21/2021	UFI CHM 2021-070	Liquid	FD	SLURRY			356		472	
DEEP_S	OL-3613-03	33	33	6/21/2021	UFI CHM 2021-070	Liquid	FD2	SLURRY			356		516	
DEEP_S	OL-3615-01	33	33	6/29/2021	UFI CHM 2021-070	Liquid	REG	SLURRY			2100		2404	
DEEP_S	OL-3615-02	33	33	6/29/2021	UFI CHM 2021-070	Liquid	FD	SLURRY			1932		2300	
DEEP_S	OL-3615-03	33	33	6/29/2021	UFI CHM 2021-070	Liquid	FD2	SLURRY			1660		1968	
DEEP_S	OL-3618-01	33	33	7/7/2021	UFI CHM 2021-070	Liquid	REG	SLURRY			1192		1360	
DEEP_S	OL-3618-02	33	33	7/7/2021	UFI CHM 2021-070	Liquid	FD	SLURRY			1152		1320	
DEEP_S	OL-3618-03	33	33	7/7/2021	UFI CHM 2021-070	Liquid	FD2	SLURRY			1068		1212	
DEEP_S	OL-3622-01	33	33	7/13/2021	UFI CHM 2021-070	Liquid	REG	SLURRY			1088		1356	
DEEP_S	OL-3622-02	33	33	7/13/2021	UFI CHM 2021-070	Liquid	FD	SLURRY			648		844	
DEEP_S	OL-3622-03	33	33	7/13/2021	UFI CHM 2021-070	Liquid	FD2	SLURRY			984		1216	
DEEP_S	OL-3625-01	33	33	7/20/2021	UFI CHM 2021-081	Liquid	REG	SLURRY			5020		5612	
DEEP_S	OL-3625-02	33	33	7/20/2021	UFI CHM 2021-081	Liquid	FD	SLURRY			4564		5104	
DEEP_S	OL-3625-03	33	33	7/20/2021	UFI CHM 2021-081	Liquid	FD2	SLURRY			5492		6092	
DEEP_S	OL-3629-01	33	33	7/27/2021	UFI CHM 2021-081	Liquid	REG	SLURRY			972		1232	
DEEP_S	OL-3629-02	33	33	7/27/2021	UFI CHM 2021-081	Liquid	FD	SLURRY			1204		1548	
DEEP_S	OL-3629-03	33	33	7/27/2021	UFI CHM 2021-081	Liquid	FD2	SLURRY			1004		1292	
DEEP_S	OL-3632-01	33	33	8/3/2021	UFI CHM 2021-099	Liquid	REG	SLURRY			836		1040	
DEEP_S	OL-3632-02	33	33	8/3/2021	UFI CHM 2021-099	Liquid	FD	SLURRY			656		884	
DEEP_S	OL-3632-03	33	33	8/3/2021	UFI CHM 2021-099	Liquid	FD2	SLURRY			704		900	
DEEP_S	OL-3636-01	33	33	8/9/2021	UFI CHM 2021-099	Liquid	REG	SLURRY			1272		1504	
DEEP_S	OL-3636-02	33	33	8/9/2021	UFI CHM 2021-099	Liquid	FD	SLURRY			736		880	
DEEP_S	OL-3636-03	33	33	8/9/2021	UFI CHM 2021-099	Liquid	FD2	SLURRY			1020		1208	
DEEP_S	OL-3639-01	33	33	8/17/2021	UFI CHM 2021-107	Liquid	REG	SLURRY			1248		1476	
DEEP_S	OL-3639-02	33	33	8/17/2021	UFI CHM 2021-107	Liquid	FD	SLURRY			1436		1692	
DEEP_S	OL-3639-03	33	33	8/17/2021	UFI CHM 2021-107	Liquid	FD2	SLURRY			1716		2032	
DEEP_S	OL-3643-01	33	33	8/24/2021	UFI CHM 2021-107	Liquid	REG	SLURRY			6464		7160	
DEEP_S	OL-3643-02	33	33	8/24/2021	UFI CHM 2021-107	Liquid	FD	SLURRY			9376		10352	
DEEP_S	OL-3643-03	33	33	8/24/2021	UFI CHM 2021-107	Liquid	FD2	SLURRY			9224		10168	
DEEP_S	OL-3646-01	33	33	8/31/2021	UFI CHM 2021-107	Liquid	REG	SLURRY			1472		1724	
DEEP_S	OL-3646-02	33	33	8/31/2021	UFI CHM 2021-107	Liquid	FD	SLURRY			1216		1436	
DEEP_S	OL-3646-03	33	33	8/31/2021	UFI CHM 2021-107	Liquid	FD2	SLURRY			1396		1632	
DEEP_S	OL-3651-01	33	33	9/8/2021	UFI CHM 2021-130	Liquid	REG	SLURRY			1520		1856	

								Parameter Name	Mercury		Total Fixed Solids		Total Suspended Solids	
								Method	E1631		SM2540E		SM2540D	
								Fraction	T		T		T	
								Units	ug/l		mg/L		mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix						
DEEP_S	OL-3651-02	33	33	9/8/2021	UFI CHM 2021-130	Liquid	FD	SLURRY			1644		2024	
DEEP_S	OL-3651-03	33	33	9/8/2021	UFI CHM 2021-130	Liquid	FD2	SLURRY			1656		1988	
DEEP_S	OL-3655-01	33	33	9/14/2021	UFI CHM 2021-130	Liquid	REG	SLURRY			1152		1404	
DEEP_S	OL-3655-02	33	33	9/14/2021	UFI CHM 2021-130	Liquid	FD	SLURRY			1012		1220	
DEEP_S	OL-3655-03	33	33	9/14/2021	UFI CHM 2021-130	Liquid	FD2	SLURRY			992		1156	
DEEP_S	OL-3659-01	33	33	9/21/2021	UFI CHM 2021-130	Liquid	REG	SLURRY			1012		1252	
DEEP_S	OL-3659-02	33	33	9/21/2021	UFI CHM 2021-130	Liquid	FD	SLURRY			1088		1404	
DEEP_S	OL-3659-03	33	33	9/21/2021	UFI CHM 2021-130	Liquid	FD2	SLURRY			1084		1348	
DEEP_S	OL-3663-01	33	33	9/28/2021	UFI CHM 2021-141	Liquid	REG	SLURRY			1188		1500	
DEEP_S	OL-3663-02	33	33	9/28/2021	UFI CHM 2021-141	Liquid	FD	SLURRY			1220		1556	
DEEP_S	OL-3663-03	33	33	9/28/2021	UFI CHM 2021-141	Liquid	FD2	SLURRY			1064		1356	
DEEP_S	OL-3667-01	33	33	10/5/2021	UFI CHM 2021-141	Liquid	REG	SLURRY			808		1048	
DEEP_S	OL-3667-02	33	33	10/5/2021	UFI CHM 2021-141	Liquid	FD	SLURRY			532		732	
DEEP_S	OL-3667-03	33	33	10/5/2021	UFI CHM 2021-141	Liquid	FD2	SLURRY			800		1072	
DEEP_S	OL-3671-01	33	33	10/12/2021	UFI CHM 2021-141	Liquid	REG	SLURRY			556		804	
DEEP_S	OL-3671-02	33	33	10/12/2021	UFI CHM 2021-141	Liquid	FD	SLURRY			476		688	
DEEP_S	OL-3671-03	33	33	10/12/2021	UFI CHM 2021-141	Liquid	FD2	SLURRY			508		732	
DEEP_S	OL-3675-01	33	33	10/19/2021	UFI CHM 2021-159	Liquid	REG	SLURRY			12936		14052	
DEEP_S	OL-3675-02	33	33	10/19/2021	UFI CHM 2021-159	Liquid	FD	SLURRY			13108		14250	
DEEP_S	OL-3675-03	33	33	10/19/2021	UFI CHM 2021-159	Liquid	FD2	SLURRY			11224		12200	
DEEP_S	OL-3679-01	33	33	10/27/2021	UFI CHM 2021-159	Liquid	REG	SLURRY			7064		7876	
DEEP_S	OL-3679-02	33	33	10/27/2021	UFI CHM 2021-159	Liquid	FD	SLURRY			6020		6704	
DEEP_S	OL-3679-03	33	33	10/27/2021	UFI CHM 2021-159	Liquid	FD2	SLURRY			6448		7172	
DEEP_S	OL-3683-01	33	33	11/2/2021	UFI CHM 2021-159	Liquid	REG	SLURRY			10324		11272	
DEEP_S	OL-3683-02	33	33	11/2/2021	UFI CHM 2021-159	Liquid	FD	SLURRY			10568		11536	
DEEP_S	OL-3683-03	33	33	11/2/2021	UFI CHM 2021-159	Liquid	FD2	SLURRY			9452		10324	
DEEP_S	OL-3687-01	33	33	11/10/2021	UFI CHM 2021-170	Liquid	REG	SLURRY			2696		3084	
DEEP_S	OL-3687-02	33	33	11/10/2021	UFI CHM 2021-170	Liquid	FD	SLURRY			3240		3628	
DEEP_S	OL-3687-03	33	33	11/10/2021	UFI CHM 2021-170	Liquid	FD2	SLURRY			2972		3328	
DEEP_S	OL-3691-01	33	33	11/16/2021	UFI CHM 2021-170	Liquid	REG	SLURRY			2580		2908	
DEEP_S	OL-3691-02	33	33	11/16/2021	UFI CHM 2021-170	Liquid	FD	SLURRY			2776		3128	
DEEP_S	OL-3691-03	33	33	11/16/2021	UFI CHM 2021-170	Liquid	FD2	SLURRY			2688		3060	

ATTACHMENT A-2 – VALIDATED LABORATORY DATA FOR SEDIMENT SAMPLES

						Parameter	MERCURY		Percent Moisture		Solids		MERCURY	
						Method	SW7471		ASTM D2216		ASTM D2216		SW7470	
						Units	mg/kg		%		%		mg/L	
Location ID	Field Sample ID	Depth (ft)	Sampled	SDG	Matrix	Sample Type								
OL-STA-80073	OL-3700-17	0 - 0.13	05/18/2021	410-40437-1	SED	REG	0.6	J	71.9		28.1			
OL-STA-80073	OL-3700-18	0.13 - 0.33	05/18/2021	410-40437-1	SED	REG	1.2	J	72.5		27.5			
OL-STA-80075	OL-3700-15	0 - 0.13	05/18/2021	410-40437-1	SED	REG	0.38	J	71.2		28.8			
OL-STA-80075	OL-3700-16	0.13 - 0.33	05/18/2021	410-40437-1	SED	REG	0.96	J	71.1		28.9			
OL-STA-80077	OL-3700-11	0 - 0.13	05/18/2021	410-40437-1	SED	REG	0.72	J	72.2		27.8			
OL-STA-80077	OL-3700-12	0.13 - 0.33	05/18/2021	410-40437-1	SED	REG	1.5	J	72.3		27.7			
OL-STA-80077	OL-3700-13	0 - 0.13	05/18/2021	410-40437-1	SED	FD	0.6	J	72.1		27.9			
OL-STA-80077	OL-3700-14	0.13 - 0.33	05/18/2021	410-40437-1	SED	FD	1.4	J	72.1		27.9			
OL-STA-80085	OL-3700-05	0 - 0.13	05/18/2021	410-40437-1	SED	REG	0.3	J	70.5		29.5			
OL-STA-80085	OL-3700-06	0.13 - 0.33	05/18/2021	410-40437-1	SED	REG	1	J	68.8		31.2			
OL-STA-80237	OL-3700-09	0 - 0.13	05/18/2021	410-40437-1	SED	REG	0.16	J	52.3		47.7			
OL-STA-80237	OL-3700-10	0.13 - 0.33	05/18/2021	410-40437-1	SED	REG	0.96	J	65		35			
OL-VC-80044	OL-3700-01	0 - 0.13	05/18/2021	410-40437-1	SED	REG	0.32	J	69		31			
OL-VC-80044	OL-3700-02	0.13 - 0.33	05/18/2021	410-40437-1	SED	REG	1.1	J	68.3		31.7			
OL-VC-80068	OL-3700-07	0 - 0.13	05/18/2021	410-40437-1	SED	REG	0.39	J	64.8		35.2			
OL-VC-80068	OL-3700-08	0.13 - 0.33	05/18/2021	410-40437-1	SED	REG	1.2	J	64.7		35.3			
OL-VC-80070	OL-3700-19	0 - 0.13	05/18/2021	410-40437-1	SED	REG	0.96	J	61.1		38.9			
OL-VC-80070	OL-3700-20	0.13 - 0.33	05/18/2021	410-40437-1	SED	REG	1.8	J	61.1		38.9			
OL-VC-80172	OL-3700-03	0 - 0.13	05/18/2021	410-40437-1	SED	REG	0.35	J	67.5		32.5			
OL-VC-80172	OL-3700-04	0.13 - 0.33	05/18/2021	410-40437-1	SED	REG	0.94	J	67.6		32.4			
OL-STA-80069	OL-3702-09	0 - 0.13	05/18/2021	410-40439-1	SED	REG	0.63	J	75.8		24.2			
OL-STA-80069	OL-3702-10	0.13 - 0.33	05/18/2021	410-40439-1	SED	REG	1.1	J	73.7		26.3			
OL-STA-80069	OL-3702-11	0 - 0.13	05/18/2021	410-40439-1	SED	FD	0.6	J	75.1		24.9			
OL-STA-80069	OL-3702-12	0.13 - 0.33	05/18/2021	410-40439-1	SED	FD	1.1	J	74.1		25.9			
OL-STA-80072	OL-3702-05	0 - 0.13	05/18/2021	410-40439-1	SED	REG	0.54	J	73.4		26.6			
OL-STA-80072	OL-3702-06	0.13 - 0.33	05/18/2021	410-40439-1	SED	REG	1.4	J	75.1		24.9			
OL-STA-80225	OL-3702-01	0 - 0.13	05/18/2021	410-40439-1	SED	REG	0.51	J	80.4		19.6			
OL-STA-80225	OL-3702-02	0.13 - 0.33	05/18/2021	410-40439-1	SED	REG	1	J	76.9		23.1			
OL-STA-80229	OL-3702-07	0 - 0.13	05/18/2021	410-40439-1	SED	REG	0.47	J	75.4		24.6			
OL-STA-80229	OL-3702-08	0.13 - 0.33	05/18/2021	410-40439-1	SED	REG	1	J	78		22			
OL-VC-80157	OL-3702-03	0 - 0.13	05/18/2021	410-40439-1	SED	REG	0.46	J	77.8		22.2			
OL-VC-80157	OL-3702-04	0.13 - 0.33	05/18/2021	410-40439-1	SED	REG	0.87	J	73.9		26.1			
OL-STA-80074	OL-3701-01	0 - 0.13	05/18/2021	410-40440-1	SED	REG	0.42	J	69.5		30.5			
OL-STA-80074	OL-3701-02	0.13 - 0.33	05/18/2021	410-40440-1	SED	REG	1.6	J	70.5		29.5			
OL-STA-80091	OL-3701-13	0 - 0.13	05/18/2021	410-40440-1	SED	REG	0.44	J	66.7		33.3			
OL-STA-80091	OL-3701-14	0.13 - 0.33	05/18/2021	410-40440-1	SED	REG	1.2	J	71.4		28.6			
OL-STA-80103	OL-3701-07	0 - 0.13	05/18/2021	410-40440-1	SED	REG	0.43	J	73.1		26.9			
OL-STA-80103	OL-3701-08	0.13 - 0.33	05/18/2021	410-40440-1	SED	REG	1.4	J	74.3		25.7			
OL-STA-80227	OL-3701-15	0 - 0.13	05/18/2021	410-40440-1	SED	REG	0.57	J	75.5		24.5			
OL-STA-80227	OL-3701-16	0.13 - 0.33	05/18/2021	410-40440-1	SED	REG	1.2	J	73.4		26.6			
OL-STA-80234	OL-3701-09	0 - 0.13	05/18/2021	410-40440-1	SED	REG	0.42	J	77.4		22.6			
OL-STA-80234	OL-3701-10	0.13 - 0.33	05/18/2021	410-40440-1	SED	REG	1.1	J	78.3		21.7			
OL-VC-80045	OL-3701-03	0 - 0.13	05/18/2021	410-40440-1	SED	REG	0.22	J	61		39			
OL-VC-80045	OL-3701-04	0.13 - 0.33	05/18/2021	410-40440-1	SED	REG	1.1	J	64.2		35.8			
OL-VC-80046	OL-3701-11	0 - 0.13	05/18/2021	410-40440-1	SED	REG	0.46	J	64.5		35.5			

						Parameter	MERCURY		Percent Moisture		Solids		MERCURY	
						Method	SW7471		ASTM D2216		ASTM D2216		SW7470	
						Units	mg/kg		%		%		mg/L	
Location ID	**Field Sample ID**	**Depth (ft)**	**Sampled**	**SDG**	**Matrix**	**Sample Type**								
OL-VC-80046	OL-3701-12	0.13 - 0.33	05/18/2021	410-40440-1	SED	REG	1	J	62.9		37.1			
OL-VC-80047	OL-3701-05	0 - 0.13	05/18/2021	410-40440-1	SED	REG	0.24	J	67.1		32.9			
OL-VC-80047	OL-3701-06	0.13 - 0.33	05/18/2021	410-40440-1	SED	REG	0.46	J	56.4		43.6			
OL-VC-80048	OL-3701-17	0 - 0.13	05/18/2021	410-40440-1	SED	REG	0.18	J	59.2		40.8			
OL-VC-80048	OL-3701-18	0.13 - 0.33	05/18/2021	410-40440-1	SED	REG	0.3		41.5		58.5			
QC	OL-3701-19	--	05/18/2021	410-40440-1	WQ	EB							0.000079	U
QC	OL-3701-20	--	05/18/2021	410-40440-1	WQ	EB							0.000079	U
OL-STA-80067	OL-3703-06	0 - 0.13	05/19/2021	410-40567-1	SED	REG	0.66	J	73.3		26.7			
OL-STA-80067	OL-3703-07	0.13 - 0.33	05/19/2021	410-40567-1	SED	REG	0.86	J	71.7		28.3			
OL-STA-80068	OL-3703-12	0 - 0.13	05/19/2021	410-40567-1	SED	REG	0.54	J	79.8		20.2			
OL-STA-80068	OL-3703-13	0.13 - 0.33	05/19/2021	410-40567-1	SED	REG	0.93	J	74.1		25.9			
OL-STA-80070	OL-3703-14	0 - 0.13	05/19/2021	410-40567-1	SED	REG	0.3	J	77.6		22.4			
OL-STA-80070	OL-3703-15	0.13 - 0.33	05/19/2021	410-40567-1	SED	REG	0.92	J	76.4		23.6			
OL-STA-80076	OL-3703-01	0 - 0.13	05/19/2021	410-40567-1	SED	REG	0.34	J	75.6		24.4			
OL-STA-80076	OL-3703-02	0.13 - 0.33	05/19/2021	410-40567-1	SED	REG	1.2	J	74.3		25.7			
OL-STA-80078	OL-3703-18	0 - 0.13	05/19/2021	410-40567-1	SED	REG	0.45	J	73		27			
OL-STA-80078	OL-3703-19	0.13 - 0.33	05/19/2021	410-40567-1	SED	REG	1.1	J	74.2		25.8			
OL-STA-80078	OL-3703-20	0.13 - 0.33	05/19/2021	410-40567-1	SED	FD	0.91	J	73.3		26.7			
OL-STA-80080	OL-3703-08	0 - 0.13	05/19/2021	410-40567-1	SED	REG	0.78	J	74.8		25.2			
OL-STA-80080	OL-3703-09	0.13 - 0.33	05/19/2021	410-40567-1	SED	REG	1.9	J	73.1		26.9			
OL-STA-80226	OL-3703-03	0 - 0.13	05/19/2021	410-40567-1	SED	REG	0.65	J	74.7		25.3			
OL-STA-80226	OL-3703-04	0.13 - 0.33	05/19/2021	410-40567-1	SED	REG	1.3	J	73.1		26.9			
OL-VC-80024	OL-3703-10	0 - 0.13	05/19/2021	410-40567-1	SED	REG	0.36	J	72.4		27.6			
OL-VC-80024	OL-3703-11	0.13 - 0.33	05/19/2021	410-40567-1	SED	REG	0.88	J	73.3		26.7			
OL-VC-80079	OL-3703-16	0 - 0.13	05/19/2021	410-40567-1	SED	REG	0.28	J	72.7		27.3			
OL-VC-80079	OL-3703-17	0.13 - 0.33	05/19/2021	410-40567-1	SED	REG	0.77	J	71.2		28.8			
QC	OL-3703-05	--	05/19/2021	410-40567-1	WQ	EB							0.000079	U
OL-SS-80002-SS	OL-3704-14	0 - 0.13	05/19/2021	410-40578-1	SED	REG	0.47	J	81.3		18.7			
OL-SS-80002-SS	OL-3704-15	0.13 - 0.33	05/19/2021	410-40578-1	SED	REG	1.1	J	77.8		22.2			
OL-STA-80071	OL-3704-16	0 - 0.13	05/19/2021	410-40578-1	SED	REG	0.44	J	78.9		21.1			
OL-STA-80071	OL-3704-17	0.13 - 0.33	05/19/2021	410-40578-1	SED	REG	1.3	J	77.3		22.7			
OL-STA-80081	OL-3704-10	0 - 0.13	05/19/2021	410-40578-1	SED	REG	0.44	J	77.6		22.4			
OL-STA-80081	OL-3704-11	0.13 - 0.33	05/19/2021	410-40578-1	SED	REG	0.7	J	76.9		23.1			
OL-STA-80084	OL-3704-12	0 - 0.13	05/19/2021	410-40578-1	SED	REG	0.25	J	75.8		24.2			
OL-STA-80084	OL-3704-13	0.13 - 0.33	05/19/2021	410-40578-1	SED	REG	1.2	J	78.6		21.4			
OL-STA-80236	OL-3704-18	0 - 0.13	05/19/2021	410-40578-1	SED	REG	0.29	J	71.6		28.4			
OL-STA-80236	OL-3704-19	0.13 - 0.33	05/19/2021	410-40578-1	SED	REG	1	J	73.8		26.2			
OL-STA-80239	OL-3704-01	0 - 0.13	05/19/2021	410-40578-1	SED	REG	0.36	J	67.9		32.1			
OL-STA-80239	OL-3704-02	0.13 - 0.33	05/19/2021	410-40578-1	SED	REG	1.3	J	71.2		28.8			
OL-VC-80039	OL-3704-05	0 - 0.13	05/19/2021	410-40578-1	SED	REG	0.18	J	66.5		33.5			
OL-VC-80039	OL-3704-06	0.13 - 0.33	05/19/2021	410-40578-1	SED	REG	0.3	J	54.8		45.2			
OL-VC-80040	OL-3704-03	0 - 0.13	05/19/2021	410-40578-1	SED	REG	0.2	J	70.7		29.3			
OL-VC-80040	OL-3704-04	0.13 - 0.33	05/19/2021	410-40578-1	SED	REG	0.56	J	60.6		39.4			
OL-VC-80071	OL-3704-08	0 - 0.13	05/19/2021	410-40578-1	SED	REG	0.18	J	78.8		21.2			
OL-VC-80071	OL-3704-09	0.13 - 0.33	05/19/2021	410-40578-1	SED	REG	0.31	J	61.3		38.7			

						Parameter	MERCURY		Percent Moisture		Solids		MERCURY	
						Method	SW7471		ASTM D2216		ASTM D2216		SW7470	
						Units	mg/kg		%		%		mg/L	
Location ID	Field Sample ID	Depth (ft)	Sampled	SDG	Matrix	Sample Type								
QC	OL-3704-07	--	05/19/2021	410-40578-1	WQ	EB							0.000079	U
OL-VC-80051	OL-3705-05	0 - 0.13	05/19/2021	410-40587-1	SED	REG	0.62	J	69.1		30.9			
OL-VC-80051	OL-3705-06	0.13 - 0.33	05/19/2021	410-40587-1	SED	REG	1.6	J	69		31			
OL-VC-80062	OL-3705-03	0 - 0.13	05/19/2021	410-40587-1	SED	REG	0.32	J	72.5		27.5			
OL-VC-80062	OL-3705-04	0.13 - 0.33	05/19/2021	410-40587-1	SED	REG	0.9	J	70		30			
OL-VC-80177	OL-3705-01	0 - 0.13	05/19/2021	410-40587-1	SED	REG	0.43	J	72.3		27.7			
OL-VC-80177	OL-3705-02	0.13 - 0.33	05/19/2021	410-40587-1	SED	REG	1.3	J	73.9		26.1			
OL-STA-80082	OL-3706-03	0 - 0.13	05/20/2021	410-40792-1	SED	REG	0.34	J	75.9		24.1			
OL-STA-80082	OL-3706-04	0.13 - 0.33	05/20/2021	410-40792-1	SED	REG	1	J	76		24			
OL-STA-80083	OL-3706-05	0 - 0.13	05/20/2021	410-40792-1	SED	REG	0.39	J	74.9		25.1			
OL-STA-80083	OL-3706-06	0.13 - 0.33	05/20/2021	410-40792-1	SED	REG	0.65	J	75.3		24.7			
OL-STA-80238	OL-3706-07	0 - 0.13	05/20/2021	410-40792-1	SED	REG	0.34	J	72		28			
OL-STA-80238	OL-3706-08	0.13 - 0.33	05/20/2021	410-40792-1	SED	REG	0.98	J	55.7		44.3			
OL-VC-80064	OL-3706-16	0 - 0.13	05/20/2021	410-40792-1	SED	REG	0.21	J	74.2		25.8			
OL-VC-80064	OL-3706-17	0.13 - 0.33	05/20/2021	410-40792-1	SED	REG	1.4	J	66.4		33.6			
QC	OL-3706-11	--	05/20/2021	410-40792-1	WQ	EB							0.000079	U
S361	OL-3706-15	0 - 0.5	05/20/2021	410-40792-1	SED	REG	0.18	J	52		48			
S364	OL-3706-12	0 - 0.5	05/20/2021	410-40792-1	SED	REG	0.12	J	68.7		31.3			
S364	OL-3706-13	0 - 0.5	05/20/2021	410-40792-1	SED	FD	0.13	J	70.2		29.8			
S67	OL-3706-14	0 - 0.5	05/20/2021	410-40792-1	SED	REG	0.31	J	68.1		31.9			
S93	OL-3706-02	0 - 0.5	05/20/2021	410-40792-1	SED	REG	0.2		43.8		56.2			
S94	OL-3706-01	0 - 0.5	05/20/2021	410-40792-1	SED	REG	0.057	J	53.1		46.9			
ST51	OL-3706-09	0 - 0.13	05/20/2021	410-40792-1	SED	REG	0.48	J	76.7		23.3			
ST51	OL-3706-10	0.13 - 0.33	05/20/2021	410-40792-1	SED	REG	1.1	J	77.8		22.2			
QC	OL-3707-01	--	05/21/2021	410-40902-1	WQ	EB							0.000079	U
S100	OL-3707-08	0 - 0.5	05/21/2021	410-40902-1	SED	REG	0.057	J	43.1		56.9			
S112	OL-3707-07	0 - 0.5	05/21/2021	410-40902-1	SED	REG	1.9		49.8		50.2			
S26	OL-3707-05	0 - 0.5	05/21/2021	410-40902-1	SED	REG	0.11		37.9		62.1			
S306	OL-3707-09	0 - 0.5	05/21/2021	410-40902-1	SED	REG	0.11		36.6		63.4			
S329	OL-3707-10	0 - 0.5	05/21/2021	410-40902-1	SED	REG	0.12		43.4		56.6			
S367	OL-3707-03	0 - 0.5	05/21/2021	410-40902-1	SED	REG	0.26		45		55			
S371	OL-3707-06	0 - 0.5	05/21/2021	410-40902-1	SED	REG	0.32	J	61		39			
S373	OL-3707-02	0 - 0.5	05/21/2021	410-40902-1	SED	REG	0.83	J	40.2		59.8			
S61	OL-3707-04	0 - 0.5	05/21/2021	410-40902-1	SED	REG	0.19		43		57			

APPENDIX 4B - BORING LOGS FOR 2021 MONITORED NATURAL RECOVERY

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SS-80002-SS
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1130160.9001 Easting: 914508.4001 Mud Line: 305.7 Ft Surface Water Depth: 57 Ft	Drilling Company: Atlantic Testing Logging Company: Parsons Geologist: Zack Cornish Penetration Depth: 3.0 Ft Core Recovery Depth: 2.17 Ft	Water Elev.: 362.7 Ft Attempts: 1 Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3704-14	0.0	ML	Wet, very soft, brown black, SILT, slight organic odor	Gravity Corer	
0.2		OL-3704-15	0.0	ML	Wet, very soft, dark gray black, SILT, slight organic odor		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80067
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1133304.3401
Easting: 913031.2
Mud Line: 325.8 Ft
Surface Water Depth: 37 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.5 Ft
Core Recovery Depth: 2.33 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3703-06	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	
0.2		OL-3703-07	0.0	ML	Wet, very soft, brown black, SILT		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80068
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1131964.41	Drilling Company: Atlantic Testing	Water Elev.: 362.8 Ft
Easting: 914013.7498	Logging Company: Parsons	Attempts: 1
Mud Line: 313.8 Ft	Geologist: Sara Weishaupt	Depth Units: Ft
Surface Water Depth: 49 Ft	Penetration Depth: 3.5 Ft Core Recovery Depth: 2.25 Ft	

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3703-12	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	
0.2		OL-3703-13	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80069
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1130481.2401
Easting: 916888.4301
Mud Line: 312.8 Ft
Surface Water Depth: 50 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 3.5 Ft
Core Recovery Depth: 1.83 Ft

Water Elev.: 362.8 Ft
Attempts: 2
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3702-09	0.0	ML	Wet, very soft, brown black, SILT, trace microbeads	Gravity Corer	
0.2		OL-3702-10	0.0	ML	Wet, very soft, brown black, SILT, trace microbeads, slight organic odor		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80069 DUP
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1130481.2401
Easting: 916888.4301
Mud Line: 312.8 Ft
Surface Water Depth: 50 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 3.0 Ft
Core Recovery Depth: 1.67 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3702-11	0.0	ML	Wet, very soft, brown black, SILT, trace microbeads	Gravity Corer	
0.2		OL-3702-12	0.0	ML	Wet, very soft, brown black, SILT, trace microeads, slight organic odor		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80070
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1129681.24
Easting: 914728.28
Mud Line: 300.8 Ft
Surface Water Depth: 62 Ft

Drilling Company: Alantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 2.5 Ft
Core Recovery Depth: 1.33 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3703-14	0.0	ML	Wet, very soft, gray black, SILT	Gravity Corer	
0.2		OL-3703-15	0.0	ML	Wet, very soft, gray black, SILT		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80071
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1129431.5 Easting: 915564.7901 Mud Line: 303.7 Ft Surface Water Depth: 59 Ft	Drilling Company: Atlantic Testing Logging Company: Parsons Geologist: Zack Cornish Penetration Depth: 3.0 Ft Core Recovery Depth: 2.0 Ft	Water Elev.: 362.7 Ft Attempts: 1 Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3704-16	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	
0.2		OL-3704-17	0.0	ML	Wet, very soft, dark gray black, SILT, slight organic odor		

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80072
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1128954.8599	Drilling Company: Atlantic Testing	Water Elev.: 362.8 Ft
Easting: 917504.94	Logging Company: Parsons	Attempts: 1
Mud Line: 307.8 Ft	Geologist: Sara Weishaupt	Depth Units: Ft
Surface Water Depth: 55 Ft	Penetration Depth: 2.0 Ft Core Recovery Depth: 0.83 Ft	

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3702-05	0.0	ML	Wet, very soft, gray black, SILT	Gravity Corer	
0.2		OL-3702-06	0.0	ML	Wet, very soft, gray black, SILT		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80073
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1127851.133
Easting: 915614.507
Mud Line: 310.8 Ft
Surface Water Depth: 52 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 2.0 Ft
Core Recovery Depth: 1.88 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3700-17	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	
0.2		OL-3700-18	0.0	ML	Wet, very soft, brown black, SILT, slight sulfuric odor		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80074
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1127488.6601
Easting: 916887.2999
Mud Line: 324.8 Ft
Surface Water Depth: 38 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 2.5 Ft
Core Recovery Depth: 1.33 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3701-01	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	
0.2		OL-3701-02	0.0	ML	Wet, very soft, brown black, SILT, trace very fine sand		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80075
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1127258.776
Easting: 918764.31
Mud Line: 310.5 Ft
Surface Water Depth: 52.3 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 2.0 Ft
Core Recovery Depth: 1.83 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3700-15	0.0	ML	Wet, very soft, brown black, SILT, trace very fine sand	Gravity Corer	
0.2		OL-3700-16	0.0	ML	Wet, very soft, gray black, SILT, trace very fine sand		

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80076
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1126092.994
Easting: 920194.324
Mud Line: 302.8 Ft
Surface Water Depth: 60 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 2.0 Ft
Core Recovery Depth: 1.33 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3703-01	0.0	ML	Wet, very soft, gray black, SILT	Gravity Corer	
0.2		OL-3703-02	0.0	ML	Wet, very soft, gray black, SILT, slight sulfuric odor		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80077
Date: 5/17/2021
Weather: Sunny, high of 77

Northing: 1126199.5902
Easting: 922810.9901
Mud Line: 327.7 Ft
Surface Water Depth: 35.5 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 2.1 Ft
Core Recovery Depth: 1.83 Ft

Water Elev.: 363.2 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3700-11	0.0	ML	Wet, very soft, light brown black, SILT, trace sand	Gravity Corer	
0.2		OL-3700-12	0.0	ML	Wet, very soft, brown black, SILT, trace sand		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80077 DUP
Date: 5/17/2021
Weather: Sunny, high of 77

Northing: 1126199.5902
Easting: 922810.9901
Mud Line: 327.7 Ft
Surface Water Depth: 35.5 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 2.1 Ft
Core Recovery Depth: 1.83 Ft

Water Elev.: 363.2 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3700-13	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	
0.2		OL-3700-14	0.0	ML	Wet, very soft, brown black, SILT		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80078
Date: 5/19/2021
Weather: Sunny, high of 77

Northing: 1124584.054
Easting: 921423.813
Mud Line: 299.7 Ft
Surface Water Depth: 63 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.5 Ft
Core Recovery Depth: 1.92 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3703-18	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	
0.2		OL-3703-19	0.0	ML	Wet, very soft, brown black, SILT, trace biological matter		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80078 DUP
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1124584.054
Easting: 921423.813
Mud Line: 299.7 Ft
Surface Water Depth: 63 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.0 Ft
Core Recovery Depth: 1.67 Ft

Water Elev.: 362.7 Ft
Attempts: 2
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0							
0.2		OL-3703-20	0.0	ML	Wet, very soft, brown black, SILT, trace biological matter	Gravity Corer	

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80080
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1123750.453
Easting: 923744
Mud Line: 301.7 Ft
Surface Water Depth: 61 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 2.5 Ft
Core Recovery Depth: 1.25 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3703-08	0.0	ML	Wet, very soft, gray black, SILT	Gravity Corer	
0.2		OL-3703-09	0.0	ML	Wet, very soft, black, SILT		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80081
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1123151.653
Easting: 922887.3498
Mud Line: 298.7 Ft
Surface Water Depth: 64 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.0 Ft   Core Recovery Depth: 1.17 Ft

Water Elev.: 362.7 Ft
Attempts: 4
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3704-10	0.0	ML	Wet, very soft, brown to dark gray, SILT	Gravity Corer	
0.2		OL-3704-11	0.0	ML	Wet, very soft, dark gray black, SILT		

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80082
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1122148.299
Easting: 921462.665
Mud Line: 303.7 Ft
Surface Water Depth: 59 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 2.1 Ft
Core Recovery Depth: 1.83 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3706-03	0.0	ML	Wet, very soft, brown black, SILT, trace organics, slight organic odor	Gravity Corer	
0.2		OL-3706-04	0.0	ML	Wet, very soft, black, SILT, slight petroleum-like odor		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80083
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1123213.4779
Easting: 924896.7182
Mud Line: 308.7 Ft
Surface Water Depth: 54 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 2.5 Ft
Core Recovery Depth: 1.25 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3706-05	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	
0.2		OL-3706-06	0.0	ML	Wet, very soft, brown black, SILT, slight petroleum-like odor		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80084
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1121960.108
Easting: 923870.988
Mud Line: 300.7 Ft
Surface Water Depth: 62 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.5 Ft
Core Recovery Depth: 1.67 Ft

Water Elev.: 362.7 Ft
Attempts: 3
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3704-12	0.0	ML	Wet, very soft, dark gray, SILT, slight petroleum-like odor	Gravity Corer	
		OL-3704-13	0.0	ML	Wet, very soft, dark gray, SILT, slight petroleum-like odor		
0.2				ML	very soft, black, SILT, slight petroleum-like odor		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80085
Date: 5/17/2021
Weather: Sunny, high of 77

Northing: 1121766.871
Easting: 926312.738
Mud Line: 318.7 Ft
Surface Water Depth: 44.5 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 2.5 Ft
Core Recovery Depth: 1.50 Ft

Water Elev.: 363.2 Ft
Attempts: 2
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3700-05	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	
0.2		OL-3700-06	0.0	ML	very soft, brown black, SILT		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80091
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1127310.183
Easting: 915328.647
Mud Line: 319.8 Ft
Surface Water Depth: 43 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 2.5 Ft
Core Recovery Depth: 2.00 Ft

Water Elev.: 362.8 Ft
Attempts: 2
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3701-13	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	
0.2		OL-3701-14	0.0	ML	Wet, very soft, brown black, SILT		

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80103
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1127751.053
Easting: 918766.737
Mud Line: 307.8 Ft
Surface Water Depth: 55 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 3.0 Ft
Core Recovery Depth: 1.83 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3701-07	0.0	ML	Wet, very soft, gray black, SILT	Gravity Corer	
0.2		OL-3701-08	0.0	ML	Wet, very soft, black, SILT		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80225
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1131817.283
Easting: 912400.71
Mud Line: 310.8 Ft
Surface Water Depth: 52 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 2.0 Ft
Core Recovery Depth: 1.25 Ft

Water Elev.: 362.8 Ft
Attempts: 2
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3702-01	0.0	ML	Wet, very soft, gray black, SILT, slight organic odor	Gravity Corer	
0.2		OL-3702-02	0.0	ML	Wet, very soft, dark gray black, SILT, slight organic odor		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80226
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1128246.308	Drilling Company: Atlantic Testing	Water Elev.: 362.8 Ft
Easting: 914594.132	Logging Company: Parsons	Attempts: 1
Mud Line: 323.8 Ft	Geologist: Zack Cornish	Depth Units: Ft
Surface Water Depth: 39 Ft	Penetration Depth: 2.5 Ft Core Recovery Depth: 2.00 Ft	

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3703-03	0.0	ML	Wet, very soft, brown black, SILT, Undisturbed soft sediment on top	Gravity Corer	
0.2		OL-3703-04	0.0	ML	Wet, very soft, brown black, SILT, slight organic odor		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80227
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1128131.858 Easting: 914928.175 Mud Line: 315.8 Ft Surface Water Depth: 47 Ft	Drilling Company: Atlantic Testing Logging Company: Parsons Geologist: Sara Weishaupt Penetration Depth: 3.5 Ft Core Recovery Depth: 2.08 Ft	Water Elev.: 362.8 Ft Attempts: 1 Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3701-15	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	
0.2		OL-3701-16	0.0	ML	Wet, very soft, brown black, SILT		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80229
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1124300.709
Easting: 919843.483
Mud Line: 305.8 Ft
Surface Water Depth: 57 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 2.5 Ft
Core Recovery Depth: 1.67 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3702-07	0.0	ML	Wet, very soft, gray black, SILT	Gravity Corer	
0.2		OL-3702-08	0.0	ML	Wet, very soft, gray black, SILT		

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80234
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1128960.696 Easting: 918727.627 Mud Line: 310.8 Ft Surface Water Depth: 52 Ft	Drilling Company: Atlantic Testing Logging Company: Parsons Geologist: Sara Weishaupt Penetration Depth: 3.0 Ft Core Recovery Depth: 1.67 Ft	Water Elev.: 362.8 Ft Attempts: 1 Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3701-09	0.0	ML	Wet, very soft, brown black, SILT, trace organics (Chironomid), Undisturbed soft sediment on top	Gravity Corer	
0.2		OL-3701-10	0.0	ML	Wet, very soft, black, SILT		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80236
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1120071.2781	Drilling Company: Atlantic Testing	Water Elev.: 362.7 Ft
Easting: 923003.1299	Logging Company: Parsons	Attempts: 1
Mud Line: 304.7 Ft	Geologist: Zack Cornish	Depth Units: Ft
Surface Water Depth: 58 Ft	Penetration Depth: 4.0 Ft Core Recovery Depth: 1.83 Ft	

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3704-18	0.0	ML	Wet, very soft, brown and black, SILT, slight organic odor	Gravity Corer	
0.2		OL-3704-19	0.0	ML	Wet, very soft, dark gray and black, SILT, trace organics, slight organic odor		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80237
Date: 5/17/2021
Weather: Sunny, high of 77

Northing: 1119537.7601 Easting: 922780.3799 Mud Line: 326.3 Ft Surface Water Depth: 36.9 Ft	Drilling Company: Atlantic Testing Logging Company: Parsons Geologist: Sara Weishaupt Penetration Depth: 1.5 Ft Core Recovery Depth: 1.17 Ft	Water Elev.: 363.2 Ft Attempts: 1 Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3700-09	0.0	ML	Wet, very soft, brown black, SILT, trace sand	Gravity Corer	
0.2		OL-3709-10	0.0	ML	Wet, very soft, brown black, SILT, trace sand		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80238
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1118763.0113
Easting: 926199.2588
Mud Line: 326.7 Ft
Surface Water Depth: 36 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 2.0 Ft
Core Recovery Depth: 1.33 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3706-07	0.0	ML	Wet, very soft, brown and black, SILT, slight organic odor	Gravity Corer	
0.2		OL-3706-08	0.0	ML	Wet, very soft, brown and black, SILT, trace very fine sand		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-80239
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1120092.1093
Easting: 926256.789
Mud Line: 314.7 Ft
Surface Water Depth: 48 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.5 Ft
Core Recovery Depth: 1.67 Ft

Water Elev.: 362.7 Ft
Attempts: 2
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3704-01	0.0	ML	Wet, very soft, gray black, SILT	Gravity Corer	
0.2		OL-3704-02	0.0	ML	Wet, very soft, gray black, SILT		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80024
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1123471.1399
Easting: 920313.3701
Mud Line: 311.8 Ft
Surface Water Depth: 51 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.0 Ft
Core Recovery Depth: 2.0 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3703-10	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	
0.2		OL-3703-11	0.0	ML	Wet, very soft, brown black, SILT		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80039
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1119442.4701
Easting: 926887.3301
Mud Line: 329.7 Ft
Surface Water Depth: 33 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.0 Ft
Core Recovery Depth: 1.0 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3704-05	0.0	ML	Wet, very soft, gray black, SILT, trace very fine sand	Gravity Corer	
0.2		OL-3704-06	0.0	ML	Wet, very soft, brown black, SILT, some fine sand		
				ML	Wet, very soft, brown black, fine SAND		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80040
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1119062.4099
Easting: 926712.8101
Mud Line: 330.7 Ft
Surface Water Depth: 32 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.0 Ft
Core Recovery Depth: 1.42 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3704-03	0.0	ML	Wet, very soft, brown black, SILT, trace organics	Gravity Corer	
0.2		OL-3704-04	0.0	ML	Wet, very soft, brown black, SILT, trace organics		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80044
Date: 5/17/2021
Weather: Sunny, high of 77

Northing: 1123842.2501
Easting: 919639.4299
Mud Line: 320.7 Ft
Surface Water Depth: 42.5 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 1.7 Ft
Core Recovery Depth: 1.42 Ft

Water Elev.: 363.2 Ft
Attempts: 2
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3700-01	0.0	ML	Wet, very soft, dark brown black, SILT	Gravity Corer	
0.2		OL-3700-02	0.0	ML	Wet, very soft, brown black, SILT		

PARSONS

SHEET 1 of 1

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80045
Date: 5/17/2021
Weather: Sunny, high of 77

Northing: 1124834.3399
Easting: 918863.9701
Mud Line: 328.4 Ft
Surface Water Depth: 34.8 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 2.0 Ft
Core Recovery Depth: 1.75 Ft

Water Elev.: 363.2 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3701-03	0.0	ML	Wet, very soft, brown black, SILT, trace very fine sand	Gravity Corer	
0.2		OL-3701-04	0.0	ML	Wet, very soft, brown black, SILT, trace very fine sand		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80046
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1127247.84
Easting: 914921.8999
Mud Line: 334.8 Ft
Surface Water Depth: 28 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 3.2 Ft
Core Recovery Depth: 2.25 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3701-11	0.0	ML	Wet, very soft, brown black, SILT, trace very fine sand	Gravity Corer	
0.2		OL-3701-12	0.0	ML	Wet, very soft, brown black, SILT, trace very fine sand		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80047
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1127129.2399
Easting: 915478.3801
Mud Line: 328.8 Ft
Surface Water Depth: 34 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 1.3 Ft
Core Recovery Depth: 1.33 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3701-05	0.0	ML	Wet, very soft, brown black, SILT, trace very fine sand	Gravity Corer	
0.2		OL-3701-06	0.0	ML	Wet, very soft, brown black, SILT, little very fine sand		

PARSONS

SHEET 1 of 1

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80048
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1127200.35
Easting: 915963.7099
Mud Line: 329.8 Ft
Surface Water Depth: 33 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 1.7 Ft
Core Recovery Depth: 1.67 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3701-17	0.0	ML	Wet, very soft, brown black, SILT, some fine sand, little gravel	Gravity Corer	
0.2		OL-3701-18	0.0	SM	Wet, very soft, brown black, fine to coarse SAND, and silt, little gravel		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80051
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1119150.9901
Easting: 925420.1001
Mud Line: 315.7 Ft
Surface Water Depth: 47 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.0 Ft
Core Recovery Depth: 1.67 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3705-05	0.0	ML	Wet, very soft, brown and dark gray, SILT	Gravity Corer	
0.2		OL-3705-06	0.0	ML	Wet, very soft, dark gray black, SILT		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80062
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1119365.03
Easting: 925508.1701
Mud Line: 310.7 Ft
Surface Water Depth: 52 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.5 Ft
Core Recovery Depth: 2.17 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3705-03	0.0	ML	Wet, very soft, dark gray brown, SILT	Gravity Corer	
0.2		OL-3705-04	0.0	ML	Wet, very soft, dark gray brown, SILT, slight organic odor		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80064
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1119039.49
Easting: 926074.9301
Mud Line: 321.7 Ft
Surface Water Depth: 41 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 2.0 Ft
Core Recovery Depth: 0.75 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3706-16	0.0	ML	Wet, very soft, brown and dark gray, SILT	Gravity Corer	
0.2		OL-3706-17	0.0	ML	Wet, very soft, brown and dark gray, SILT		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80068
Date: 5/17/2021
Weather: Sunny, high of 77

Northing: 1119361.1701
Easting: 924800.39
Mud Line: 303.0 Ft
Surface Water Depth: 60.2 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 1.7 Ft
Core Recovery Depth: 1.46 Ft

Water Elev.: 363.2 Ft
Attempts: 2
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3700-07	0.0	ML	Wet, very soft, black, SILT	Gravity Corer	
0.2		OL-3700-08	0.0	ML	Wet, very soft, dark gray to black, SILT		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80070
Date: 5/17/2021
Weather: Sunny, high of 77

Northing: 1118961.1899
Easting: 925281.9101
Mud Line: 314.5 Ft
Surface Water Depth: 48.75 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 1.0 Ft
Core Recovery Depth: 0.92 Ft

Water Elev.: 363.2 Ft
Attempts: 2
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3700-19	0.0	ML	Wet, very soft, gray black, SILT, trace very fine sand	Gravity Corer	
0.2		OL-3700-20	0.0	ML	Wet, very soft, gray black, SILT, trace very fine sand		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80071
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1118689.39
Easting: 926477.3201
Mud Line: 329.7 Ft
Surface Water Depth: 33 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 2.5 Ft
Core Recovery Depth: 1.67 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3704-08	0.0	ML	Wet, very soft, black brown, SILT, trace organics	Gravity Corer	
0.2		OL-3704-09	0.0	ML	Wet, very soft, brown black, SILT, trace organics, slight organic odor		

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80079
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1123487.9601
Easting: 920635.7901
Mud Line: 303.8 Ft
Surface Water Depth: 59 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 2.5 Ft
Core Recovery Depth: 1.92 Ft

Water Elev.: 362.8 Ft
Attempts: 2
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3703-16	0.0	ML	Wet, very soft, gray black, SILT	Gravity Corer	
0.2		OL-3703-17	0.0	ML	Wet, very soft, brown black, SILT, trace microbeads, trace organics		

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80157
Date: 5/18/2021
Weather: Sunny, high of 79; wind 1mph WSW

Northing: 1130031.572
Easting: 914167.391
Mud Line: 304.8 Ft
Surface Water Depth: 58 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 2.0 Ft
Core Recovery Depth: 1.5 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3702-03	0.0	ML	Wet, very soft, dark gray black, SILT	Gravity Corer	
0.2		OL-3702-04	0.0	ML	Wet, very soft, dark gray black, SILT		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80172
Date: 5/17/2021
Weather: Sunny, high of 77

Northing: 1120972.454
Easting: 925571.66
Mud Line: 306.3 Ft
Surface Water Depth: 56.9 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Sara Weishaupt
Penetration Depth: 3.0 Ft
Core Recovery Depth: 1.0 Ft

Water Elev.: 363.2 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3700-03	0.0	ML	Wet, very soft, black brown, SILT, Soft sediment suspended on top 2 cm	Gravity Corer	
0.2		OL-3700-04	0.0	ML	Wet, very soft, brown black, SILT		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-80177
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1120174.935
Easting: 924690.497
Mud Line: 305.7 Ft
Surface Water Depth: 57 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.0 Ft
Core Recovery Depth: 2.08 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3705-01	0.0	ML	Wet, very soft, brown black, SILT	Gravity Corer	
0.2		OL-3705-02	0.0	ML	Wet, very soft, dark gray black, SILT, slight organic odor		

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S100
Date: 5/21/2021
Weather: Sunny, high of 88

Northing: 1130994.8122 Easting: 911481.0043 Mud Line: 359.6 Ft Surface Water Depth: 3.2 Ft	Drilling Company: Atlantic Testing Logging Company: Parsons Geologist: Zack Cornish Penetration Depth: 3.0 Ft Core Recovery Depth: 2.63 Ft	Water Elev.: 362.8 Ft Attempts: 1 Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3707-08	0.0	SP	Wet, loose, brown, SAND, little gravel, trace organics, slight sulfuric-like odor	Vibracore	
0.2				SP	Wet, loose, light gray, fine SAND, and gravel, slight sulfuric-like odor		
0.4				SP	Wet, very soft, light gray, SILT, and fine sand, trace organics		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S112
Date: 5/21/2021
Weather: Sunny, high of 88

Northing: 1133090.9415
Easting: 910898.2187
Mud Line: 342.0 Ft
Surface Water Depth: 20.8 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.5 Ft
Core Recovery Depth: 2.92 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0 – 0.2		OL-3707-07	0.0	SM	Wet, loose, black, ZEBRA MUSSELS, some sand, trace organics, sulfuric-like odor	Vibracore	
0.4				SM	Wet, loose, brown, fine SAND, little silt, trace organics, sulfuric-like odor		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S26
Date: 5/21/2021
Weather: Sunny, high of 88

Northing: 1121782.5173	Drilling Company: Atlantic Testing	Water Elev.: 362.8 Ft
Easting: 927947.6478	Logging Company: Parsons	Attempts: 1
Mud Line: 360.2 Ft	Geologist: Zack Cornish	Depth Units: Ft
Surface Water Depth: 2.6 Ft	Penetration Depth: 3.8 Ft Core Recovery Depth: 3.50 Ft	

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0 – 0.17	100	>> OL-3707-05	0.0	SP	Wet, loose, black, coarse SAND, and gravel, trace organics, sulfuric-like odor	Vibracore	
0.17 – 0.5 (0.2, 0.4)				GM	Wet, loose, light gray, GRAVEL, some fine sand, trace organics, sulfuric-like odor		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S306
Date: 5/20/2021
Weather: Sunny, high of 89

Northing: 1126523.309
Easting: 917208.5418
Mud Line: 359.7 Ft
Surface Water Depth: 3 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.5 Ft
Core Recovery Depth: 2.75 Ft

Water Elev.: 362.7 Ft
Attempts: 4
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3707-09	0.0	ML	Wet, very soft, brown, SILT, and fine sand, trace organics, slight sulfuric-like odor	Vibracore	
0.2				SM	Wet, very loose, black, fine SAND, little silt, trace organics, slight sulfuric-like odor		
0.4				SM	Wet, loose, brown, fine SAND, and silt		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S329
Date: 5/20/2021
Weather: Sunny, high of 89

Northing: 1119390.0933
Easting: 922016.4051
Mud Line: 357.7 Ft
Surface Water Depth: 5 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 2.9 Ft
Core Recovery Depth: 2.08 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0 – 0.25		OL-3707-10	0.0	SP	Wet, loose, black and brown, SAND, and zebra mussels, trace organics, sulfuric-like odor	Vibracore	
0.25 – 0.5				SP	Wet, loose, light gray, SAND, and gravel, little silt, sulfuric-like odor		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S361
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1125987.7576 Easting: 917991.9752 Mud Line: 358.7 Ft Surface Water Depth: 4 Ft	Drilling Company: Atlantic Testing Logging Company: Parsons Geologist: Zack Cornish Penetration Depth: 1.0 Ft Core Recovery Depth: 0.75 Ft	Water Elev.: 362.7 Ft Attempts: 1 Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0 – 0.25		OL-3706-15	0.0	ML	Wet, very soft, dark gray, SILT, and fine sand, trace organics	Gravity Corer	
0.25 – 0.5				ML	Wet, very soft, gray brown, SILT, and very fine sand, sulfuric-like (marl) odor		

Depth scale: 0, 0.2, 0.4

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S364
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1122024.2202
Easting: 920426.3571
Mud Line: 355.7 Ft
Surface Water Depth: 7 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 2.0 Ft
Core Recovery Depth: 1.08 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3706-12	0.0	SM	Wet, very soft, brown and light gray, coarse SAND, and silt	Gravity Corer	
0.2				SOLV	Wet, very soft, light gray, SILT-LIKE GRAINS, moth ball-like odor		
0.4							

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S364 DUP
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1122024.2202
Easting: 920426.3571
Mud Line: 355.7 Ft
Surface Water Depth: 7 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 2.0 Ft
Core Recovery Depth: 1.25 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3706-13	0.0	SM	Wet, very soft, brown and light gray, coarse SAND, and silt	Gravity Corer	
0.2							
0.4				SOLV	Wet, very soft, light gray, SILT-LIKE GRAINS, moth ball-like odor		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S367
Date: 5/21/2021
Weather: Sunny, high of 88

Northing: 1123376.0633 Easting: 926072.1184 Mud Line: 359.1 Ft Surface Water Depth: 3.7 Ft	Drilling Company: Atlantic Testing Logging Company: Parsons Geologist: Zack Cornish Penetration Depth: 5.0 Ft Core Recovery Depth: 4.79 Ft	Water Elev.: 362.8 Ft Attempts: 1 Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0 0.2 0.4		OL-3707-03	0.0	SM	Wet, very soft, dark gray brown, fine SAND, some silt, trace organics, sulfuric-like odor	Vibracore	
				SM	Wet, very soft, light gray, fine SAND, and silt, trace organics, sulfuric-like (marl) odor		

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S371
Date: 5/21/2021
Weather: Sunny, high of 88

Northing: 1129640.8979
Easting: 919682.5617
Mud Line: 357.9 Ft
Surface Water Depth: 4.9 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.0 Ft
Core Recovery Depth: 3 Ft

Water Elev.: 362.8 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0							
0.2		OL-3707-06	0.0	ML	Wet, very soft, gray brown, SILT, some very fine sand, little organics (shells and wood pieces), sulfuric-like odor	Vibracore	
0.4							

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S373
Date: 5/21/2021
Weather: Sunny, high of 88

Northing: 1133776.6534	Drilling Company: Atlantic Testing	Water Elev.: 362.8 Ft
Easting: 914568.2976	Logging Company: Parsons	Attempts: 1
Mud Line: 345.3 Ft	Geologist: Zack Cornish	Depth Units: Ft
Surface Water Depth: 17.5 Ft	Penetration Depth: 5.0 Ft Core Recovery Depth: 4.42 Ft	

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0 – 0.33		OL-3707-02	0.0	ML	Wet, loose, black, SILT, and fine sand, trace zebra mussels	Vibracore	
0.33 – 0.5				ML	Wet, very soft, gray brown, SILT, and fine sand, trace zebra mussels		

Depth scale: 0, 0.2, 0.4

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S61
Date: 5/21/2021
Weather: Sunny, high of 88

Northing: 1126768.362 Easting: 923177.4461 Mud Line: 358.7 Ft Surface Water Depth: 4.1 Ft	Drilling Company: Atlantic Testing Logging Company: Parsons Geologist: Zack Cornish Penetration Depth: 4.2 Ft Core Recovery Depth: 4.13 Ft	Water Elev.: 362.8 Ft Attempts: 1 Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0 – 0.25		OL-3707-04	0.0	SM	Wet, loose, brown black, fine SAND, and zebra mussels, trace organics, slight sulfuric-like odor	Vibracore	
0.25 – 0.5				SM	Wet, loose, light gray, fine SAND, and gravel, little silt, trace organics, slight sulfuric-like odor		

Depth scale: 0, 0.2, 0.4

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S67
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1124858.0239
Easting: 918043.4688
Mud Line: 357.7 Ft
Surface Water Depth: 5 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 1.5 Ft
Core Recovery Depth: 1.0 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY 20 40 60 80	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3706-14	0.0	SM	Wet, very soft,, brown, SAND, and silt, trace organics	Gravity Corer	
0.2 0.4				SOLV	Wet, very soft,, light gray, SILT-LIKE GRAINS, moth ball-like odor		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S93
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1130991.0425	Drilling Company: Atlantic Testing	Water Elev.: 362.7 Ft
Easting: 917537.5706	Logging Company: Parsons	Attempts: 1
Mud Line: 359.7 Ft	Geologist: Zack Cornish	Depth Units: Ft
Surface Water Depth: 3 Ft	Penetration Depth: 2.5 Ft Core Recovery Depth: 1.17 Ft	

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0							
0.2		OL-3706-02	0.0	SM	Wet, very loose, brown to gray, SAND, some silt, trace organics, sulfuric-like (marl) odor	Gravity Corer	
0.4							

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: S-94
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1128522.3654
Easting: 912818.9271
Mud Line: 358.7 Ft
Surface Water Depth: 4 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 1.5 Ft
Core Recovery Depth: 0.83 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0							
0.2							
		OL-3706-01	0.0	ML	Wet, very soft, gray, SILT, and fine sand, little shells, trace organics, sulfuric-like (marl) odor	Gravity Corer	
0.4							

PARSONS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: ST-51
Date: 5/19/2021
Weather: Sunny, high of 86; wind 1mph SW

Northing: 1123869.7241
Easting: 923007.0022
Mud Line: 299.7 Ft
Surface Water Depth: 63 Ft

Drilling Company: Atlantic Testing
Logging Company: Parsons
Geologist: Zack Cornish
Penetration Depth: 3.0 Ft
Core Recovery Depth: 2 Ft

Water Elev.: 362.7 Ft
Attempts: 1
Depth Units: Ft

Depth (ft)	% RECOVERY (20 40 60 80)	Sample ID	PID (ppm)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-3706-09	0.0	ML	Wet, very soft, brown and dark gray, SILT	Gravity Corer	
0.2		OL-3706-10	0.0	ML	Wet, very soft, dark gray and black, SILT		

HONEYWELL LOG OL_MNR BOREHOLE LOGS.GPJ OL DATA TEMPLATE.GDT 6/13/22

PARSONS

APPENDIX 4C - SEDIMENT AREA-WEIGHTED AVERAGE MERCURY CONCENTRATION CALCULATIONS

APPENDIX 4C-1 SURFACE SEDIMENT AREA-WEIGHTED MERCURY CONCENTRATIONS

Zone	Location ID	Year	Notes About Mercury Concentration	Mercury Concentration (mg/kg)	Thiessen Polygon Area (ft^2)	Concentration * Area (mg/kg * ft^2)	Sum of (Concentration * Area) (mg/kg * ft2)	Total Area (ft2)	Surface Sediment Area-Weighted Average Mercury Concentration (mg/kg)
Ninemile Creek Outlet Area									
Profundal Zone	OL-STA-80071	2021		0.44	303,259	133,434			
Profundal Zone	OL-STA-80072	2021		0.54	154,018	83,170			
Profundal Zone	OL-STA-80073	2021		0.60	1,077,284	646,371			
Profundal Zone	OL-STA-80074	2021		0.42	1,411,962	593,024			
Profundal Zone	OL-STA-80091	2021		0.44	233,777	102,862			
Profundal Zone	OL-STA-80226	2021		0.65	453,594	294,836			
Profundal Zone	OL-STA-80227	2021		0.57	641,413	365,606			
Profundal Zone	OL-VC-80046	2021		0.46	335,776	154,457			
Profundal Zone	OL-VC-80047	2021		0.24	119,609	28,706			
Profundal Zone	OL-VC-80048	2021		0.18	363,183	65,373			
Littoral Zone (non-Cap)	S306	2021		0.11	696,985	76,668			
Littoral Zone (non-Cap)	S358	2000		0.045	123,883	5,575			
Littoral Zone (non-Cap)	S74	1992		0.84	65,134	54,713			
Littoral Zone (non-Cap)	S87	1992		1.0	239,033	239,033			
Cap Area A1	OL-RAA-CAP-0001	2019		0.0060	331,977	1,992			
Cap Area A1	OL-RAA-CAP-0002	2019		0.0080	325,033	2,600			
Cap Area A1	OL-RAA-CAP-0003	2019		0.12	301,233	34,642			
Cap Area A1	OL-RAA-CAP-0004	2019		0.0060	305,496	1,833			
Cap Area A1	OL-RAA-CAP-0005	2019		0.0070	385,889	2,701	3,196,181	9,874,167	0.32
Cap Area A1	OL-RAA-CAP-0007	2019		0.11	224,293	23,551			
Cap Area A1	OL-RAA-CAP-0009	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.45	272,840	122,031			
Cap Area A1	OL-RAA-CAP-0015	2019		0.048	151,132	7,254			
Cap Area A1	OL-RAA-CAP-0019	2019		0.36	80,378	29,097			
Cap Area A1	OL-RAA-CAP-0020	2019		0.75	13,724	10,334			
Cap Area A1	OL-RAA-CAP-0021	2019		0.055	98,110	5,396			
Cap Area A1	OL-RAA-CAP-0030	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.90	45,708	40,993			
Cap Area A1	OL-RAA-CAP-0031	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.90	10,598	9,505			
Cap Area A2	OL-RAA-CAP-0006	2019		0.0060	259,134	1,555			
Cap Area A2	OL-RAA-CAP-0008	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.13	174,583	22,051			
Cap Area A2	OL-RAA-CAP-0010	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.13	69,596	8,790			
Cap Area A2	OL-RAA-CAP-0011	2019		0.043	120,902	5,199			
Cap Area A2	OL-RAA-CAP-0012	2019		0.050	148,317	7,416			
Cap Area A2	OL-RAA-CAP-0016	2019		0.046	107,524	4,946			
Cap Area A2	OL-RAA-CAP-0017	2019		0.043	47,036	2,023			
Cap Area A2	OL-RAA-CAP-0018	2019		0.045	78,597	3,537			
Cap Area RA-A40197	OL-RAA-CAP-0013	2019		0.048	59,875	2,874			
Cap Area RA-A40197	OL-RAA-CAP-0014	2019		0.047	43,284	2,034			
North Basin									
Profundal Zone	OL-SS-80002-SS	2021		0.47	1,637,401	769,578			
Profundal Zone	OL-STA-80067	2021		0.66	4,038,871	2,665,655			
Profundal Zone	OL-STA-80068	2021		0.54	4,352,387	2,350,289			
Profundal Zone	OL-STA-80069	2021		0.63	3,249,618	2,047,259			
Profundal Zone	OL-STA-80071	2021		0.44	1,819,744	800,687			
Profundal Zone	OL-STA-80072	2021		0.54	2,249,984	1,214,991			
Profundal Zone	OL-STA-80074	2021		0.42	12,255	5,147			
Profundal Zone	OL-STA-80225	2021		0.51	3,865,801	1,971,558			
Profundal Zone	OL-STA-80226	2021		0.65	1,444,075	938,649			

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APPENDIX 4C-1 SURFACE SEDIMENT AREA-WEIGHTED MERCURY CONCENTRATIONS

Zone	Location ID	Year	Notes About Mercury Concentration	Mercury Concentration (mg/kg)	Thiessen Polygon Area (ft^2)	Concentration * Area (mg/kg * ft^2)	Sum of (Concentration * Area) (mg/kg * ft2)	Total Area (ft2)	Surface Sediment Area-Weighted Average Mercury Concentration (mg/kg)
Profundal Zone	OL-STA-80227	2021		0.57	12,036	6,861			
Profundal Zone	OL-STA-80234	2021		0.42	1,082,450	454,629			
Profundal Zone	OL-VC-80070	2021		0.96	968,353	929,618			
Profundal Zone	OL-VC-80157	2021		0.46	3,040,730	1,398,736			
Littoral Zone (non-Cap)	OL-VC-50003	2006		1.7	598,748	1,017,872			
Littoral Zone (non-Cap)	OL-VC-50004	2010		2.1	18,879	39,646			
Littoral Zone (non-Cap)	OL-VC-50005	2006		0.59	13,781	8,131			
Littoral Zone (non-Cap)	OL-VC-50006	2006		2.1	5,769	12,116			
Littoral Zone (non-Cap)	OL-VC-50007	2006		0.67	141,081	94,524			
Littoral Zone (non-Cap)	OL-VC-50008	2006		0.78	6,220	4,851			
Littoral Zone (non-Cap)	OL-VC-50009	2010		0.016	195,469	3,127			
Littoral Zone (non-Cap)	OL-VC-50010	2006		0.060	371,382	22,283	25,585,629	39,729,248	0.64
Littoral Zone (non-Cap)	S100	2021		0.057	462,797	26,379			
Littoral Zone (non-Cap)	S101	1992		0.87	711,997	619,438			
Littoral Zone (non-Cap)	S104	1992		1.4	324,059	453,682			
Littoral Zone (non-Cap)	S105	1992		1.6	266,583	426,534			
Littoral Zone (non-Cap)	S110	1992		2.2	646,202	1,421,645			
Littoral Zone (non-Cap)	S112	2021		1.9	1,283,789	2,439,200			
Littoral Zone (non-Cap)	S113	1992		0.17	346,226	58,858			
Littoral Zone (non-Cap)	S357	2000		1.2	255,906	307,087			
Littoral Zone (non-Cap)	S370	2000		0.61	109,095	66,712			
Littoral Zone (non-Cap)	S371	2021		0.32	1,030,738	329,836			
Littoral Zone (non-Cap)	S372	2000		1.5	672,393	974,970			
Littoral Zone (non-Cap)	S373	2021		0.83	616,246	511,485			
Littoral Zone (non-Cap)	S374	2000		0.34	1,888,505	642,092			
Littoral Zone (non-Cap)	S87	1992		1.0	79,060	79,060			
Littoral Zone (non-Cap)	S92	1992		0.54	583,776	315,239			
Littoral Zone (non-Cap)	S93	2021		0.20	601,157	120,231			
Littoral Zone (non-Cap)	S94	2021		0.057	638,249	36,380			
Cap Area A1	OL-RAA-CAP-0001	2019		0.0060	59,766	359			
Cap Area RAF	OL-RAF-CAP-0001	2019		0.0070	6,845	48			
Cap Area RAF	OL-RAF-CAP-0002	2019		0.0090	20,826	187			
Saddle									
Profundal Zone	OL-STA-80072	2021		0.54	96,289	51,996			
Profundal Zone	OL-STA-80074	2021		0.42	280,727	117,905			
Profundal Zone	OL-STA-80075	2021		0.38	1,553,038	590,154			
Profundal Zone	OL-STA-80103	2021		0.43	1,727,168	742,682			
Profundal Zone	OL-STA-80234	2021		0.42	1,386,172	582,192			
Profundal Zone	OL-VC-80045	2021		0.22	143,149	31,493			
Littoral Zone (non-Cap)	OL-VC-30034	2006		0.44	108,397	47,695			
Littoral Zone (non-Cap)	OL-VC-30144	2009		1.6	47,361	73,884			
Littoral Zone (non-Cap)	OL-VC-30145	2009		1.0	50,115	51,117			
Littoral Zone (non-Cap)	OL-VC-30148	2009		0.13	504	66			
Littoral Zone (non-Cap)	S361	2021		0.18	227,498	40,950			
Littoral Zone (non-Cap)	S362	2000		0.086	278,221	23,927	2,890,807	7,461,897	0.39
Littoral Zone (non-Cap)	S364	2021		0.13	180,342	23,444			
Littoral Zone (non-Cap)	S370	2000		0.61	182,833	111,802			

APPENDIX 4C-1 SURFACE SEDIMENT AREA-WEIGHTED MERCURY CONCENTRATIONS

Zone	Location ID	Year	Notes About Mercury Concentration	Mercury Concentration (mg/kg)	Thiessen Polygon Area (ft^2)	Concentration * Area (mg/kg * ft^2)	Sum of (Concentration * Area) (mg/kg * ft2)	Total Area (ft2)	Surface Sediment Area-Weighted Average Mercury Concentration (mg/kg)
Littoral Zone (non-Cap)	S371	2021		0.32	96,539	30,892			
Littoral Zone (non-Cap)	S67	2021		0.31	407,020	126,176			
Littoral Zone (non-Cap)	S71	1992		0.14	185,354	25,950			
Littoral Zone (non-Cap)	S72	1992		0.79	153,988	121,650			
Littoral Zone (non-Cap)	S73	1992		0.16	222,728	35,636			
Littoral Zone (non-Cap)	S74	1992		0.84	71,385	59,963			
Cap Area A1	OL-RAA-CAP-0004	2019		0.0060	30,765	185			
Cap Area B1/C1	OL-RAB-CAP-0018	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.28	2,800	794			
Cap Area B2	OL-RAB-CAP-0002	2019		0.010	14,927	149			
Cap Area RA-B-1A	OL-RAB-CAP-0001	2019		0.0070	14,577	102			
South Basin									
Profundal Zone	OL-RAB-CAP-0011	2019		0.011	303,779	3,342			
Profundal Zone	OL-STA-80075	2021		0.38	770,958	292,964			
Profundal Zone	OL-STA-80076	2021		0.34	4,684,838	1,592,845			
Profundal Zone	OL-STA-80077	2021		0.72	3,317,226	2,388,403			
Profundal Zone	OL-STA-80078	2021		0.45	2,928,752	1,317,938			
Profundal Zone	OL-STA-80080	2021		0.78	2,118,696	1,652,583			
Profundal Zone	OL-STA-80081	2021		0.44	1,943,892	855,312			
Profundal Zone	OL-STA-80082	2021		0.34	3,202,459	1,088,836			
Profundal Zone	OL-STA-80083	2021		0.39	2,266,159	883,802			
Profundal Zone	OL-STA-80084	2021		0.25	2,471,384	617,846			
Profundal Zone	OL-STA-80085	2021		0.30	224,347	67,304			
Profundal Zone	OL-STA-80103	2021		0.43	628,590	270,294			
Profundal Zone	OL-STA-80229	2021		0.47	1,093,428	513,911			
Profundal Zone	OL-STA-80234	2021		0.42	13,479	5,661			
Profundal Zone	OL-STA-80236	2021		0.29	75,461	21,884			
Profundal Zone	OL-VC-80024	2021		0.36	566,094	203,794			
Profundal Zone	OL-VC-80044	2021		0.32	299,394	95,806			
Profundal Zone	OL-VC-80045	2021		0.22	1,274,416	280,372			
Profundal Zone	OL-VC-80079	2021		0.28	1,376,566	385,438			
Profundal Zone	OL-VC-80172	2021		0.35	32,273	11,296			
Profundal Zone	ST51	2021		0.48	1,804,483	866,152			
Littoral Zone (non-Cap)	OL-VC-30034	2006		0.44	82,950	36,498			
Littoral Zone (non-Cap)	OL-VC-30148	2009		0.13	277,769	36,388			
Littoral Zone (non-Cap)	OL-VC-30153	2009		0.20	71,970	14,250			
Littoral Zone (non-Cap)	OL-VC-50018	2006		0.18	322,219	57,999			
Littoral Zone (non-Cap)	OL-VC-50019	2006		0.064	68,667	4,395			
Littoral Zone (non-Cap)	OL-VC-50020	2006		0.086	510	44			
Littoral Zone (non-Cap)	OL-VC-50021	2006		0.10	403,850	40,385			
Littoral Zone (non-Cap)	OL-VC-50022	2006		0.091	201,601	18,346			
Littoral Zone (non-Cap)	S324	2000		0.33	530,887	175,193			
Littoral Zone (non-Cap)	S365	2000		0.65	420,190	273,123			
Littoral Zone (non-Cap)	S367	2021		0.26	285,665	74,273	15,277,936	39,281,681	0.39
Littoral Zone (non-Cap)	S368	2000		0.22	1,001,789	220,394			
Littoral Zone (non-Cap)	S369	2000		0.055	704,839	38,766			
Littoral Zone (non-Cap)	S45	1992		0.66	327,740	216,309			
Littoral Zone (non-Cap)	S46	1992		0.39	195,755	76,344			

APPENDIX 4C-1 SURFACE SEDIMENT AREA-WEIGHTED MERCURY CONCENTRATIONS

Zone	Location ID	Year	Notes About Mercury Concentration	Mercury Concentration (mg/kg)	Thiessen Polygon Area (ft^2)	Concentration * Area ($mg/kg * ft^2$)	Sum of (Concentration * Area) (mg/kg * ft2)	Total Area (ft2)	Surface Sediment Area-Weighted Average Mercury Concentration (mg/kg)
Littoral Zone (non-Cap)	S61	2021		0.19	1,346,329	255,803			
Littoral Zone (non-Cap)	S62	1992		0.94	84,391	79,327			
Littoral Zone (non-Cap)	S66	1992		0.21	510	107			
Littoral Zone (non-Cap)	S67	2021		0.31	46,322	14,360			
Littoral Zone (non-Cap)	S71	1992		0.14	142,911	20,007			
Littoral Zone (non-Cap)	S72	1992		0.79	78,686	62,162			
Littoral Zone (non-Cap)	S73	1992		0.16	184,896	29,583			
Cap Area B1/C1	OL-RAB-CAP-0012A	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.28	54,121	15,356			
Cap Area B1/C1	OL-RAB-CAP-0015	2019		0.0060	19,176	115			
Cap Area B1/C1	OL-RAB-CAP-0017	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.28	63,730	18,082			
Cap Area B1/C1	OL-RAB-CAP-0018	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.28	38,256	10,854			
Cap Area B1/C1	OL-RAC-CAP-0001	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.28	63,643	18,057			
Cap Area B1/C1	OL-RAC-CAP-0002	2019		0.0080	70,526	564			
Cap Area B2	OL-RAB-CAP-0002	2019		0.010	133,768	1,338			
Cap Area C2	OL-RAC-CAP-0003	2019		0.0070	37,109	260			
Cap Area RA-B-1A	OL-RAB-CAP-0001	2019		0.0070	57,839	405			
Cap Area RA-B-1A	OL-RAB-CAP-0003	2019		0.0070	49,884	349			
Cap Area RA-B-1B	OL-RAB-CAP-0004	2019		0.010	31,348	313			
Cap Area RA-B-1C	OL-RAB-CAP-0005	2019		0.0060	40,138	241			
Cap Area RA-B-1C	OL-RAB-CAP-0007	2019		0.0060	41,141	247			
Cap Area RA-B-1C	OL-RAB-CAP-0008	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.57	40,211	22,877			
Cap Area RA-B-1C	OL-RAB-CAP-0010	2019		0.0060	68,331	410			
Cap Area RA-B-1D	OL-RAB-CAP-0013	2019		0.016	52,287	837			
Cap Area RA-B-1E	OL-RAB-CAP-0014	2019		0.0080	60,619	485			
Cap Area RA-B-1E	OL-RAB-CAP-0016	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.57	36,280	20,641			
Cap Area WB 1-8	OL-RAB-CAP-0006	2019		0.052	33,110	1,722			
Cap Area WB 1-8	OL-RAB-CAP-0009	2019		0.037	49,406	1,828			
Cap Area WB 1-8	OL-RAB-CAP-0019	2019		0.049	63,639	3,118			
South Corner									
Profundal Zone	OL-STA-80070	2021		0.30	191,106	57,332			
Profundal Zone	OL-STA-80082	2021		0.34	183,177	62,280			
Profundal Zone	OL-STA-80084	2021		0.25	660,903	165,226			
Profundal Zone	OL-STA-80085	2021		0.30	1,811,799	543,540			
Profundal Zone	OL-STA-80236	2021		0.29	2,446,062	709,358			
Profundal Zone	OL-STA-80237	2021		0.16	1,142,728	182,837			
Profundal Zone	OL-STA-80238	2021		0.34	227,658	77,404			
Profundal Zone	OL-STA-80239	2021		0.36	1,204,389	433,580			
Profundal Zone	OL-VC-80039	2021		0.18	429,574	77,323			
Profundal Zone	OL-VC-80040	2021		0.20	230,877	46,175			
Profundal Zone	OL-VC-80051	2021		0.62	163,793	101,552			
Profundal Zone	OL-VC-80062	2021		0.32	535,123	171,239			
Profundal Zone	OL-VC-80064	2021		0.21	396,517	83,269			
Profundal Zone	OL-VC-80068	2021		0.39	551,853	215,223			
Profundal Zone	OL-VC-80071	2021		0.18	167,022	30,064			
Profundal Zone	OL-VC-80172	2021		0.35	1,722,827	602,989			
Profundal Zone	OL-VC-80177	2021		0.43	1,716,608	738,141			
Littoral Zone (non-Cap)	S16	1992		0.25	214,242	53,561			

APPENDIX 4C-1 SURFACE SEDIMENT AREA-WEIGHTED MERCURY CONCENTRATIONS

Zone	Location ID	Year	Notes About Mercury Concentration	Mercury Concentration (mg/kg)	Thiessen Polygon Area (ft^2)	Concentration * Area (mg/kg * ft^2)	Sum of (Concentration * Area) (mg/kg * ft2)	Total Area (ft2)	Surface Sediment Area-Weighted Average Mercury Concentration (mg/kg)
Littoral Zone (non-Cap)	S17	1992		0.18	426,375	76,747			
Littoral Zone (non-Cap)	S26	2021		0.11	561,471	61,762			
Littoral Zone (non-Cap)	S328	2000		0.72	56,392	40,602			
Littoral Zone (non-Cap)	S329	2021		0.12	94,715	11,366			
Littoral Zone (non-Cap)	S330	2000		0.43	88,785	38,178			
Littoral Zone (non-Cap)	S34	1992		0.15	843,751	126,563			
Littoral Zone (non-Cap)	S365	2000		0.65	41,955	27,271			
Littoral Zone (non-Cap)	S366	2000		0.053	315,814	16,738			
Littoral Zone (non-Cap)	S367	2021		0.26	158,467	41,201			
Littoral Zone (non-Cap)	S37	1992		0.49	30,227	14,811			
Littoral Zone (non-Cap)	S400	2000		0.37	27,635	10,225			
Littoral Zone (non-Cap)	S434	2000		0.056	41,821	2,342			
Cap Area C2	OL-RAC-CAP-0003	2019		0.0070	20,903	146			
Cap Area C2	OL-RAC-CAP-0004	2019		0.0080	123,985	992			
Cap Area C3	OL-RAC-CAP-0023	2019		0.010	108,167	1,082			
Cap Area C3	OL-RAC-CAP-0020	2019		0.0090	177,931	1,601			
Cap Area C3	OL-RAC-CAP-0021	2019		0.0090	118,841	1,070			
Cap Area C3	OL-RAC-CAP-0022	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.57	38,688	22,011			
Cap Area D-Addendum East	OL-RAD-CAP-0007	2019		0.0070	145,492	1,018			
Cap Area D-Center	OL-RAD-CAP-0012	2019		0.0090	77,445	697			
Cap Area D-Center	OL-RAD-CAP-0013	2019		0.014	95,627	1,339			
Cap Area D-Center	OL-RAD-CAP-0017	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.28	94,525	26,819			
Cap Area D-Center	OL-RAD-CAP-0018	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.57	136,394	77,599			
Cap Area D-Center	OL-RAD-CAP-0024	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.57	104,379	59,384			
Cap Area D-Center	OL-RAD-CAP-0026	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.28	163,542	46,401			
Cap Area D-Center	OL-RAD-CAP-0029	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.28	169,420	48,069			
Cap Area D-Center	OL-RAD-CAP-0034	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.28	92,403	26,217			
Cap Area D-East	OL-RAD-CAP-0014	2019		0.0080	210,418	1,683			
Cap Area D-East	OL-RAD-CAP-0021	2019		0.037	309,204	11,441			
Cap Area D-East	OL-RAD-CAP-0025	2019		0.016	211,043	3,377			
Cap Area D-East	OL-RAD-CAP-0028	2019		0.0090	176,921	1,592			
Cap Area D-East	OL-RAD-CAP-0031	2019		0.0070	206,654	1,447			
Cap Area D-East	OL-RAD-CAP-0032	2019		0.0070	140,715	985			
Cap Area D-East	OL-RAD-CAP-0033	2019		0.035	171,018	5,986			
Cap Area D-East	OL-RAD-CAP-0036	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.28	109,576	31,089			
Cap Area D-East	OL-RAD-CAP-0038	2019		0.035	181,204	6,342			
Cap Area D-East	OL-RAD-CAP-0040	2019		0.037	160,454	5,937			
Cap Area D-SMU-2	OL-RAD-CAP-0001	2019		0.0090	86,827	781			
Cap Area D-SMU-2	OL-RAD-CAP-0006	2019		0.010	88,460	885			
Cap Area D-SMU-2	OL-RAD-CAP-0009	2019		0.012	87,807	1,054			
Cap Area D-SMU-2	OL-RAD-CAP-0016	2019		0.011	54,065	595			
Cap Area D-West	OL-RAD-CAP-0010	2019		0.0090	115,334	1,038			
Cap Area D-West	OL-RAD-CAP-0015	2019		0.0060	107,907	647			
Cap Area D-West	OL-RAD-CAP-0020	2019		0.0080	58,820	471			
Cap Area D-West	OL-RAD-CAP-0022	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.57	116,433	66,242			
Cap Area E-1	OL-RAE-CAP-0017	2019		0.0060	186,759	1,121			
Cap Area E-1	OL-RAE-CAP-0018	2019		0.17	214,214	37,273			

APPENDIX 4C-1 SURFACE SEDIMENT AREA-WEIGHTED MERCURY CONCENTRATIONS

Zone	Location ID	Year	Notes About Mercury Concentration	Mercury Concentration (mg/kg)	Thiessen Polygon Area (ft^2)	Concentration * Area (mg/kg * ft^2)	Sum of (Concentration * Area) (mg/kg * ft2)	Total Area (ft2)	Surface Sediment Area-Weighted Average Mercury Concentration (mg/kg)
Cap Area E-1	OL-RAE-CAP-0019	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.86	166,072	143,607	11,899,496	33,137,350	0.36
Cap Area E-1	OL-RAE-CAP-0020	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.86	305,443	264,125			
Cap Area E-1	OL-RAE-CAP-0021	2019		0.014	228,686	3,202			
Cap Area E-1	OL-RAE-CAP-0022	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.86	254,421	220,005			
Cap Area E-1	OL-RAE-CAP-0028	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.86	711,503	615,256			
Cap Area E-1	OL-RAE-CAP-0034	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.86	277,111	239,626			
Cap Area E-1	OL-RAE-CAP-0037	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.43	424,400	183,018			
Cap Area E-1	OL-RAE-CAP-0042	2019		0.11	59,268	6,697			
Cap Area E-2	OL-RAE-CAP-0031	2019		0.0060	125,914	755			
Cap Area E-2	OL-RAE-CAP-0033	2019		0.012	111,654	1,340			
Cap Area E-2	OL-RAE-CAP-0036	2019		0.0080	85,734	686			
Cap Area E-2	OL-RAE-CAP-0039	2019	2019 measured porewater concentration converted to sorbed phase concentration	1.3	72,386	92,092			
Cap Area E-2	OL-RAE-CAP-0040	2019	2019 measured porewater concentration converted to sorbed phase concentration	2.6	99,217	253,111			
Cap Area E-2	OL-RAE-CAP-0041	2019	2019 measured porewater concentration converted to sorbed phase concentration	1.3	204,566	260,255			
Cap Area E-2	OL-RAE-CAP-0043	2019	2019 measured porewater concentration converted to sorbed phase concentration	2.6	518,513	1,322,774			
Cap Area E-2	OL-RAE-CAP-0044	2019	2019 measured porewater concentration converted to sorbed phase concentration	1.3	181,581	231,013			
Cap Area E-3	OL-RAE-CAP-0023	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.72	257,774	185,003			
Cap Area E-3	OL-RAE-CAP-0024	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.72	849,449	609,646			
Cap Area E-3	OL-RAE-CAP-0025	2019		0.036	246,923	8,889			
Cap Area E-3	OL-RAE-CAP-0026	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.36	448,276	160,445			
Cap Area E-3	OL-RAE-CAP-0027	2019		0.10	301,256	28,619			
Cap Area E-3	OL-RAE-CAP-0029	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.72	293,393	210,567			
Cap Area E-3	OL-RAE-CAP-0030	2019		0.030	168,376	5,051			
Cap Area E-3	OL-RAE-CAP-0032	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.72	357,782	256,778			
Cap Area E-3	OL-RAE-CAP-0035	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.36	251,581	90,045			
Cap Area E-3	OL-RAE-CAP-0038	2019		0.029	110,040	3,191			
Cap Area OL-VC-10138/40	OL-RAD-CAP-0023	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.57	111,563	63,471			
Cap Area Outboard Center	OL-RAD-CAP-0037	2019		0.038	112,223	4,264			
Cap Area Outboard Center	OL-RAD-CAP-0039	2019		0.044	83,442	3,671			
Cap Area Outboard Center	OL-RAD-CAP-0041	2019		0.047	138,720	6,520			
Cap Area Outboard East	OL-RAD-CAP-0042	2019		0.052	137,305	7,140			
Cap Area Outboard East	OL-RAD-CAP-0043	2019		0.060	55,598	3,336			
Cap Area Outboard East	OL-RAD-CAP-0044	2019		0.056	59,403	3,327			
Cap Area Outboard East	OL-RAD-CAP-0045	2019		0.076	42,462	3,227			
Cap Area Outboard East	OL-RAD-CAP-0046	2019		0.11	193,994	20,563			
Cap Area Outboard West	OL-RAD-CAP-0027	2019		0.063	79,913	5,035			
Cap Area Outboard West	OL-RAD-CAP-0030	2019		0.058	140,806	8,167			
Cap Area Outboard West	OL-RAD-CAP-0035	2019		0.045	85,482	3,847			
Cap Area RA-C-1A	OL-RAC-CAP-0016	2019		0.0090	16,492	148			
Cap Area RA-C-1A	OL-RAC-CAP-0017	2019		0.0100	15,554	156			
Cap Area RA-C-1B	OL-RAC-CAP-0014	2019		0.012	13,575	163			
Cap Area RA-C-1B	OL-RAC-CAP-0018	2019		0.019	23,308	443			
Cap Area RA-C-1C	OL-RAC-CAP-0015	2019		0.067	21,311	1,428			
Cap Area RA-C-1D	OL-RAC-CAP-0019	2019		0.015	23,916	359			
Cap Area RA-C-2A	OL-RAC-CAP-0005	2019		0.0070	37,444	262			
Cap Area RA-C-2A	OL-RAC-CAP-0007	2019	2019 measured porewater concentration converted to sorbed phase concentration	0.57	35,861	20,402			
Cap Area RA-C-2A	OL-RAC-CAP-0009	2019		0.0080	30,078	241			

APPENDIX 4C-1 SURFACE SEDIMENT AREA-WEIGHTED MERCURY CONCENTRATIONS

Zone	Location ID	Year	Notes About Mercury Concentration	Mercury Concentration (mg/kg)	Thiessen Polygon Area (ft^2)	Concentration * Area (mg/kg * ft^2)	Sum of (Concentration * Area) (mg/kg * ft2)	Total Area (ft2)	Surface Sediment Area-Weighted Average Mercury Concentration (mg/kg)
Cap Area RA-C-2B	OL-RAC-CAP-0006	2019		0.014	7,303	102			
Cap Area RA-C-2B	OL-RAC-CAP-0008	2019		0.019	8,833	168			
Cap Area RA-C-2C	OL-RAC-CAP-0011	2019		0.0070	14,070	98			
Cap Area RA-C-2C	OL-RAC-CAP-0013	2019		0.0060	15,054	90			
Cap Area RA-C-2D	OL-RAC-CAP-0010	2019		0.0070	6,466	45			
Cap Area RA-C-2D	OL-RAC-CAP-0012	2019		0.0060	6,846	41			
Cap Area RA-C-TLC	OL-SMU8-CAP-0004	2019		0.43	22,584	9,598			
Cap Area RA-C-TLC	OL-SMU8-CAP-0005	2019		0.22	23,170	5,144			
Cap Area RA-C-TLC	OL-SMU8-CAP-0001	2019		0.0070	122,715	859			
Cap Area RA-C-TLC	OL-SMU8-CAP-0002	2019		0.0070	55,996	392			
Cap Area RA-C-TLC	OL-SMU8-CAP-0003	2019		0.0060	64,153	385			
Cap Area RA-C-TLC	OL-SMU8-CAP-0006	2019		0.0060	18,056	108			
Cap Area RA-C-TLC	OL-SMU8-CAP-0007	2019		0.011	17,287	190			
Cap Area RA-D-1A	OL-RAD-CAP-0002	2019		0.0060	87,032	522			
Cap Area RA-D-1A	OL-RAD-CAP-0003	2019		0.034	107,249	3,646			
Cap Area RA-D-1A	OL-RAD-CAP-0004	2019		0.037	134,624	4,981			
Cap Area RA-D-1B	OL-RAD-CAP-0005	2019		0.0080	30,326	243			
Cap Area RA-D-1B	OL-RAD-CAP-0011	2019		0.011	20,414	225			
Cap Area RA-D-2	OL-RAD-CAP-0008	2019		0.023	72,313	1,663			
Cap Area RA-D-2	OL-RAD-CAP-0019	2019		0.0070	30,046	210			
Cap Area RA-D-Amended TLC	OL-SMU8-CAP-0008	2019		0.018	124,425	2,240			
Cap Area RA-D-Amended TLC	OL-SMU8-CAP-0009	2019		0.24	102,605	24,625			
Cap Area RA-D-Amended TLC	OL-SMU8-CAP-0010	2019		0.085	77,288	6,570			
Cap Area RA-D-Amended TLC	OL-SMU8-CAP-0011	2019		0.0090	119,702	1,077			
Cap Area RA-D-Amended TLC	OL-SMU8-CAP-0012	2019		0.022	92,537	2,036			
Cap Area RA-D-Amended TLC	OL-SMU8-CAP-0013	2019		0.017	92,739	1,577			
Cap Area RA-D-Amended TLC	OL-SMU8-CAP-0014	2019		0.080	120,682	9,655			
Cap Area RA-D-Amended TLC	OL-SMU8-CAP-0015	2019		0.010	68,862	689			
Cap Area RA-D-Amended TLC	OL-SMU8-CAP-0016	2019		0.0070	57,442	402			
Cap Area RA-D-TLC	OL-SMU8-CAP-0017	2019		0.11	75,581	8,616			
Cap Area RA-D-TLC	OL-SMU8-CAP-0018	2019		0.0070	100,583	704			
Cap Area RA-D-TLC	OL-SMU8-CAP-0019	2019		0.41	76,333	31,067			
Cap Area RA-D-TLC	OL-SMU8-CAP-0020	2019		0.19	78,783	14,654			
Cap Area RA-E-TLC	OL-SMU8-CAP-0021	2019		0.093	116,213	10,808			
Cap Area RA-E-TLC	OL-SMU8-CAP-0022	2019		0.10	85,581	8,900			
Cap Area RA-E-TLC	OL-SMU8-CAP-0023	2019		0.17	94,343	15,944			
Cap Area RA-E-TLC	OL-SMU8-CAP-0024	2019		0.030	91,252	2,738			
Cap Area RA-E-TLC	OL-SMU8-CAP-0025	2019		0.078	121,677	9,491			
Sediment - CSX Area	OL-RAE-CAP-0001	2019		7.3	57,967	423,157			
Sediment - CSX Area	OL-RAE-CAP-0002	2019		4.3	19,376	83,315			
Sediment - CSX Area	OL-RAE-CAP-0003	2019		2.0	27,294	54,589			
Sediment - CSX Area	OL-RAE-CAP-0004	2019		5.1	14,995	76,477			
Sediment - CSX Area	OL-RAE-CAP-0005	2019		0.88	19,875	17,470			
Sediment - CSX Area	OL-RAE-CAP-0006	2019		0.96	29,640	28,307			
Sediment - CSX Area	OL-RAE-CAP-0007	2019		1.1	29,681	32,649			
Sediment - CSX Area	OL-RAE-CAP-0008	2019		0.048	42,104	2,021			
Sediment - CSX Area	OL-RAE-CAP-0009	2019		0.53	38,565	20,324			
Sediment - CSX Area	OL-RAE-CAP-0010	2019		0.35	56,901	20,143			
Sediment - CSX Area	OL-RAE-CAP-0011	2019		0.37	29,572	11,030			
Sediment - CSX Area	OL-RAE-CAP-0012	2019		0.32	39,229	12,475			
Sediment - CSX Area	OL-RAE-CAP-0013	2019		0.49	31,035	15,176			
Sediment - CSX Area	OL-RAE-CAP-0014	2019		0.31	34,677	10,611			
Sediment - CSX Area	OL-RAE-CAP-0015	2019		0.21	43,281	8,916			
Sediment - CSX Area	OL-RAE-CAP-0016	2019		0.25	146,981	37,039			

APPENDIX 4D - MEMORANDA OF VISUAL INSPECTION OF THE ONONDAGA LAKE FROZEN CORES IN 2021 IN SMU 8

290 Elwood Davis Road, Suite 340
Liverpool, New York 13088
315.453.9009

ANCHOR QEA

Memorandum

June 8, 2022

To: Anne Burnham, Parsons

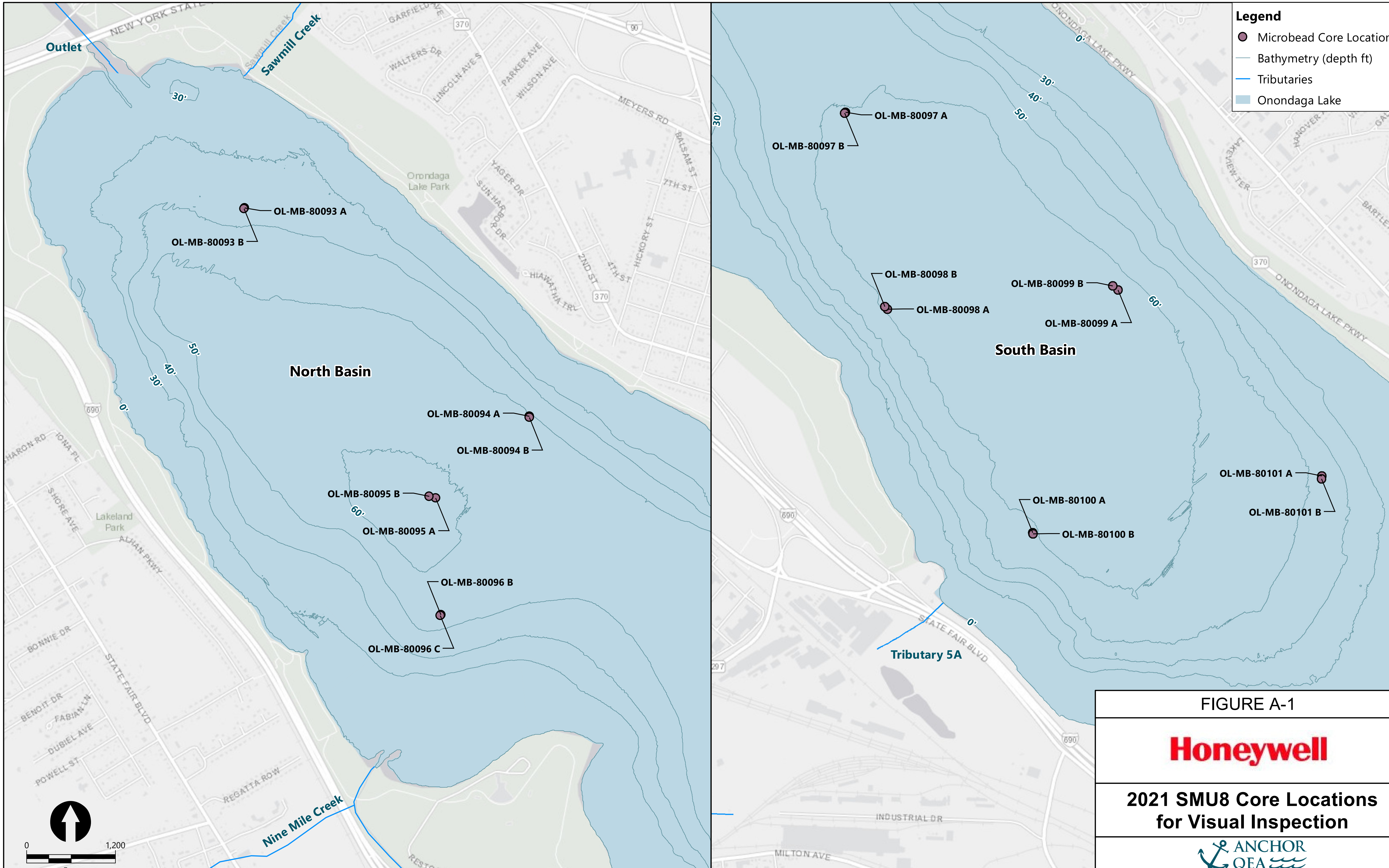
From: Deirdre Reidy, Anchor QEA, LLC

cc: Kevin Russell, Anchor QEA, LLC, and Mark Arrigo and Ed Glaza, Parsons

Re: Visual Inspection of the Onondaga Lake Frozen Cores Collected in May 2021 in SMU 8

Summary

Sediment cores were collected from the profundal zone sediments of Onondaga Lake in May 2021 as part of an ongoing effort to assess factors that impact predictions of natural recovery in Sediment Management Unit (SMU) 8, such as net sedimentation rate and mixing depth. To further assess net sedimentation rates in the profundal zone of Onondaga Lake (SMU 8), fluorescent microbead marker material was placed on the surface of SMU 8 sediments at nine locations in June and July 2009 (Parsons and Environmental Tracing Systems 2014). The microbead marker material has a grain size similar to sand, making it less likely to vertically mix with the silty SMU 8 sediments upon placement or sampling. Thus, this material provides a useful tool to measure the thickness of sediment deposited atop the marker layer (i.e., average net sedimentation rates since mid-2009). In May 2021, 18 microbead cores were collected from nine microbead plots in SMU 8, as shown in Figure A-1.


Legend
Microbead Core Locations
Bathymetry (depth ft)
Tributaries
Onondaga Lake
North Basin
South Basin
Outlet
Sawmill Creek
Nine Mile Creek
Tributary 5A
OL-MB-80093 A
OL-MB-80093 B
OL-MB-80094 A
OL-MB-80094 B
OL-MB-80095 A
OL-MB-80095 B
OL-MB-80096 B
OL-MB-80096 C
OL-MB-80097 A
OL-MB-80097 B
OL-MB-80098 A
OL-MB-80098 B
OL-MB-80099 A
OL-MB-80099 B
OL-MB-80100 A
OL-MB-80100 B
OL-MB-80101 A
OL-MB-80101 B
0
1,200
Feet
FIGURE A-1
Honeywell
2021 SMU8 Core Locations for Visual Inspection
ANCHOR QEA

Following collection, the cores were frozen and then visually inspected for the presence of microbead marker material and laminations, the presence of which provides an indication of potential mixing depths in the core (i.e., a lamination provides visual evidence of sequences of deposited material that is not mixed with the bed). Microbead marker material was observed in all 18 cores at depths ranging from 1.5 to 12.5 centimeters (cm) below the core surface (also called the mudline or top of sediment; Table A-1). The thickness of the first lamination observed in each core ranged from less than 0.1 to 9.5 cm.

Table A-1
Summary of Depth to Microbead Marker Material and Thickness of First Lamination

Location ID	Depth to Microbead Marker Material (cm)[1]	Thickness of First Lamination (cm)[2]
OL-MB-80093-A	8.5–11 (scattered)	9.5
OL-MB-80093-B	9.0	2.0
OL-MB-80094-A	4.5	0.2
OL-MB-80094-B	1.5	1.0
OL-MB-80095-A	6.5	1.0
OL-MB-80095-B	5.5	2.0
OL-MB-80096-B	9.0	2.0
OL-MB-80096-C	12.5	3.0
OL-MB-80097-A	4.5	<0.1
OL-MB-80097-B	5.0	<0.1
OL-MB-80098-A	8.5	2.0
OL-MB-80098-B	10	2.0
OL-MB-80099-A	8.0	1.0
OL-MB-80099-B	10	1.0
OL-MB-80100-A	7.5	<0.1
OL-MB-80100-B	9.0	0.1
OL-MB-80101-A	10.5	3.0
OL-MB-80101-B	12	<0.1

Notes:
1. Multiple values indicate separate, distinct microbead marker material layers.
2. The thickness of first lamination represents the depth of mixing.

Methods

Sediment cores were collected from 18 locations within SMU 8 on May 20 and May 21, 2021, in accordance with the *Onondaga Lake Monitoring and Maintenance Plan* (Parsons 2017). The core collection was consistent with methods used to collect cores for microbead marker material and/or lamination observations from SMU 8 in 2010 (Parsons 2010), 2011 (Anchor QEA 2012a), 2012

(Anchor QEA 2012b, 2012c), 2014 (Anchor QEA 2015), 2015 (Anchor QEA 2016), and 2017 (Anchor QEA 2019). Figure A-1 shows the locations of the 18 cores that were collected in May 2021: 8 cores were collected from the North Basin, and 10 cores were collected from the South Basin.

The 2021 cores were placed vertically into a cooler, packed with wet ice for transport, and maintained in a frozen state for splitting. Visual observations were conducted on June 8, 2021. Anne Burnham, Mark Arrigo, Michaela Kenward, Jim Molloy, and Julia Piskun of Parsons; Deirdre Reidy of Anchor QEA, LLC; and Bob Montione of AECOM (on behalf of the New York State Department of Environmental Conservation [NYSDEC]) were in attendance when the frozen cores were sliced.

Each core was vertically split open using a reciprocating saw to expose a vertical cross section of the core, which was visually inspected for the presence of microbead markers and sediment laminations. Visual inspection of the cores focused on the upper portion (approximately the top 25 cm) of the core, where observations are representative of more recent lake sedimentation and mixing conditions. Photographs were taken, and observations were recorded for each core. An ultraviolet light was used to assist with the visual inspection for evidence of microbead markers. Visual observations of each sliced core are summarized in the following sections.

Visual Description of Cores Collected from Microbead Plots

OL-MB-80093-A

Microbead core OL-MB-80093-A was collected in the North Basin from a water depth of 37 feet (Figure A-1). Figure A-2 is a photograph of core OL-MB-80093-A after being sliced vertically along a center section of the core, revealing microbead marker material.

Figure A-2
Core OL-MB-80093-A

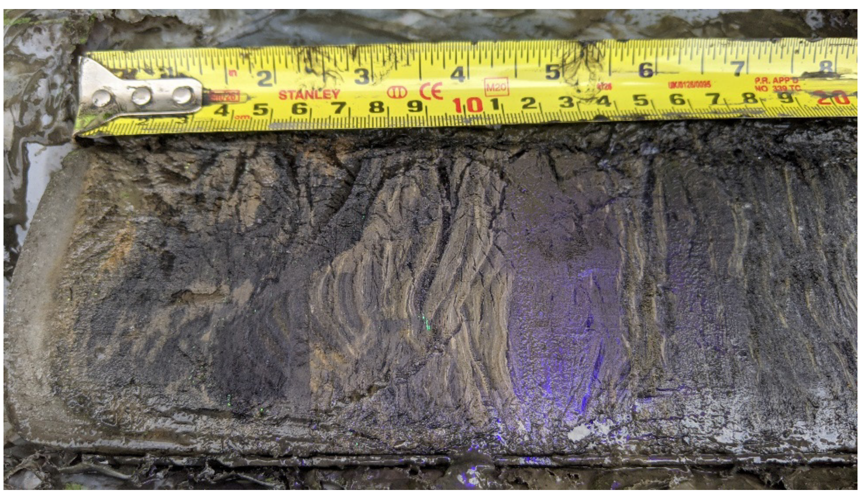
Visual inspection of the vertical cross section of microbead core OL-MB-80093-A revealed a light brown and gray mottling to a depth of 9.5 cm. Microbeads were scattered, with the highest density of microbeads observed at a depth of 8.5 to 11 cm. Minimal microbead scatter was observed to the surface. Descriptions of laminations observed in the core are as follows:

- Light brown and gray mottling was observed from the surface to a depth of 9.5 cm.
- Dark gray sediment was observed from the 9.5 to 10 cm depth interval.
- Alternating light brownish-gray and medium gray sediment (0.25 cm thick each) was observed from the 10 to 14 cm depth interval.
- Alternating light gray and dark gray sediment (approximately 0.1 to 0.2 cm thick each) was observed from the 14 to 18 cm depth interval.
- Dark gray sediment was observed from the 18 to 20 cm depth interval.
- Alternating medium gray and dark gray sediment (0.25 cm thick) was observed from the 20 to 25 cm depth interval.

OL-MB-80093-B

Microbead core OL-MB-80093-B was collected in the North Basin from a water depth of 37 feet (Figure A-1). Figure A-3 is a photograph of core OL-MB-80093-B after being sliced vertically along a center section of the core, revealing microbead marker material.

Figure A-3
Core OL-MB-80093-B



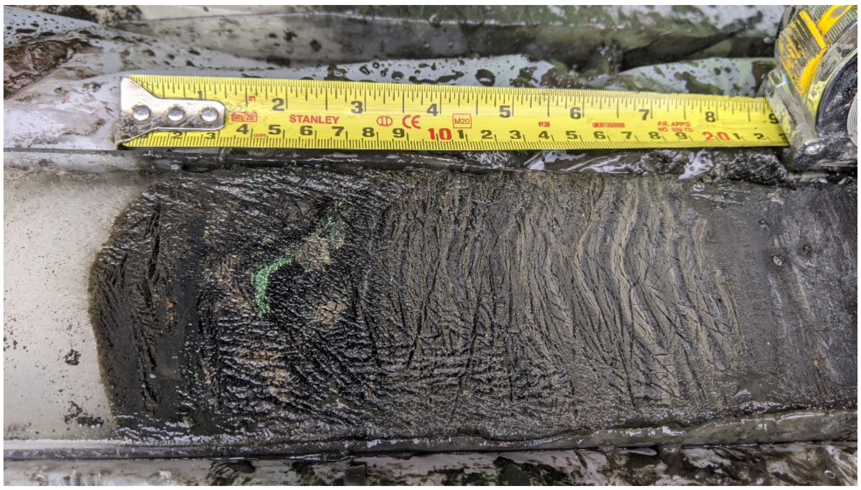
Visual inspection of the vertical cross section of microbead core OL-MB-80093-B revealed light brown sediment to a depth of 2 cm. Microbead marker material was observed in the center of the core at a depth of 9 cm, with sparce scattering to the surface. Descriptions of laminations observed in the core are as follows:

- Light brown sediment was observed from the surface to a depth of 2 cm.
- Dark gray with brownish-gray along the sides of the core was observed from the 2 to 6 cm depth interval.
- Alternating light brownish-gray and medium gray sediment (approximately 0.2 cm thick each) observed from the 6 to 9 cm depth interval.
- Microbead marker material was observed from 9 to 9.1 cm.
- Alternating light brownish-gray and medium gray sediment (approximately 0.2 cm thick each) was observed from the 9.1 to 11 cm depth interval.
- Dark brownish-gray sediment was observed from the 11 to 14 cm depth interval.
- Dark brownish-gray sediment, with fine lighter brownish-gray laminations was observed from the 14 to 15 cm depth interval.
- Dark gray sediment was observed from the 15 to 16.5 cm depth interval.
- Alternating dark gray and lighter brownish-gray (approximately 0.2 cm thick each) sediment was observed from the 16.5 to 20 cm depth interval.
- Alternating black and dark brownish-gray sediment (approximately 0.25 cm thick each) was observed from the 20 to 25 cm depth interval.

OL-MB-80094-A

Microbead core OL-MB-80094-A was collected in the North Basin from a water depth of 50 feet (Figure A-1). Figure A-4 is a photograph of core OL-MB-80094-A after being sliced vertically along a center section of the core, revealing a layer of microbead marker material.

Figure A-4
Core OL-MB-80094-A



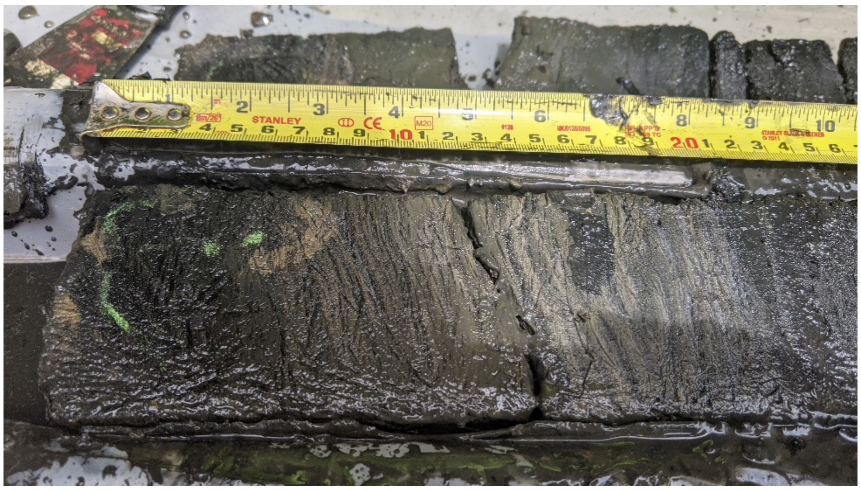
Visual inspection of the vertical cross section of microbead core OL-MB-80094-A revealed a 0.2 cm thick light brown layer of sediment at the top of the core followed by portions of light brownish-gray, dark gray, and brown sediment above a 0.5 cm thick layer of microbead material, which was observed at a depth of 4.5 cm. Descriptions of laminations observed in the core are as follows:

- Light brown sediment was observed at the surface to a depth of 0.2 cm.
- Light brownish-gray sediment was observed from the 0.2 to 2 cm depth interval.
- Dark gray sediment was observed from the 2 to 2.5 cm depth interval.
- Brown sediment was observed from the 2.5 to 4.5 cm depth interval.
- Microbead marker material was observed from the 4.5 to 5 cm depth interval.
- Black sediment was observed from the 5 to 7 cm depth interval, with one round brown blob of sediment within.
- Alternating brownish-gray and light gray sediment (0.1 to 0.2 cm thick each) was observed from the 7 to 12 cm depth interval.
- Alternating brownish-gray and light gray sediment (0.5 cm thick each) was observed from the 12 to 19 cm depth interval.

OL-MB-80094-B

Microbead core OL-MB-80094-B was collected in the North Basin from a water depth of 50 feet (Figure A-1). Figure A-5 is a photograph of core OL-MB-80094-B after being sliced vertically along a center section of the core, revealing microbead marker material.

Figure A-5
Core OL-MB-80094-B



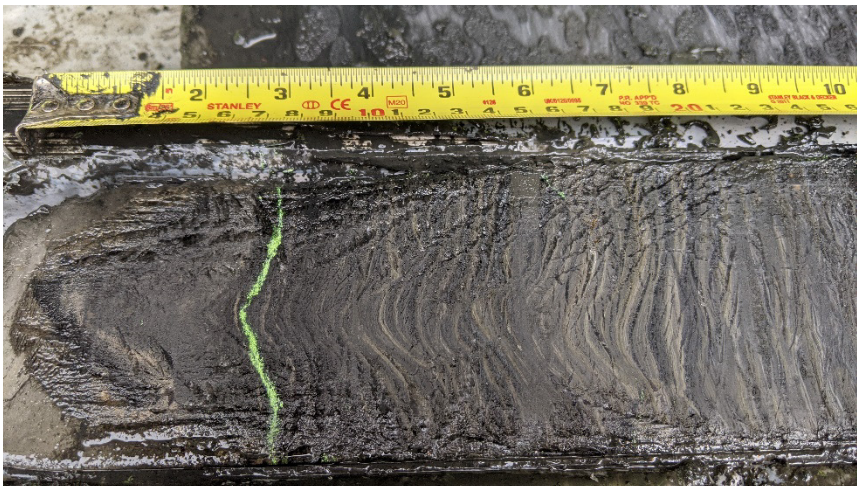
Visual inspection of the vertical cross section of microbead core OL-MB-80094-B revealed a 1 cm thick light brown layer of sediment at the top of the core followed by dark gray sediment above the first instance of microbead marker material. A 0.1 cm thick layer of microbead marker material was observed at a depth of 1.5 cm; discrete pockets of microbead marker material were also observed from depths of 4 and 6 cm. From the surface to a depth of 8 cm, some disturbance of sediment was observed on one side of the core. Descriptions of laminations observed in the core are as follows:

- Light brown sediment was observed at the surface to a depth of 1 cm.
- Light brownish-gray sediment was observed from the 1 to 1.5 cm depth interval.
- Microbead marker material was observed from the 1.5 to 1.6 cm depth interval.
- Black sediment was observed from the 1.6 to 7.5 cm, with two pockets of microbead marker material observed at depths of 4 cm and 6 cm.
- Alternating brownish-gray and light gray sediment (approximately 0.2 cm thick each) observed from the 7.5 to 12.5 cm depth interval.
- Alternating brownish-gray and light gray sediment (approximately 0.5 cm thick each) observed from the 12.5 to 19 cm depth interval.

OL-MB-80095-A

Microbead core OL-MB-80095-A was collected in the North Basin from a water depth of 59 feet (Figure A-1). Figure A-6 is a photograph of core OL-MB-80095-A after being sliced vertically along a center section of the core, revealing a layer of microbead marker material.

Figure A-6
Core OL-MB-80095-A



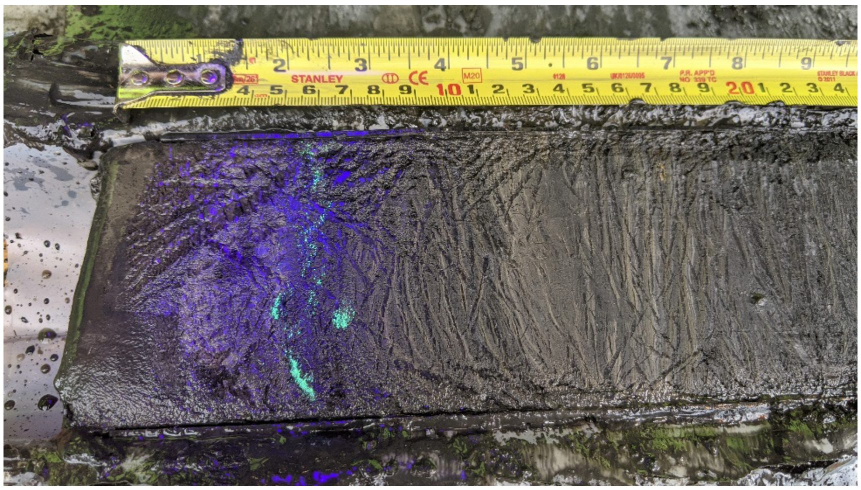
Visual inspection of the vertical cross section of microbead core OL-MB-80095-A revealed a 0.1 cm thick layer of microbead marker material at a depth ranging from 6.5 to 6.6 cm (Figure A-6). A 1 cm thick layer of light brown sediment was present at the top of the core followed by black, light gray, and medium gray sediment above the microbead marker material layer. Descriptions of laminations observed in the core are as follows:

- Light brown sediment was observed at the surface to a depth of 1 cm.
- Black sediment was observed from the 1 to 1.5 cm depth interval.
- Light gray sediment was observed from the 1.5 to 2 cm depth interval.
- Medium gray sediment was observed from the 2 to 5 cm depth interval.
- Black sediment was observed from the 5 to 6.5 cm depth interval.
- Microbead marker material was observed from the 6.5 to 6.6 cm depth interval.
- Alternating black and dark gray sediment (0.2 cm thick each) was observed from depths of 6.6 to 8 cm.
- Alternating medium gray sediment (approximately 0.4 cm thick) and medium brownish-gray sediment (approximately 0.2 cm thick) was observed from the 8 to 15.5 cm.
- Alternating light brownish-gray and medium gray sediment (0.5 cm thick each) was observed from the 15.5 to 22 cm depth interval.

OL-MB-80095-B

Microbead core OL-MB-80095-B was collected in the North Basin from a water depth of 59 feet (Figure A-1). Figure A-7 is a photograph of core OL-MB-80095-B after being sliced vertically along a center section of the core, revealing scattered microbead marker material.

Figure A-7
Core OL-MB-80095-B



Visual inspection of the vertical cross section of microbead core OL-MB-80095-B revealed a 0.1 cm thick layer of microbead marker material from the 5.5 to 5.6 cm depth interval (Figure A-7). A 3 cm thick layer of light brown sediment was present at the top of the core followed by light gray, dark gray, and black layers of sediment above the microbead marker material. Descriptions of laminations observed in the core are as follows:

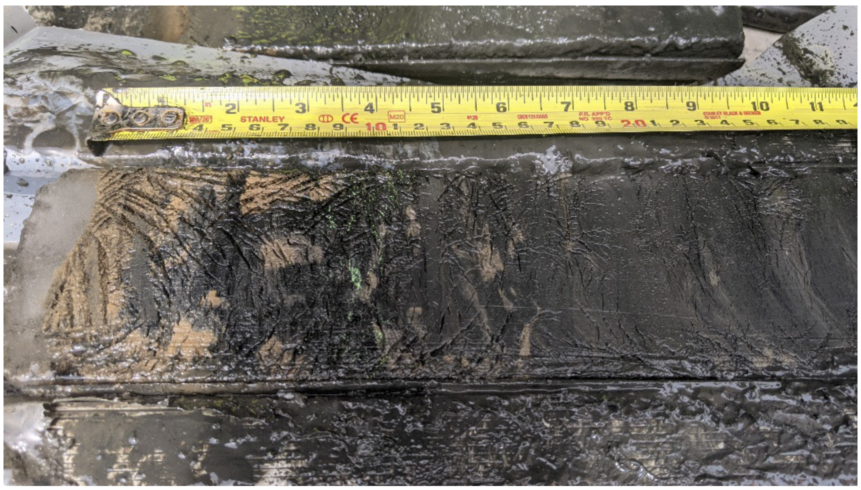
- Light brown sediment was observed at the surface to a depth of 2 cm.
- Light gray sediment was observed from the 2 to 3 cm depth interval.
- Black sediment was observed from the 3 to 4 cm depth interval.
- Light gray sediment was observed from the 4 to 4.5 cm depth interval.
- Dark gray sediment was observed from the 4.5 to 5.5 cm depth interval.
- Microbead marker material was observed from the 5.5 to 5.6 cm depth interval.
- Black sediment was observed from the 5.6 to 6.5 cm depth interval.
- Alternating medium gray and medium brownish-gray sediment (0.2 cm thick each) was observed from the 6.5 to 11 cm depth interval.
- Mottled brownish-gray and gray sediment was observed from the 11 to 15 cm depth interval.
- Alternating light gray and brownish-gray sediment with fine laminations was observed (approximately 0.3 cm thick each) from the 15 to 19 cm depth interval.

- Alternating light gray and dark gray sediment (0.5 cm thick each) was observed from the 19 to 25 cm depth interval.

OL-MB-80096-B

Microbead core OL-MB-80096-B was collected in the North Basin from a water depth of 51 feet (Figure A-1). Figure A-8 is a photograph of core OL-MB-80096-B after being sliced vertically along a center section of the core, revealing microbead marker material.

Figure A-8
Core OL-MB-80096-B



Visual inspection of the vertical cross section of microbead core OL-MB-80096-B revealed a layer of green microbead marker material from the 9 to 9.5 cm depth interval. A 2 cm thick layer of light brown sediment was present at the top of the core followed by medium gray, brown, dark gray, and black sediment layers above the microbeads. Brown discrete blobs of sediment were observed at depths between 3 and 10 cm. Descriptions of laminations observed in the core are as follows:

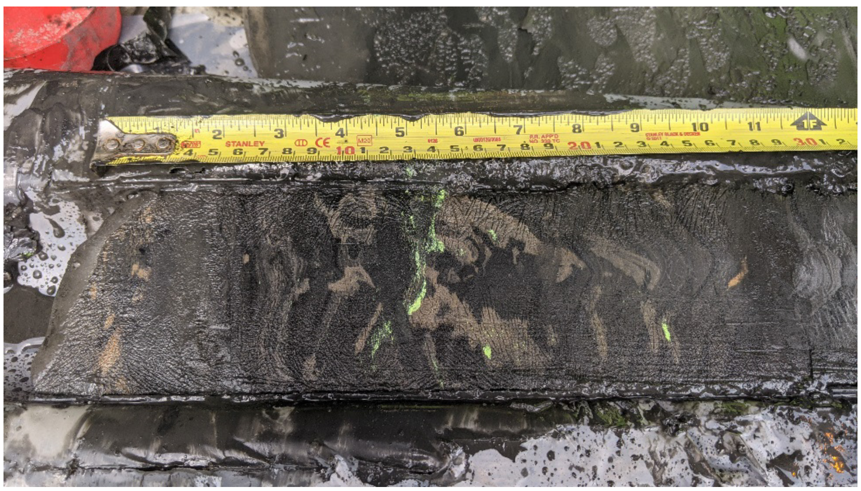
- Brown sediment was observed from the surface to a depth of 2 cm.
- Medium gray sediment was observed from the 2 to 3 cm depth interval.
- Brown sediment was observed from the 3 to 4 cm depth interval.
- Alternating dark gray (0.6 cm thick) and light gray (0.4 cm thick) sediment was observed from the 4 to 6 cm with some brown blobs.
- Black sediment with brown blobs was observed from the 6 to 7 cm depth interval.
- Black sediment was observed from the 7 to 9 cm depth interval.
- Microbead marker material was observed from the 9 to 9.5 cm depth interval.
- Black sediment was observed from the 9.5 to 10 cm depth interval, with a brown blob.
- Medium gray sediment was observed from the 10 to 11.5 cm depth interval.

- Dark gray sediment with some brown blobs was observed from the 11.5 to 16 cm depth interval.
- Alternating light gray and dark gray sediment (approximately 0.4 cm thick each) was observed from the 16 to 23 cm depth interval.
- Alternating light and dark gray sediment (approximately 0.5 cm thick each) was observed from the 23 to 26 cm depth interval.

OL-MB-80096-C

Microbead core OL-MB-80096-C was collected in the South Basin from a water depth of 51.5 feet (Figure A-1). Figure A-9 is a photograph of core OL-MB-80096-C after being sliced vertically along a center section of the core, revealing scattered microbead marker material.

Figure A-9
Core OL-MB-80096-C



Visual inspection of the vertical cross section of microbead core OL-MB-80096-C revealed a layer of microbead marker material from the 12.5 to 13 cm depth interval, with pockets of microbead marker material also observed at depth of 15 cm and 23 cm. A 2 cm thick layer of light brown sediment was present at the top of the core followed by medium gray, brown, dark gray, and black sediment layers above the microbeads. Brown discrete blobs of sediment were observed between 3 and 10 cm. Descriptions of laminations observed in the core are as follows:

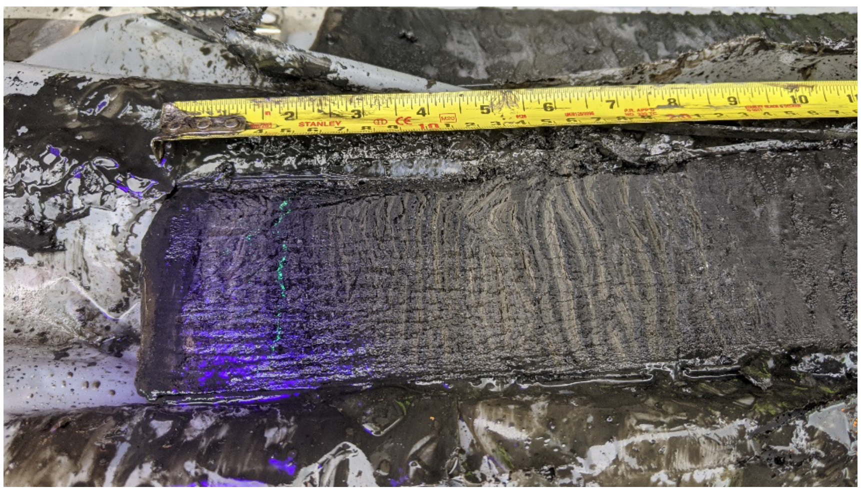
- Mottled light brown and medium gray sediment was observed from the surface to a depth of 3 cm.
- Medium gray sediment was observed from the 3 to 5 cm depth interval.
- Dark gray sediment was observed from the 5 to 6 cm depth interval.
- Black sediment was observed from the 6 to 6.5 cm depth interval.

- Brown and gray thin layers were observed from the 6.5 to 8.5 cm depth interval.
- Black with brown mottling was observed from the 8.5 to 12.5 cm depth interval.
- Microbead marker material was observed from the 12.5 to 13 cm depth interval.
- Black with brown mottling was observed from the 13 to 20 cm depth interval.
- Alternating light gray and dark gray sediment (0.5 cm thick each) was observed from the 20 to 27 cm depth interval.

OL-MB-80097-A

Microbead core OL-MB-80097-A was collected in the South Basin from a water depth of 59 feet (Figure A-1). Figure A-10 is a photograph of core OL-MB-80097-A after being sliced vertically along a center section of the core, revealing trace microbead marker material.

Figure A-10
Core OL-MB-80097-A



Visual inspection of the vertical cross section of microbead core OL-MB-80097-A revealed a 0.1 cm thick layer of microbead marker material from the 4.5 to 4.6 cm depth interval. A thin film of light brown sediment was observed at the surface, with some sediment within the ice above the core. A 1 cm thick layer of black sediment was present at the top of the core followed by light gray and dark gray sediment layers above the microbead marker material layer. Descriptions of laminations observed in the core are as follows:

- A thin film of light brown oxidized sediment was observed at the surface.
- Black sediment was observed just below the thin film at the surface to a depth of 1 cm.
- Alternating light gray and dark gray sediment (0.5 cm thick each) was observed from the 1 to 4.5 cm depth interval.
- Microbead marker material was observed from the 4.5 to 4.6 cm depth interval.

- Black sediment was observed from the 4.6 to 6 cm depth interval.
- Alternating light gray and dark gray sediment (0.2 cm thick each) was observed from the 6 to 11 cm depth interval.
- Alternating light gray and dark gray sediment (0.5 cm thick each) was observed from the 11 to 20 cm depth interval.

OL-MB-80097-B

Microbead core OL-MB-80097-B was collected in the South Basin from a water depth of 59 feet (Figure A-1). Figure A-11 is a photograph of core OL-MB-80097-B after being sliced vertically along a center section of the core, revealing microbead marker material.

Figure A-11
Core OL-MB-80097-B

Visual inspection of the vertical cross section of microbead core OL-MB-80097-B revealed a 0.1 cm thick layer of microbead marker material from the 5 to 5.1 cm depth interval. A thin film of light brown sediment was observed at the surface with some sediment within the ice above the core. A 1 cm thick layer of black sediment was present at the top of the core followed by light gray and medium gray sediment layers above the microbead marker material layer. Descriptions of laminations observed in the core are as follows:

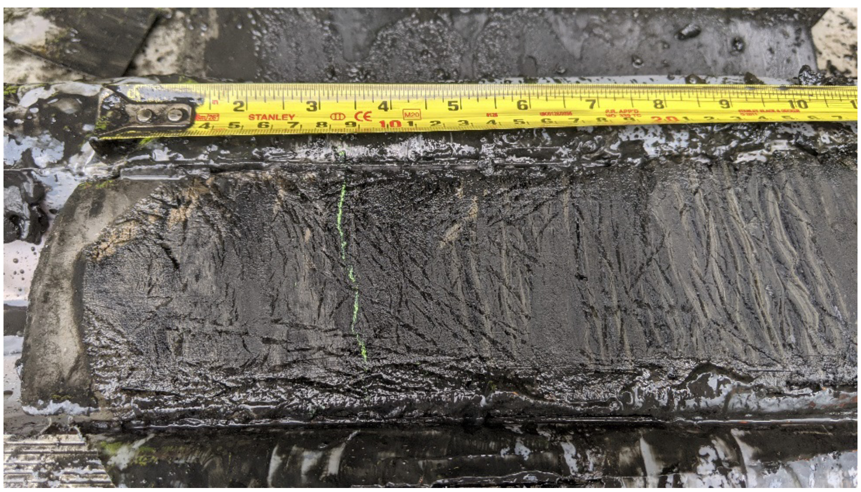
- A thin film of light brown oxidized sediment was observed at the surface.
- Black sediment was observed just below the thin film at the surface to a depth of 1 cm.
- Medium gray sediment was observed from the 1 to 2 cm depth interval.
- Light gray sediment was observed from the 2 to 3 cm depth interval.
- Medium gray sediment was observed from the 3 to 5 cm depth interval.
- Microbead marker material was observed from the 5 to 5.1 cm depth interval.

- Black sediment was observed from the 5.1 to 6.5 cm depth interval.
- Alternating light gray and brownish-gray sediment (approximately 0.2 cm thick each) was observed from the 6.5 to 13 cm depth interval.
- Alternating medium gray and brownish-gray sediment was observed from the 13 to 15 cm depth interval.
- Alternating light gray and dark gray sediment (0.5 cm thick each) was observed from the 15 to 21 cm depth interval.

OL-MB-80098-A

Microbead core OL-MB-80098-A was collected in the South Basin from a water depth of 58 feet (Figure A-1). Figure A-12 is a photograph of core OL-MB-80098-A after being sliced vertically along a center section of the core, revealing a layer of microbead marker material.

Figure A-12
Core OL-MB-80098-A



Visual inspection of the vertical cross section of microbead core OL-MB-80098-A revealed a 0.1 cm thick layer of microbead marker material from the 8.5 to 8.6 cm depth interval. A 2 cm thick layer of light brown sediment was present at the top of the core followed by black, medium gray, and light gray sediment layers above the microbead marker material layer. Descriptions of laminations observed in the core are as follows:

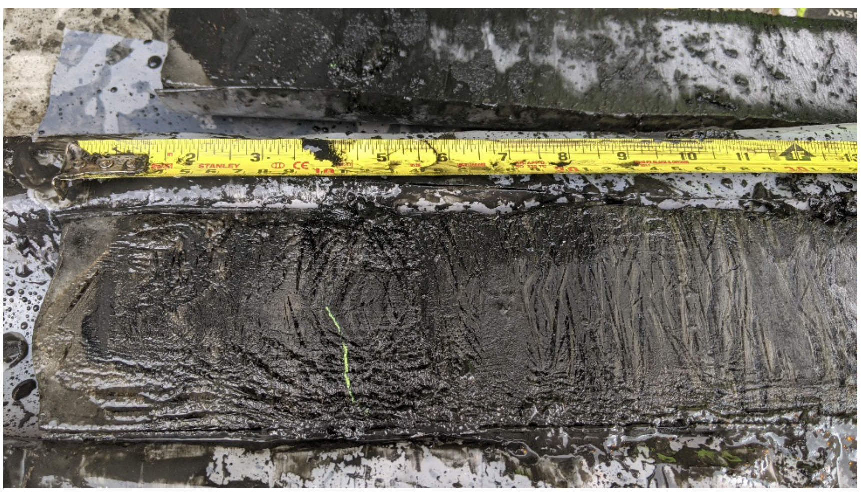
- Light brown sediment was observed at the surface to a depth of 2 cm.
- Black sediment was observed from the 2 to 2.5 cm depth interval.
- Medium gray sediment was observed from the 2.5 to 4.5 cm depth interval.
- Black sediment was observed from the 4.5 to 7 cm depth interval.
- Light gray sediment was observed from the 7 to 8 cm depth interval.

- Black sediment was observed from the 8 to 8.5 cm depth interval.
- Microbead marker material was observed from the 8.5 to 8.6 cm depth interval.
- Black sediment was observed from the 8.6 to 12 cm depth interval.
- Brownish-gray sediment was observed from the 12 to 12.5 cm depth interval.
- Alternating light gray and dark gray sediment (approximately 0.2 cm thick each) was observed from the 12.5 to 18 cm depth interval.
- Alternating light gray and dark gray (with fine laminations within) sediment (approximately 0.5 cm thick each) was observed from the 18 to 27 cm depth interval.

OL-MB-80098-B

Microbead core OL-MB-80098-B was collected in the South Basin from a water depth of 58 feet (Figure A-1). Figure A-13 is a photograph of core OL-MB-80098-B after being sliced vertically along a center section of the core, revealing microbead marker material.

Figure A-13
Core OL-MB-80098-B



Visual inspection of the vertical cross section of microbead core OL-MB-80098-B revealed a 0.1 cm thick layer of microbead marker material from the 10 to 10.1 cm depth interval. A 2 cm thick layer of light brown sediment was present at the top of the core followed by dark gray, medium gray, and black sediment layers above the microbead marker material layer. Descriptions of laminations observed in the core are as follows:

- Light brown sediment was observed at the surface to a depth of 2 cm.
- Dark gray sediment was observed from the 2 to 2.5 cm depth interval.
- Mottled dark gray and light gray sediment was observed from the 2.5 to 5.5 cm depth interval.

- Dark gray sediment was observed from the 5.5 to 8 cm depth interval.
- Medium gray sediment was observed from the 8 to 9 cm depth interval.
- Black sediment was observed from the 9 to 10 cm.
- Microbead marker material was observed from the 10 to 10.1 cm depth interval (extending from one side only to the middle of the core).
- Black sediment with fine dark gray laminations was observed from the 10.1 to 14.5 cm depth interval.
- Alternating light gray and dark gray sediment (approximately 0.2 cm thick each) was observed from the 14.5 to 20 cm depth interval.
- Alternating light gray and dark gray sediment (approximately 0.5 cm thick each) was observed from the 20 to 30 cm depth interval.

OL-MB-80099-A

Microbead core OL-MB-80099-A was collected in the South Basin from a water depth of 61 feet (Figure A-1). Figure A-14 is a photograph of core OL-MB-80099-A after being sliced vertically along a center section of the core, revealing a layer of microbead marker material.

Figure A-14
Core OL-MB-80099-A

Visual inspection of the vertical cross section of microbead core OL-MB-80099-A revealed a 0.1 cm thick layer of microbead marker material from the 8.0 to 8.1 cm depth interval. A 1 cm thick light brown layer of material was present at the top of the core followed by dark gray, light gray, and black sediment layers above the microbead marker material layer. Descriptions of laminations observed in the core are as follows:

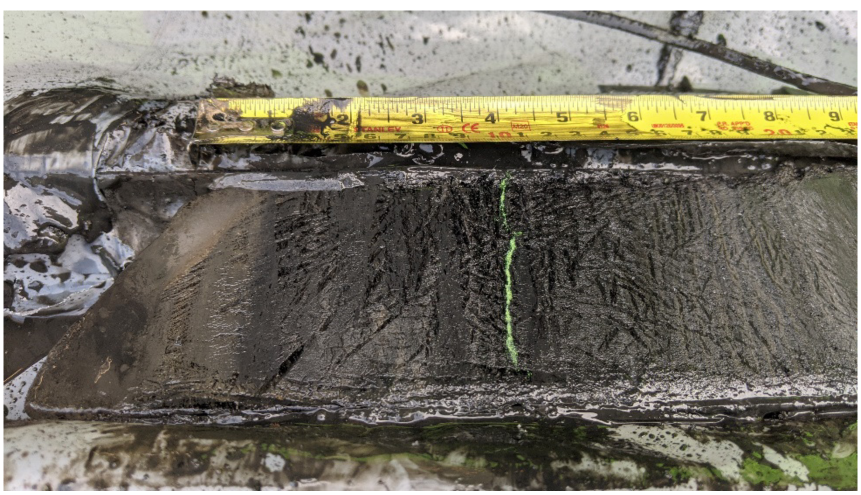
- Light brown sediment was observed at the surface to a depth of 1 cm.

- Dark gray sediment was observed from the 1 to 6 cm depth interval.
- Light gray sediment was observed from the 6 to 7 cm depth interval.
- Black sediment was observed from the 7 to 8 cm depth interval.
- Microbead marker material was observed from the 8 to 8.1 cm depth interval.
- Dark gray sediment was observed from the 8.1 to 12 cm depth interval.
- Black sediment was observed from the 12 to 12.5 cm depth interval.
- Alternating light gray to dark gray sediment (approximately 0.2 cm thick each) was observed from the 12.5 to 17 cm depth interval.
- Alternating light gray to medium gray sediment (0.5 cm thick each) was observed from the 17 to 20 cm depth interval.
- Light brownish-gray sediment was observed from the 20 to 20.5 cm depth interval.
- Black sediment was observed from the 20.5 to 21 cm depth interval.
- Light brownish-gray sediment was observed from the 21 to 22 cm depth interval.
- Alternating light to medium-brownish-gray and black sediment (0.5 cm thick each) was observed from the 22 to 24 cm depth interval.

OL-MB-80099-B

Microbead core OL-MB-80099-B was collected in the South Basin from a water depth of 61 feet (Figure A-1). Figure A-15 is a photograph of core OL-MB-80099-B after being sliced vertically along a center section of the core, revealing a layer of microbead marker material.

Figure A-15
Core OL-MB-80099-B



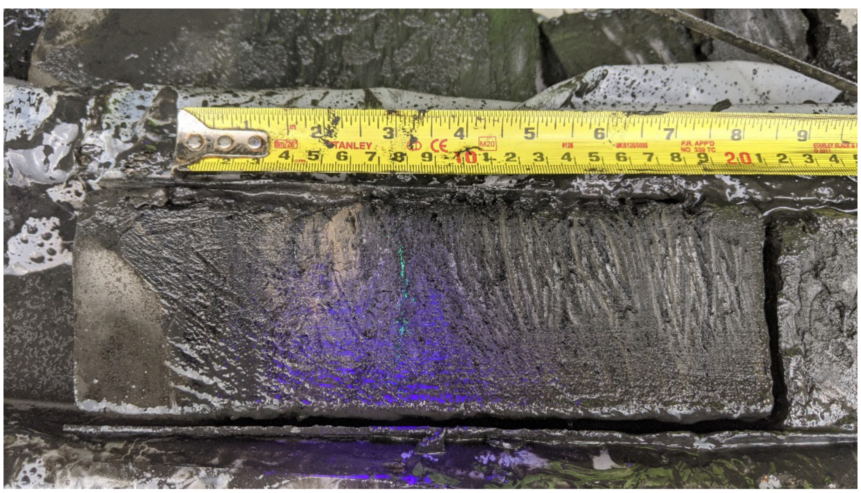
Visual inspection of the vertical cross section of microbead core OL-MB-80099-B revealed a 0.2 cm thick layer of microbead marker material from the 10 to 10.2 cm depth interval. A 1 cm thick light brown layer of material was present at the top of the core followed by dark gray, light gray, and black sediment layers above the microbead marker material layer. Descriptions of laminations observed in the core are as follows:

- Light brown sediment was observed at the surface to a depth of 1 cm.
- Light gray sediment was observed from the 1 to 3 cm depth interval.
- Dark gray sediment was observed from the 3 to 6 cm depth interval.
- Light gray sediment was observed from the 6 to 7 cm depth interval.
- Dark gray sediment was observed from the 7 to 9 cm depth interval.
- Black sediment was observed from the 9 to 10 cm depth interval.
- Microbead marker material was observed from the 10 to 10.2 cm depth interval.
- Alternating light and dark gray sediment (approximately 0.5 cm thick each) was observed from the 10.2 to 17 cm depth interval.

OL-MB-80100-A

Microbead core OL-MB-80100-A was collected in the South Basin from a water depth of 57 feet (Figure A-1). Figure A-16 is a photograph of core OL-MB-80100-A after being sliced vertically along a center section of the core, revealing a layer of microbead marker material.

Figure A-16
Core OL-MB-80100-A



Visual inspection of the vertical cross section of microbead core OL-MB-80100-A revealed a thin (less than 0.1 cm thick) layer of microbead marker material at a depth of 7.5 cm. A thin (less than 0.1 cm thick) layer of light brown sediment was present at the top of the core followed by black, mottled black and brown, and dark gray sediment layers above the microbead marker material layer. The surface of the core was unlevel, so depth measurements were logged relative to the middle of the core. Descriptions of laminations observed in the core are as follows:

- Thin layer (less than 0.1 cm thick) of light brown sediment was observed at the surface.
- Black sediment was observed from the surface to a depth of 3 cm.
- Black and brown mottled sediment was observed from the 3 to 6.5 cm depth interval.
- Dark gray sediment was observed from the 6.5 to 7.5 cm depth interval.
- Microbead marker material was observed at 7.5 cm (less than 0.1 cm thick).
- Black sediment was observed from the 7.5 to 10 cm depth interval.
- Dark gray sediment was observed from the 10 to 11 cm depth interval.
- Alternating dark gray and brownish-gray sediment (approximately 0.2 cm thick) was observed from the 11 to 16.5 cm depth interval.
- Alternating dark gray and light gray sediment (approximately 0.2 cm thick) was observed from the 16.5 to 19 cm depth interval.

OL-MB-80100-B

Microbead core OL-MB-80100-B was collected in the South Basin from a water depth of 57 feet (Figure A-1). Figure A-17 is a photograph of core OL-MB-80100-B after being sliced vertically along a center section of the core, revealing a layer of microbead marker material.

Figure A-17
Core OL-MB-80100-B

Visual inspection of the vertical cross section of microbead core OL-MB-80100-B revealed 0.1 cm thick layer of microbead marker material from the 9 to 9.1 cm depth interval. A 0.1 cm thick layer of light brown sediment was present at the top of the core followed by dark gray, black, and mottled black and brown sediment layers above the microbead marker material layer. The surface of the core is unlevel, so depth measurements were logged relative to the middle of the core. Descriptions of laminations observed in the core are as follows:

- Light brown sediment was observed from the surface to a depth of 0.1 cm.
- Dark gray sediment was observed from the 0.1 to 2 cm depth interval.
- Black sediment was observed from the 2 to 2.5 cm depth interval.
- Dark gray sediment was observed from the 2.5 to 3 cm depth interval.
- Black sediment was observed from the 3 to 4.5 cm depth interval.
- Black and brown mottled sediment was observed from the 4.5 to 8 cm depth interval.
- Black sediment was observed from the 8 to 9 cm depth interval.
- Microbead marker material was observed at 9 to 9.1 cm.
- Black sediment was observed from the 9.1 to 10 cm depth interval.
- Dark gray sediment was observed from the 10 to 10.5 cm depth interval.
- Black sediment was observed from the 10.5 to 11 cm depth interval.
- Dark gray sediment was observed from the 11 to 11.5 cm depth interval.
- Black sediment was observed from the 11.5 to 12 cm depth interval.
- Dark gray sediment was observed from the 12 to 16 cm depth interval.
- Alternating dark gray and brownish-gray sediment (approximately 0.2 cm thick each) was observed from the 16 to 21 cm depth interval.

OL-MB-80101-A

Microbead core OL-MB-80101-A was collected in the South Basin from a water depth of 47 feet (Figure A-1). Figure A-18 is a photograph of core OL-MB-80101-A after being sliced vertically along a center section of the core, revealing microbead marker material.

Figure A-18
Core OL-MB-80101-A

Photograph on right shows a section of the core (9 to 14 cm section) under ultraviolet light to better observe the microbead marker material

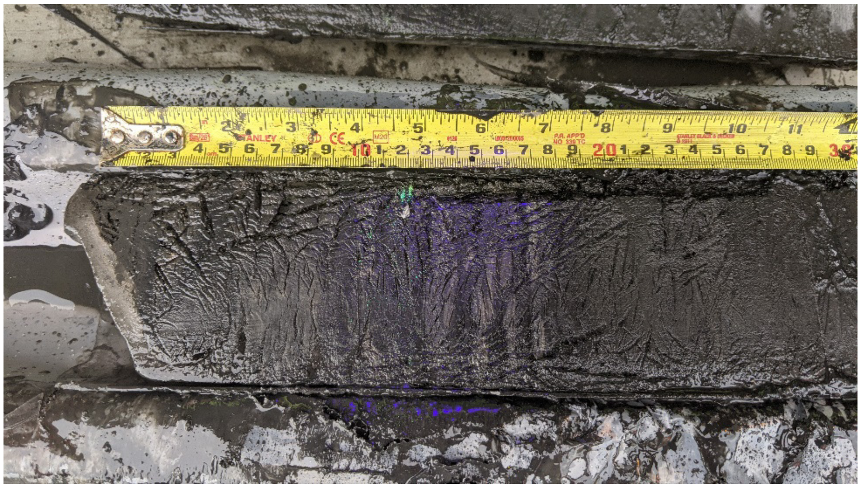
Visual inspection of the vertical cross section of microbead core OL-MB-80101-A revealed a thin (less than 0.1 cm thick) layer of microbead marker material at a depth of 10.5 cm. A 3 cm thick layer of brown sediment was present at the top of the core followed by dark gray with brown mottling and black sediment layers above the microbead marker material layer. Descriptions of laminations observed in the core are as follows:

- Brown sediment was observed from the surface to a depth of 3 cm.
- Dark gray sediment with brown mottling was observed from the 3 to 10 cm depth interval.
- Black sediment was observed from the 10 to 10.5 cm depth interval.
- A thin (less than 0.1 cm thick) layer of microbead marker material was observed at 10.5 cm depth interval.
- Black sediment was observed from the 10.5 to 11 cm depth interval.
- Medium gray sediment was observed from the 11 to 11.3 cm depth interval.
- Black sediment was observed from the 11.3 to 13 cm depth interval.
- Medium gray sediment was observed from the 13 to 13.5 cm depth interval.
- Black sediment was observed from the 13.5 to 14.5 cm depth interval.
- Medium gray sediment was observed from the 14.5 to 15 cm depth interval.
- Black sediment was observed from the 15 to 17 cm depth interval.
- Medium gray sediment was observed from the 17 to 17.2 cm depth interval.
- Dark gray sediment was observed from the 17.2 to 22 cm depth interval.
- Black sediment was observed from the 22 to 23 cm depth interval.

OL-MB-80101-B

Microbead core OL-MB-80101-B was collected in the South Basin from a water depth of 47 feet (Figure A-1). Figure A-19 is a photograph of core OL-MB-80101-B after being sliced vertically along a center section of the core, revealing a thin layer of microbead marker material.

Figure A-19
Core OL-MB-80101-B



Visual inspection of the vertical cross section of microbead core OL-MB-80101-B revealed microbead marker material present from 10 to 13 cm, most concentrated in a pocket at 12 cm. A thin (less than 0.1 cm thick) layer of brown sediment was observed at the surface (through the ice) at the top of the core followed by dark gray and light gray sediment layers above the microbead marker material. Descriptions of laminations observed in the core are as follows:

- A thin brown (less than 0.1 cm thick) layer of sediment was observed at the surface.
- Dark gray sediment was observed to a depth of 2 cm.
- Light gray sediment was observed from the 2 to 3 cm depth interval.
- Dark gray sediment was observed from the 3 to 5 cm depth interval.
- Light gray sediment was observed from the 5 to 8.5 cm depth interval.
- Dark gray sediment was observed from the 8.5 to 10 cm depth interval.
- Light gray sediment was observed from the 10 to 10.5 cm depth interval, with scattering of microbead marker material.
- Dark gray sediment was observed from the 10.5 to 12.5 cm depth interval, with scattering of microbead marker material; a pocket of microbead marker material was observed at a depth of 12 cm.
- Light gray sediment was observed from the 12.5 to 14 cm depth interval, with scattering of microbead marker material to a depth of 13 cm.

- Alternating dark gray and light gray layers (0.5 cm thick each) of sediment was observed from the 14 to 18 cm depth interval.

References

Anchor QEA (Anchor QEA, LLC), 2012a. *Evaluation of Extent of Mixing within Onondaga Lake Profundal Zone Surface Sediments Based on Visual Inspection of Late 2011 SMU 8 Cores.* Prepared for Parsons. January 11, 2012.

Anchor QEA, 2012b. *Evaluation of Extent of Mixing in Shallow Profundal Surface Sediments of Onondaga Lake Based on Visual Inspection of June 2012 SMU 8 Cores*. Prepared for Parsons. July 23, 2012.

Anchor QEA, 2012c. *Evaluation of the SMU 8 Sediment Processing Method Based on Visual Inspection of the Sand Microbead Marker Material in November 2012 SMU 8 Cores*. Prepared for Parsons. November 2012.

Anchor QEA, 2015. *Visual Inspection of the Onondaga Lake Frozen Cores Collected in October 2014 in Sediment Management Unit (SMU) 8*. Prepared for Parsons. January 2015.

Anchor QEA, 2016. *Visual Inspection of the Onondaga Lake Frozen Cores Collected in June 2015 in SMU 8*. Prepared for Parsons. January 2016.

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Parsons, 2010. *Evaluation of Onondaga Lake Profundal Surface Sediment Mixing Depths Based on Visual Evidence*. December 17, 2010.

Parsons, 2017. *Onondaga Lake Maintenance and Monitoring Plan*. Prepared for Honeywell. Syracuse, New York. October 2017.

Parsons and Environmental Tracing Systems, 2014. *Onondaga Lake Sediment Management Unit 8 Microbead Marker Placement Report.* Prepared for Honeywell, Syracuse, New York. October 2014.

APPENDIX 5A - SUMMARY OF 2021 APPLICATIONS OF NITRATE IN ONONDAGA LAKE

Honeywell

PARSONS

APPENDIX 5A SUMMARY OF 2021 APPLICATIONS OF NITRATE IN ONONDAGA LAKE

*buoy used

Date		20-Jul-2021	22-Jul-2021	26-Jul-2021	28-Jul-2021	02-Aug-2021	04-Aug-2021	10-Aug-2021	30-Aug-2021	01-Sep-2021	07-Sep-2021	09-Sep-2021	13-Sep-2021	15-Sep-2021
Location		South 1	South 2	South 1	South 2	North	South 1	South 2	South 2	South 1	South 1	South 2	South 1	North
Dilution Factor (epilimnion water flow divided by nitrate flow)		244	271	271	250	290	340	328	299	231	318	297	296	330
Nitrate Flow_gauge	gpm	10	8.5	8.5	9	8	7	7	8	10	7	7.5	7.5	7
Nitrate Flow_correction factor		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Nitrate Flow_actual	gpm	8.00	6.80	6.80	7.20	6.40	5.60	5.60	6.40	8.00	5.60	6.00	6.00	5.60
Epilimion Water Flow_System A	gpm	1826	1758	1806	1825	1737	1834	1742	1850	1813	1719	1715	1792	1790
Epilimion Water Flow_System B	gpm	2082	1932	1885	1782	1970	1974	1930	1983	1876	1843	1854	1755	1902
Water temperature_epilimnion	degrees C	24.04	23.28	24.49	24.16	22.19	22.41	24.99	25.75	24.64	22.19	21.48	20.9	21.24
Conductance_epilimnion (field)	uS/cm	1816	1769	1789	1775	1801	1831	1834	1384	1454	1558	1586	1652	1586
Specific conductance_epilimnion (calc)	uS/cm	1850	1829	1807	1804	1903	1926	1834	1364	1464	1646	1700	1792	1709
Total Water Depth at Application Location	feet	65.5	64.3	64.5	64.0	60.0	64.1	63.5	64.9	65.1	64.4	64.2	65.0	59.0
Target Water Depth for Adding Nitrate	feet	60	60	60	60	55	60	60	60	60	60	60	60	55
Water Temperature _target depth	degrees C	9.48	10.87	9.94	9.56	9.97	9.54	9.56	9.84	10.99	10.29	9.76	9.97	10.53
Conductance _target depth (field)	uS/cm	2140	2482	2122	2147	2104	2133	2132	2143	2491	2277	2343	2152	2129
Specific Conductance _target depth (calc)	uS/cm	3042	3399	2979	3045	2951	3027	3024	3016	3401	3167	3305	3019	2942
Start time_dosing	24-hour clock	10:00	08:30	11:50	08:00	12:17	08:55	09:15	13:50	08:15	11:52	08:00	14:00	07:51
Start Volume_Tank A	gallons	2569	2569	2569	2569	2569	2569	2569	2569	2569	2569	2569	2569	2569
Start Volume_Tank B	gallons	2569	2569	2569	2569	2569	2569	2569	2569	2569	2569	2569	2569	2569
End Volume_Tank A	gallons	376	376	470	376	783	376	376	376	376	376	376	971	376
End Volume_Tank B	gallons	376	251	470	376	846	376	376	376	376	376	376	971	376
Total Volume of CN-8 Applied	gallons	4386	4512	4198	4386	3509	4386	4386	4386	4386	4386	4386	3196	4386
Total Mass of CN-8 Applied	lbs as nitrogen	4605	4737	4408	4605	3684	4605	4605	4605	4605	4605	4605	3355	4605
Comments (nitrate flows are based on gauge readings)		Started CN8 flowrate at 10 gpm, then adjusted to final. Two plumes observed today.	CN8 flowrate of 8.5 gpm for entire application.	Started CN8 flowrate at 8.5 gpm, then adjusted to final. Partial application early due to constant generator shutoff	Started CN8 flowrate at 9 gpm, then adjusted to final	Starboard and port sides shutdown temporarily one at a time per UFI request. Both pumps started again at 15:03. Started CN8 flowrate at 8 gpm, then adjusted to final. Partial application due to approaching sunset.	CN8 flowrate of 7 gpm for entire application.	Started CN8 flowrate at 7 gpm, then adjusted to final	Started CN8 flowrate at 8 gpm, then adjusted to final	CN8 flowrate of 10 gpm for entire application.	Started CN8 flowrate at 7 gpm, then adjusted to final	Started CN8 flowrate at 7.5 gpm, then adjusted to final	Started CN8 flowrate at 7.5 gpm, then adjusted to final. Partial application due to approaching sunset	Started CN8 flowrate at 7 gpm, then adjusted to final
End Time_dosing	24-hour clock	14:41	14:03	17:48	12:43	19:40	16:17	15:20	18:37	14:17	18:18	13:45	18:45	14:12

Note:

1. Data in this table include initial setup readings of pumps and meters as well as final application readings. Comments include changes during run time and variations from final CN-8 flow.
2. CN8 flow rate in the table is represented as an average for two chemical pumps with differing flow rates.

Definitions:

1 CN-8: Liquid calcium nitrate provided by Univar Solutions. The density of CN-8 is 1.47 times the density of water.

2 Dilution factor is the ratio of dilution water flow from the lake epilimnion to flow of CN-8. The density of the water:CN-8 mixture varies daily with lake water temperature and salinity. Specific conductance values were measured to quantify salinity.

3 gpm: gallons per minute

4 uS/cm: Microsiemens per centimeter, or the unit of measure of specific conductance.

5 Start Volume and End Volume: Applies to CN-8.

6 Target Depth: The specific depth of release of the CN-8 as controlled by the length of individual hoses which were manually connected to the manifold prior to each application. Early on in the season the target depth identified by a height of 2-3m off of the bottom depending on what the specific water depth was at N, S1 or S2 on a given day. Where the target depths are not consistent with being 2 to 3 meters above the lake bottom, the target depths were based on monitoring within the hypolimnion at the N, S1 or S2 application locations and recent nitrate demand at each location.

7 MT NO3-N: Metric tons of nitrate-nitrogen. One metric ton is 1,000 kilograms or 2,240 pounds.

APPENDIX 5A SUMMARY OF 2021 APPLICATIONS OF NITRATE IN ONONDAGA LAKE

Date		16-Sep-2021	20-Sep-2021	22-Sep-2021	23-Sep-2021	27-Sep-2021	28-Sep-2021	29-Sep-2021	30-Sep-2021	04-Oct-2021	05-Oct-2021	06-Oct-2021	07-Oct-2021
Location		South 2	South 2	North	South 1	South 2	South 2	North	South 1	South 1	South 1	South 1	South 1
Dilution Factor (epilimnion water flow divided by nitrate flow)		324	307	319	336	385	431	413	427	534	523	458	519
Nitrate Flow_gauge	gpm	7.5	7.5	7.5	7	6	5.5	5.5	5.5	4.5	4.5	4.5	4.5
Nitrate Flow_correction factor		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Nitrate Flow_actual	gpm	6.00	6.00	6.00	5.60	4.80	4.40	4.40	4.40	3.60	3.60	3.60	3.60
Epilimion Water Flow_System A	gpm	1909	1784	1949	1888	1875	1822	1806	1851	1918	1875	1880	1870
Epilimion Water Flow_System B	gpm	1976	1901	1873	1877	1825	1972	1831	1904	1924	1888	1418	1870
Water temperature_epilimnion	degrees C	20.85	21.17	21.04	20.43	19.76	19.46	19.07	18.91	18.41	18.25	18.19	18.38
Conductance_epilimnion (field)	uS/cm	1614	1628	1653	1702	1719	1721	1712	1744	1750	1752	1752	1750
Specific conductance_epilimnion (calc)	uS/cm	1753	1756	1788	1865	1910	1925	1931	1974	2002	2011	2014	2003
Total Water Depth at Application Location	feet	64.0	63.9	59.9	64.1	64.0	64.0	59.0	64.5	64.3	64.3	65.0	65.0
Target Water Depth for Adding Nitrate	feet	60	60	55	60	60	60	55	60	60	60	60	60
Water Temperature _target depth	degrees C	9.9	10.09	10.38	9.87	11.75	9.97	10.28	9.9	11.9	9.83	9.96	10.25
Conductance _target depth (field)	uS/cm	2141	2127	2135	2172	2407	2165	2141	2180	2419	2200	2181	2189
Specific Conductance _target depth (calc)	uS/cm	3009	2974	2962	3055	3223	3037	2978	3064	3226	3097	3060	3048
Start time_dosing	24-hour clock	11:34	11:30	08:15	08:20	13:25	10:44	08:00	09:18	14:00	08:51	08:02	13:40
Start Volume_Tank A	gallons	2569	2569	2569	2569	2569	1285	2569	2569	2569	1755	2882	1097
Start Volume_Tank B	gallons	2569	2569	2569	2569	2569	1285	2569	2569	2569	1786	2882	1379
End Volume_Tank A	gallons	376	376	376	376	1285	376	345	501	1755	251	689	157
End Volume_Tank B	gallons	376	376	376	376	1285	376	251	501	1755	251	658	251
Total Volume of CN-8 Applied	gallons	4386	4386	4386	4386	2569	1817	4543	4136	1629	3039	4418	2068
Total Mass of CN-8 Applied	lbs as nitrogen	4605	4605	4605	4605	2697	1908	4770	4342	1711	3191	4638	2171
Comments (nitrate flows are based on gauge readings)		Started CN8 flowrate at 7.5 gpm, then adjusted to final	CN8 flowrate of 7.5 gpm for entire application.	Started CN8 flowrate at 7.5 gpm, then adjusted to final	Started CN8 flowrate at 7 gpm, then adjusted to final	Started CN8 flowrate at 6 gpm, then adjusted to final. Partial application due to approaching sunset	CN8 flowrate of 5.5 gpm for entire application.	CN8 flowrate of 5.5 gpm for entire application.	Started CN8 flowrate at 5.5 gpm, then adjusted to final	Partial application due to approaching sunset	CN8 flowrate of 4.5 gpm for entire application.	Starboard Water Flow meter reading low for first two hours; epilimnion water flow for system B reported as average for day. CN8 flowrate was 4.5 gpm for entire application.	CN8 flowrate of 4.5 gpm for entire application.
End Time_dosing	24-hour clock	17:43	17:31	15:02	15:39	18:31	14:12	16:57	18:26	18:13	15:45	18:25	18:16

APPENDIX 5B - EXAMPLE 2020 SUNA ONE-DAY DATA REPORT – NOVEMBER 9, 2021

Onondaga Lake Nitrate Monitoring Summary: Current Status of Nitrate Conditions in Onondaga Lake

Full Scale Nitrate Addition, 2021 Monitoring

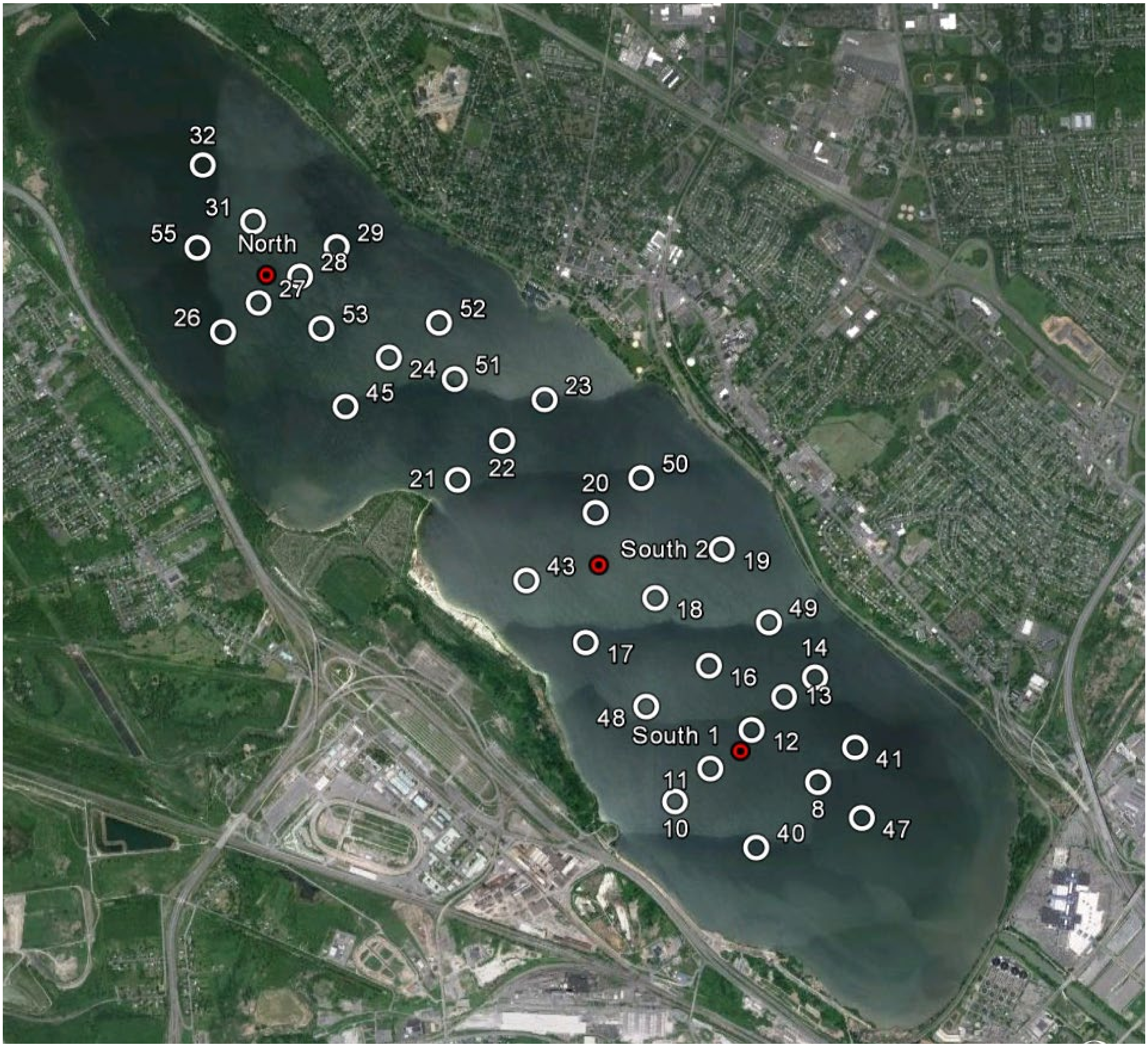
November 9, 2021

UPSTATE FRESHWATER INSTITUTE

Provisional Data Summary
for discussion purposes only

Submitted: for internal use only

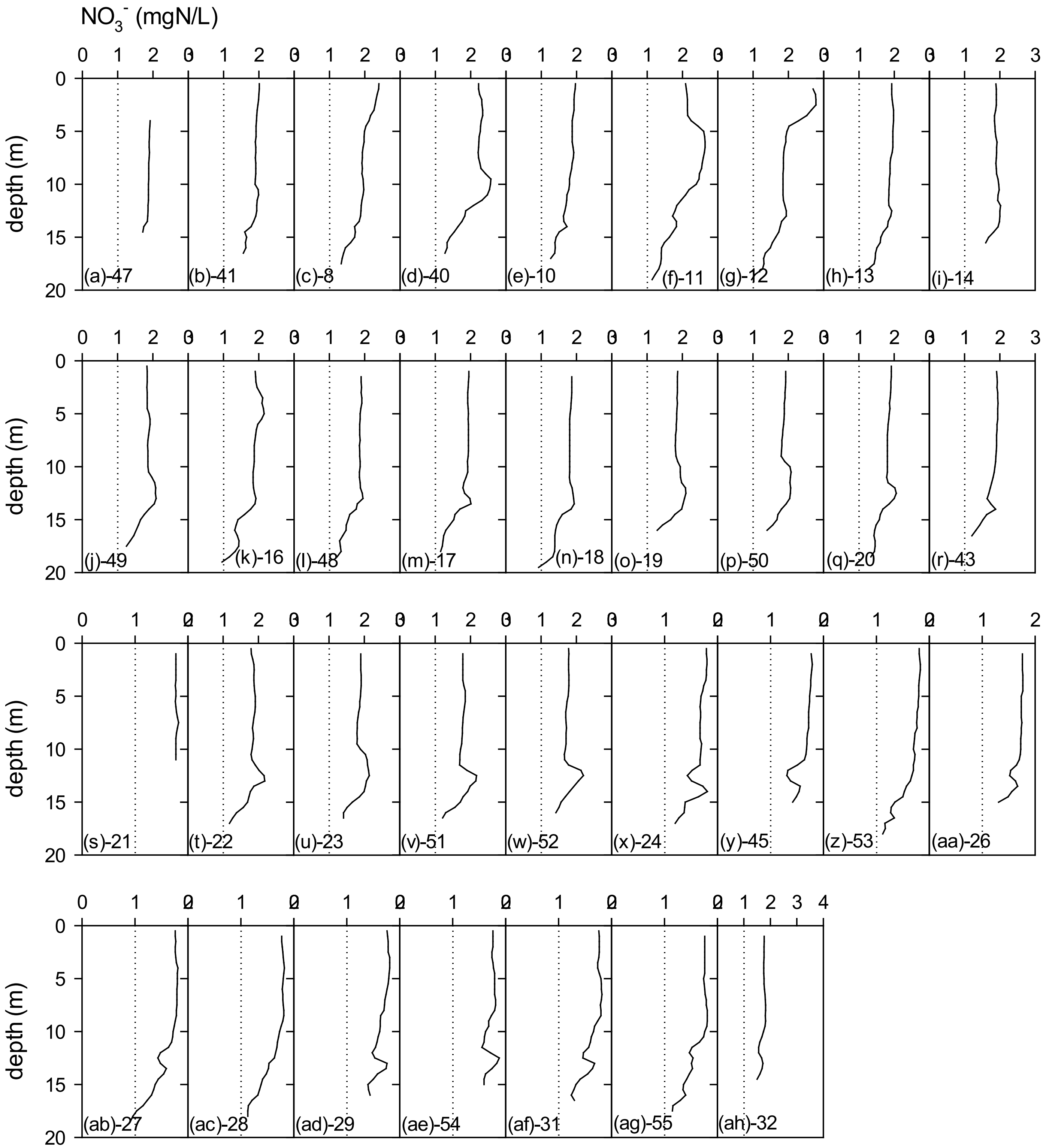
Gridding Locations



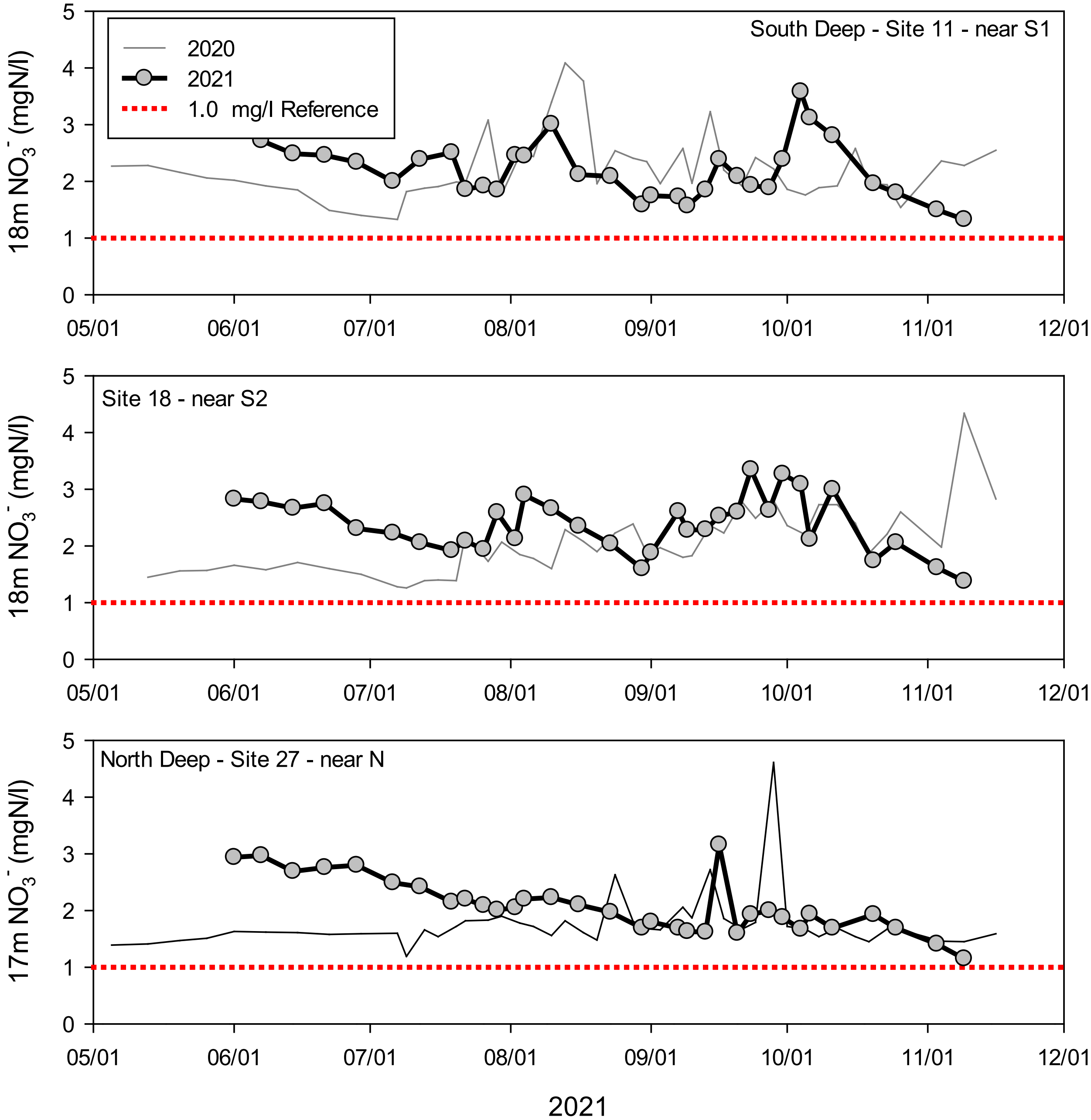
Today's injection: None

white circle: gridding loocation
red circle: injection site

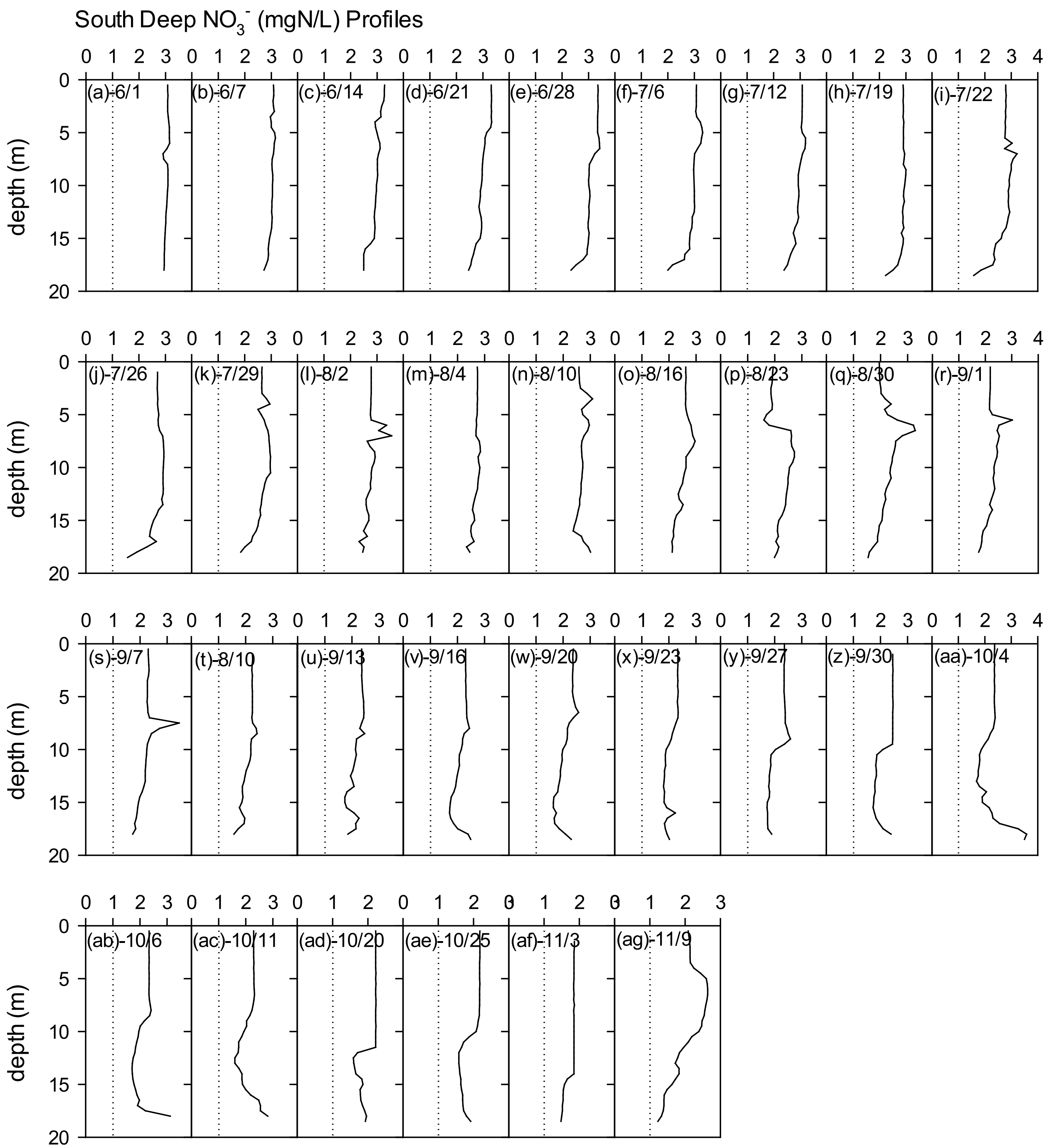
Nitrate Profiles at Each Gridding Location (mgN/L)



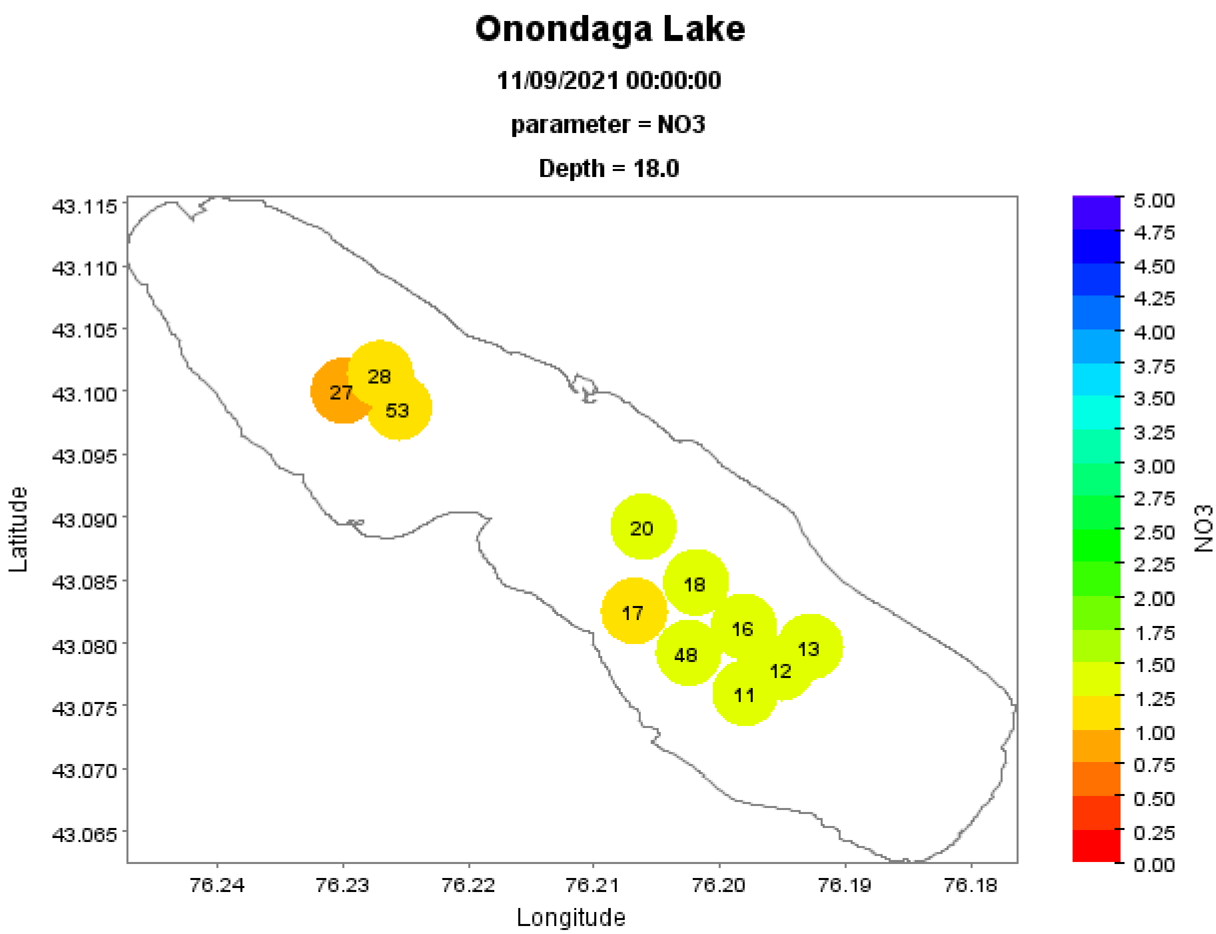
Nitrate Time Series at South Deep - 18m, Site 18 - 18m, North Deep - 17m



Nitrate Profiles at South Deep



Spatial variations in Nitrate at selected depths



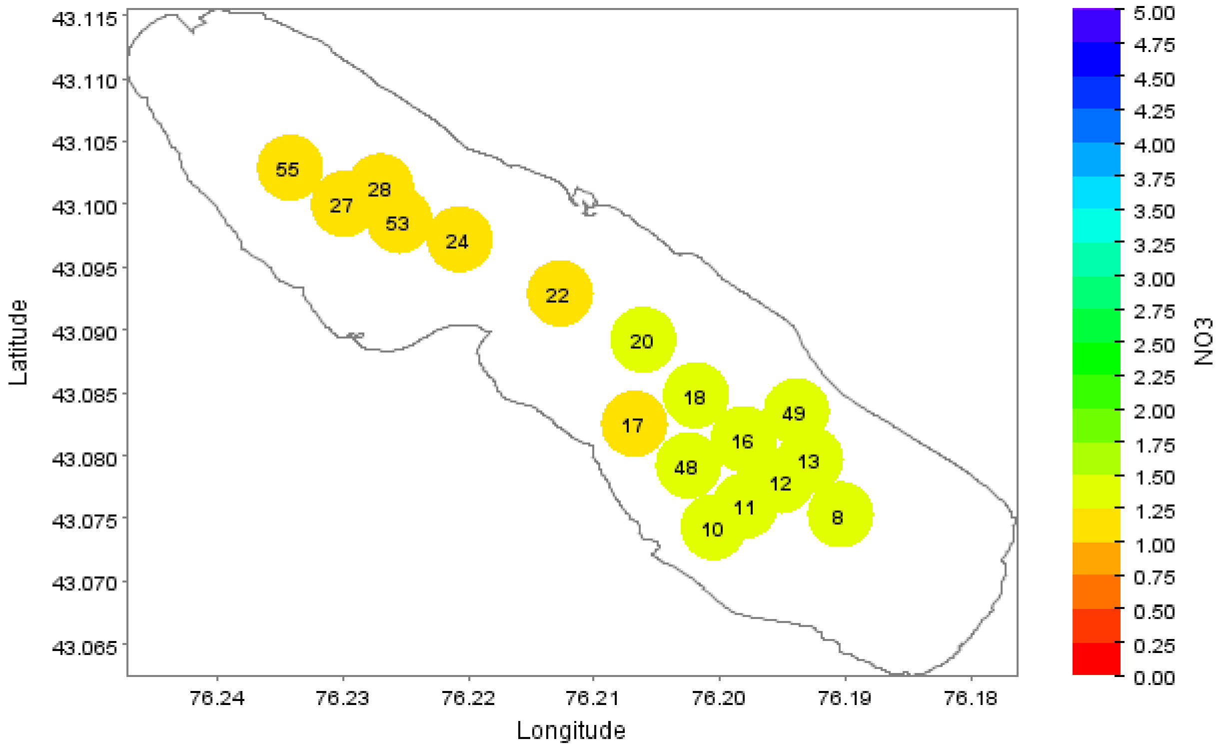
November 9, 2021

Onondaga Lake

11/09/2021 00:00:00

parameter = NO3

Depth = 17.0



November 9, 2021

Onondaga Lake

11/09/2021 00:00:00

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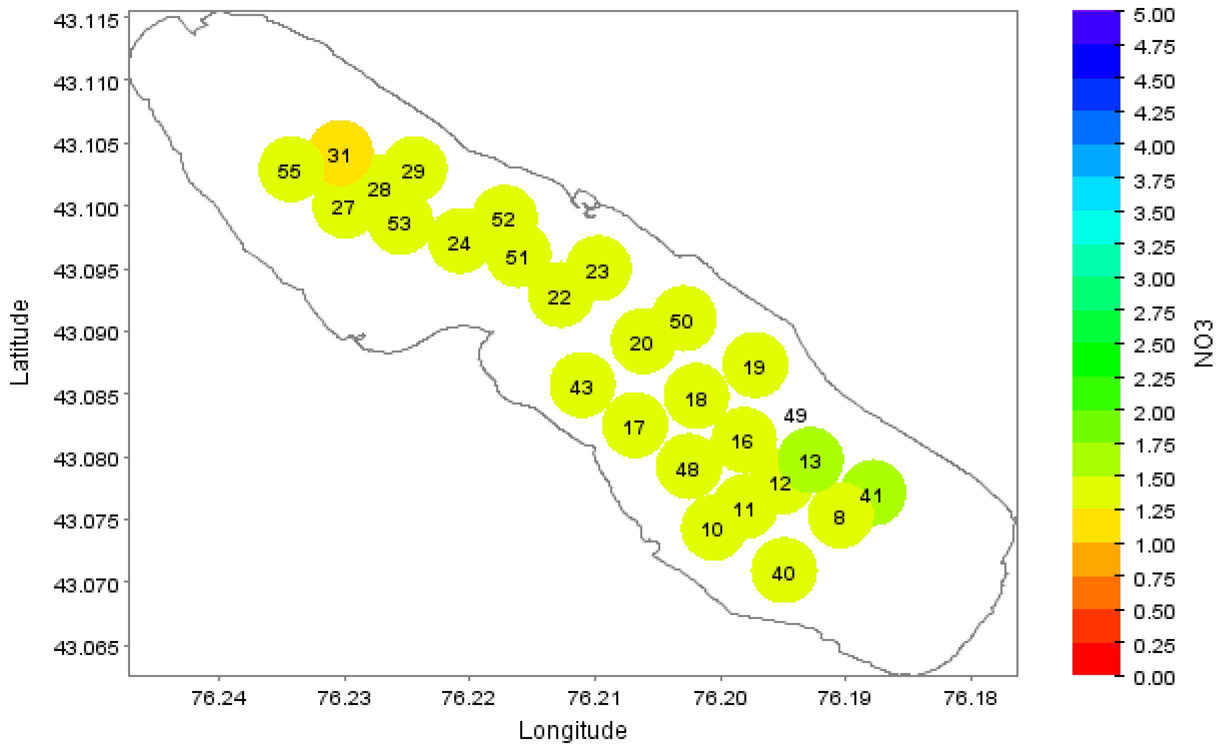

November 9, 2021

Onondaga Lake

11/09/2021 00:00:00

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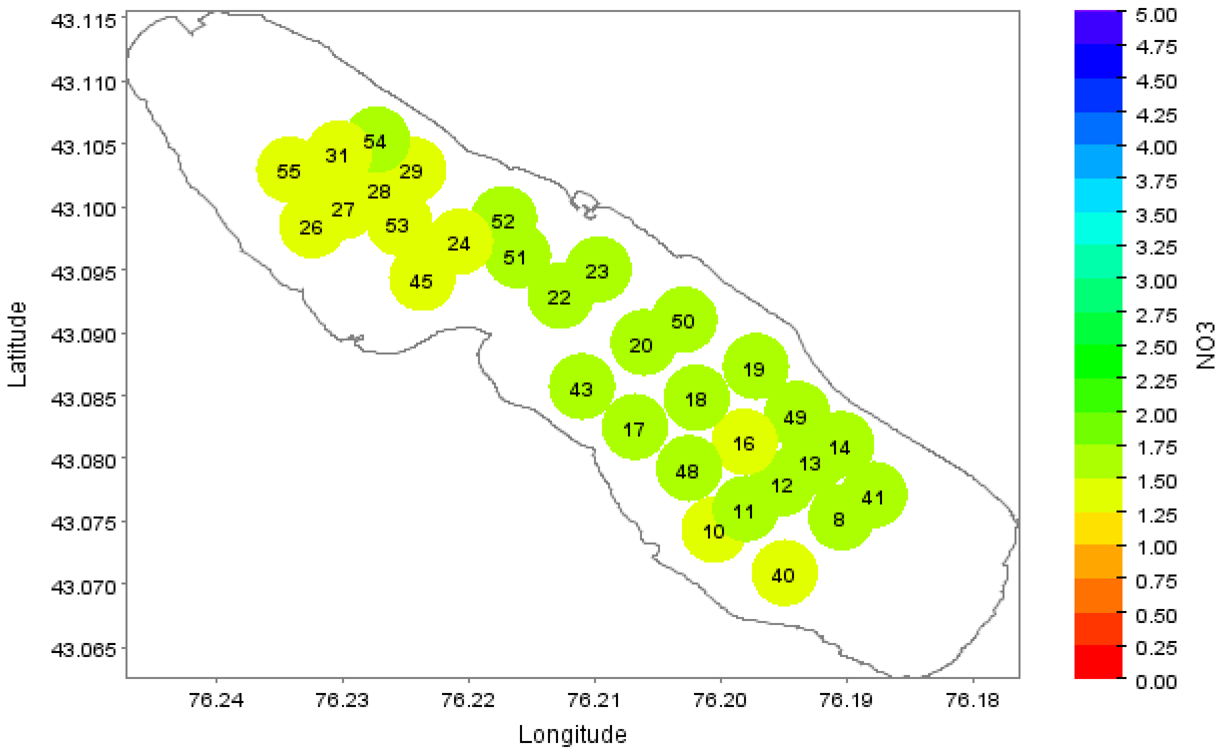
Depth = 15.0



November 9, 2021

Onondaga Lake

11/09/2021 00:00:00

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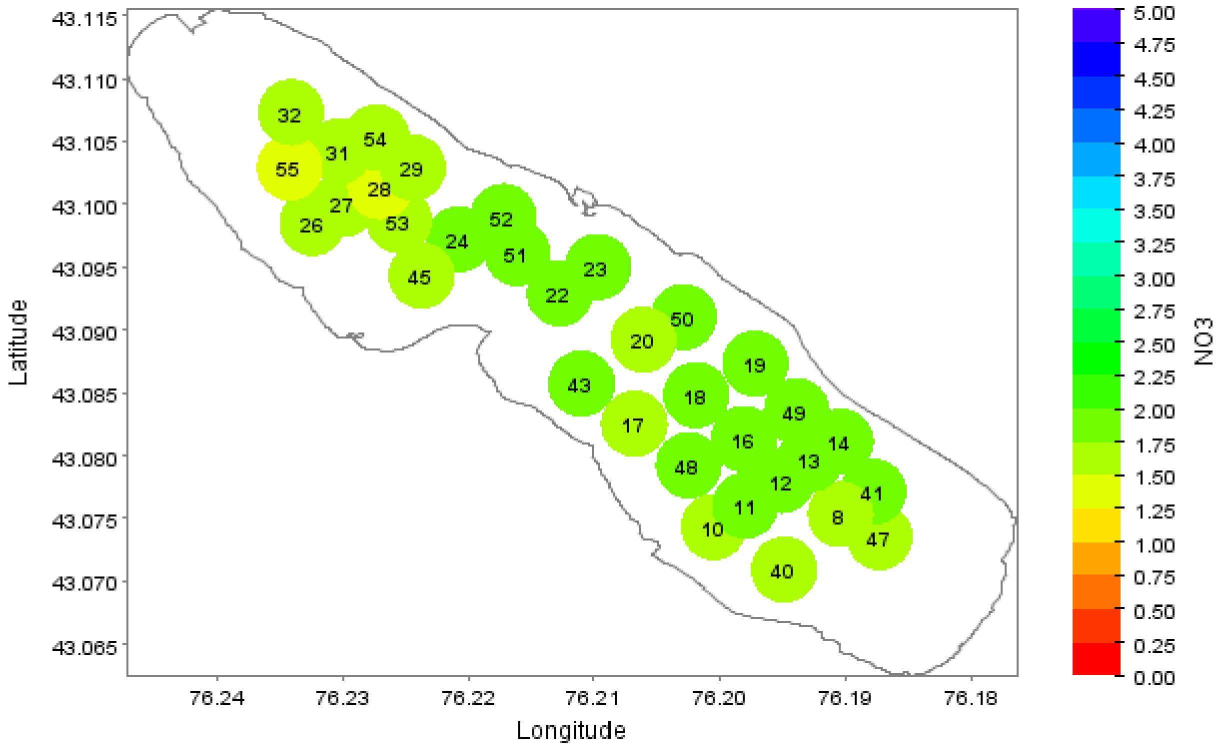
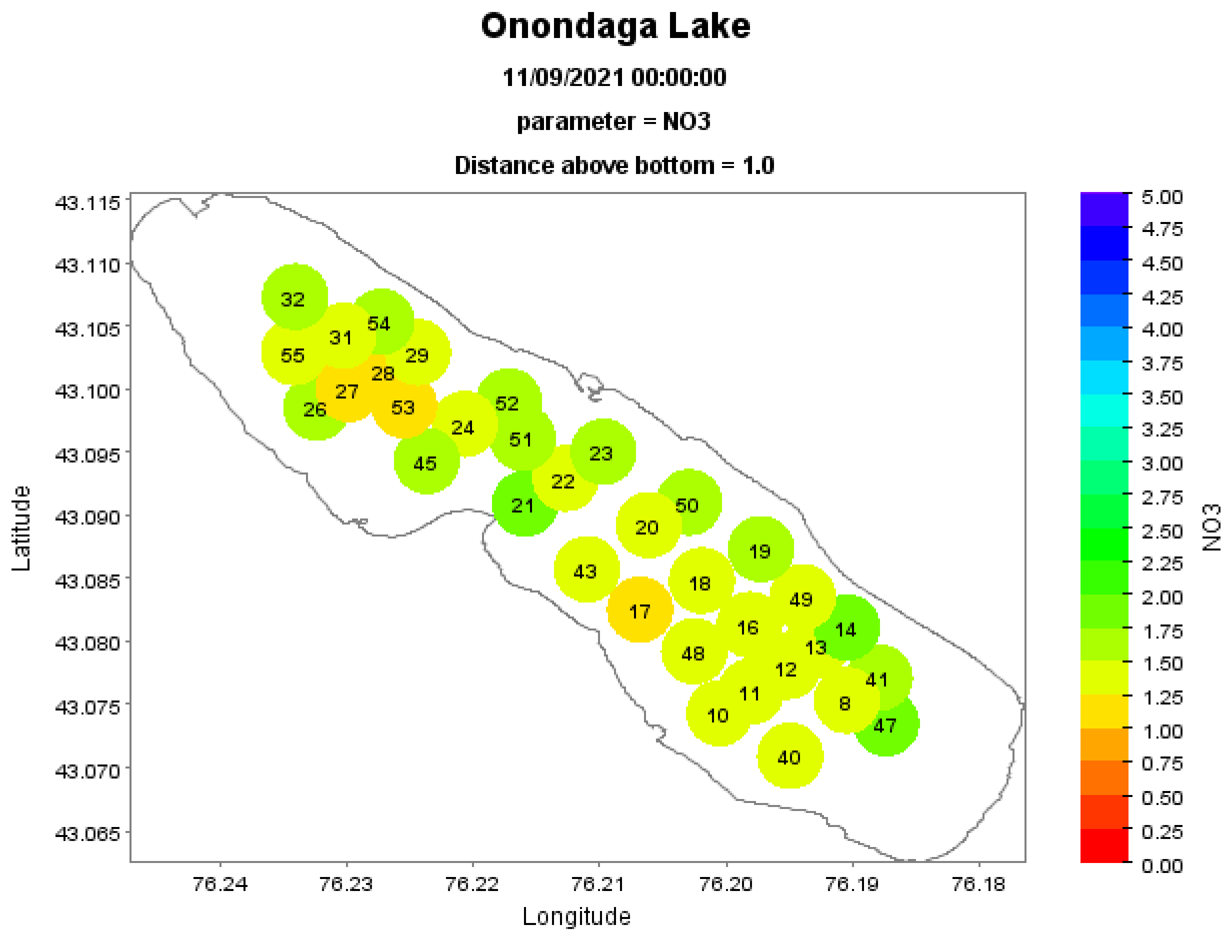


November 9, 2021



November 9, 2021

APPENDIX 5C - ONONDAGA LAKE GRIDDING SUMMARY USING A SUBMERSIBLE ULTRAVIOLET NITRATE ANALYZER – ONE METER OFF BOTTOM WEEKLY SUMMARY – JUNE 1 THROUGH NOVEMBER 22, 2021

Onondaga Lake Nitrate Monitoring Summary: Current Status of Nitrate Conditions in Onondaga Lake

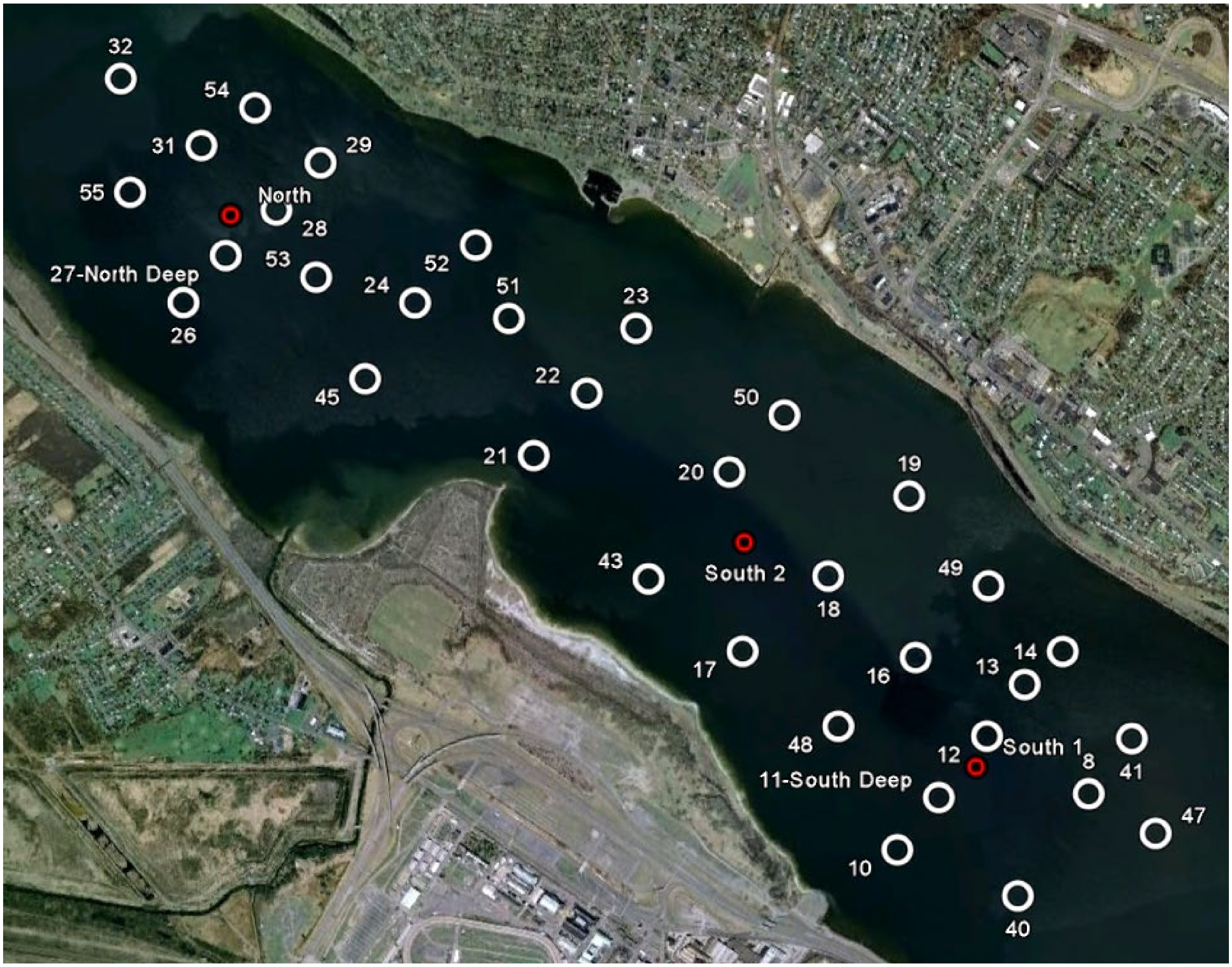
Full Scale Nitrate Addition, 2021 Monitoring

One Meter Off Bottom Weekly Summary:

June 01 through November 22, 2021

UPSTATE FRESHWATER INSTITUTE

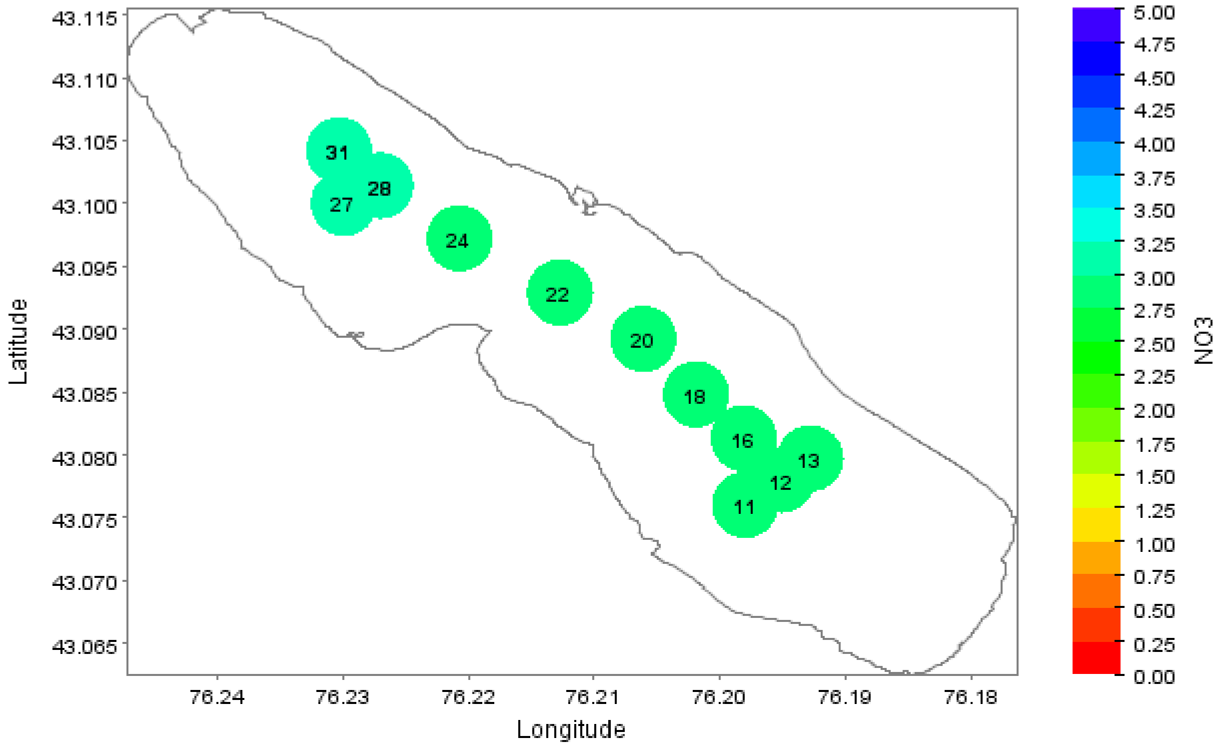
Monitoring Survey Locations



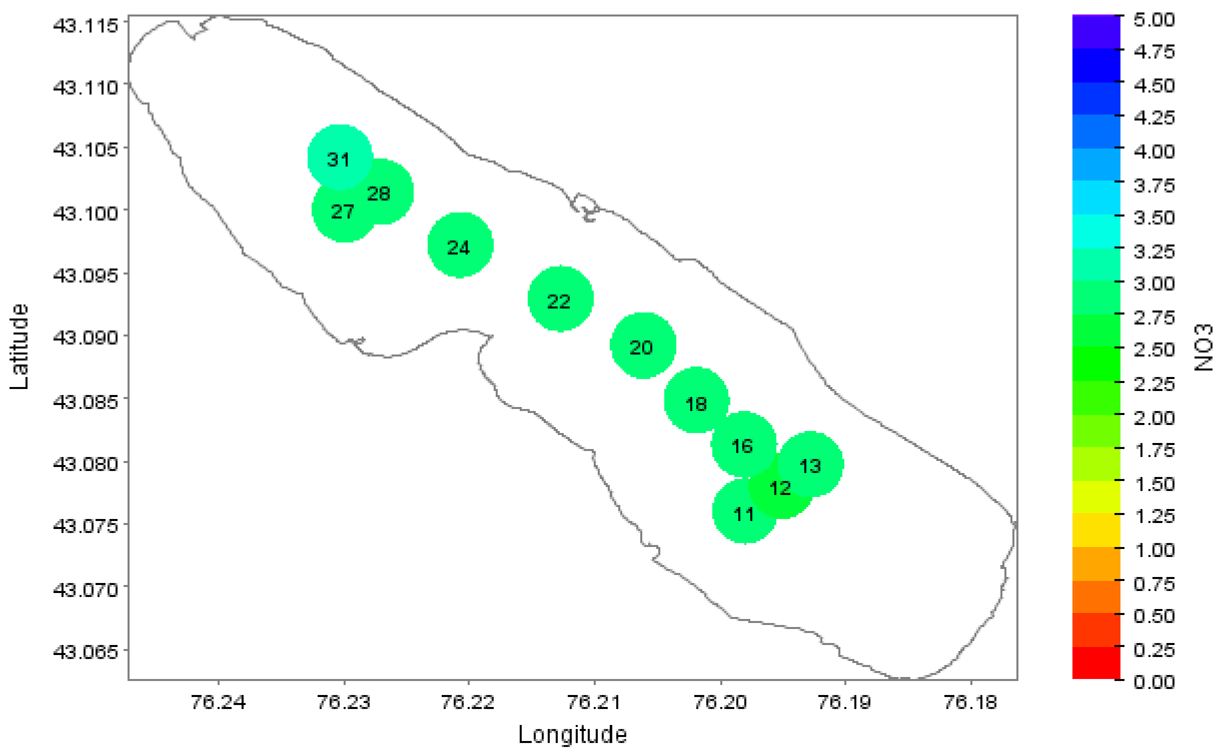
white circle: survey location
red circle: injection site

Color Bubble Plots at ~1.0 m off Bottom, Nitrate (mgN/L)

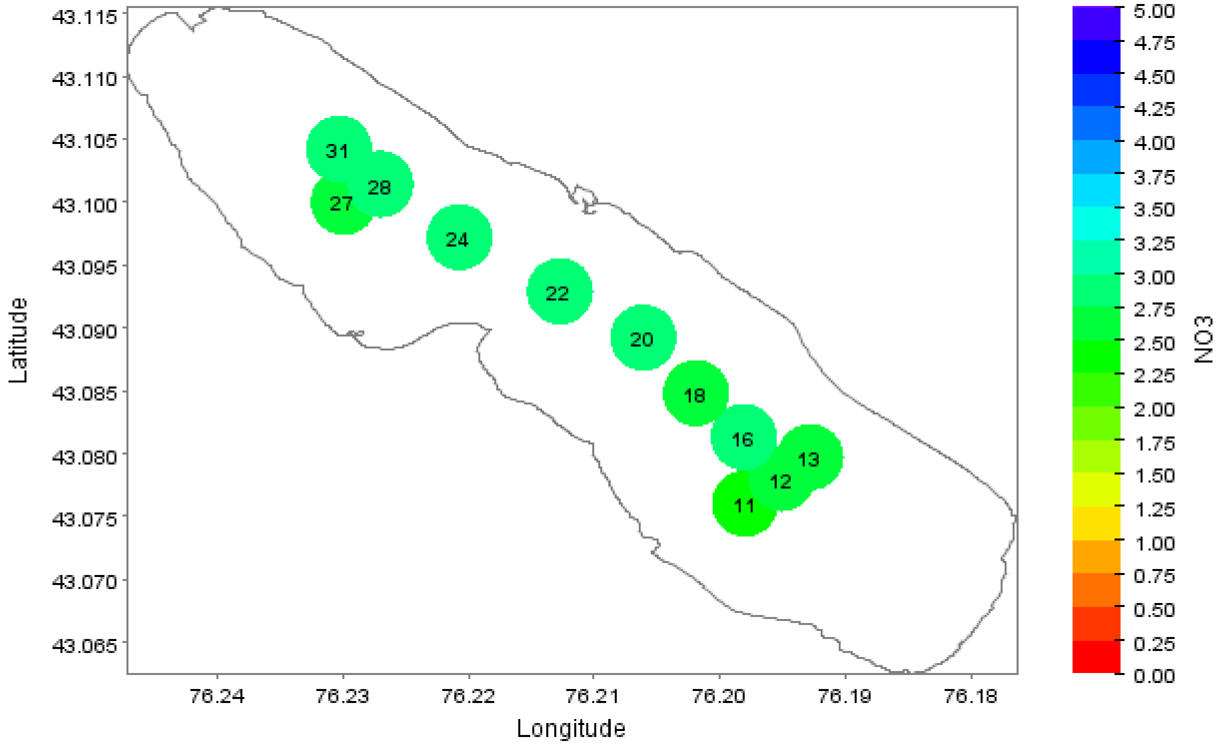
June 1, 2021



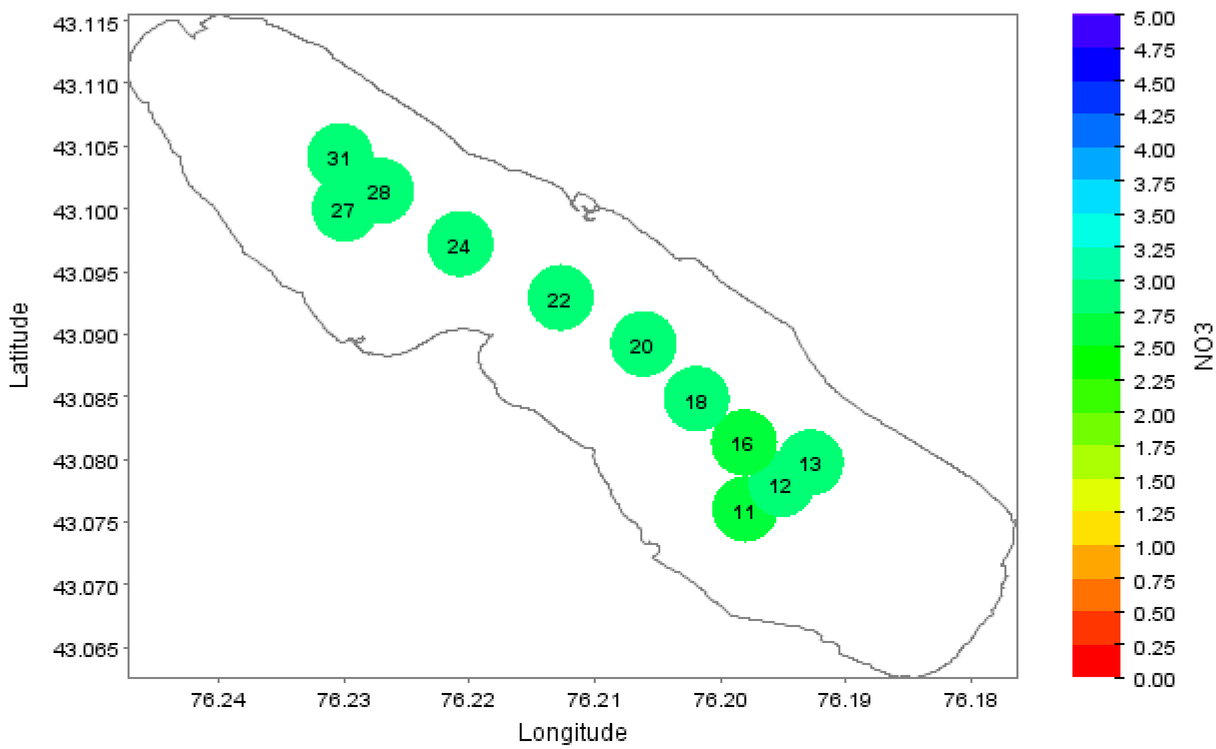
June 7, 2021



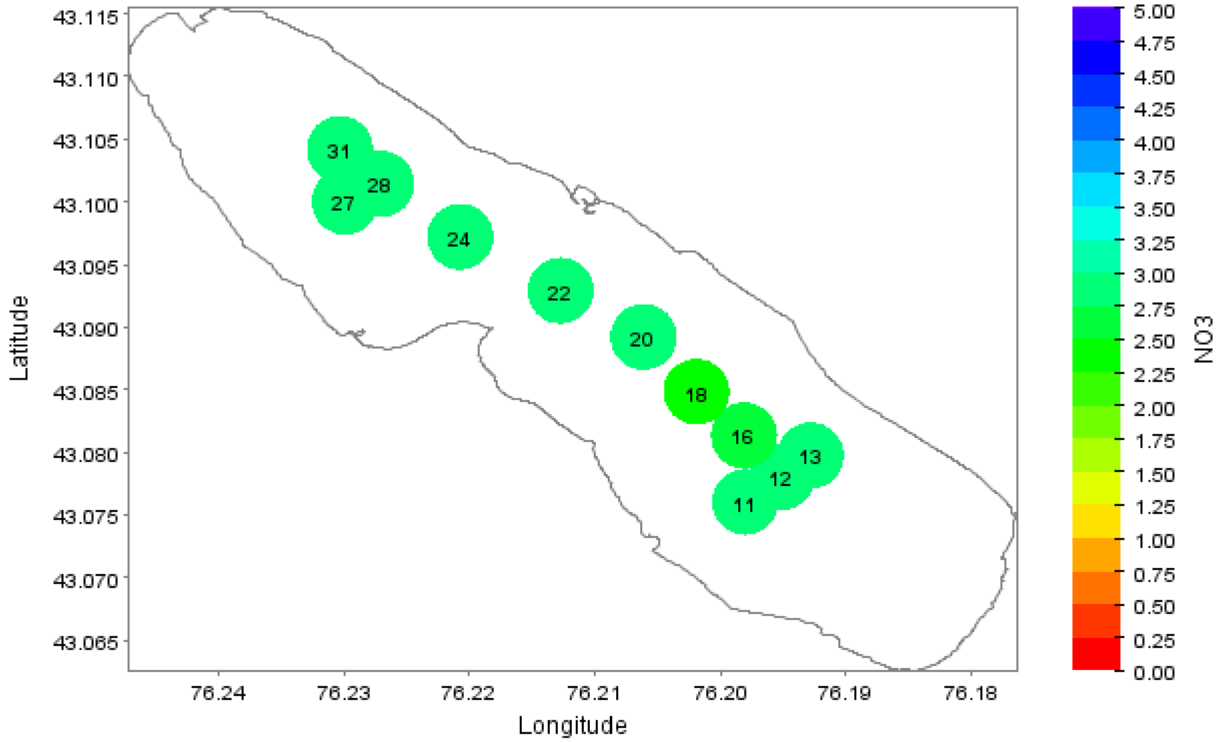
June 14, 2021



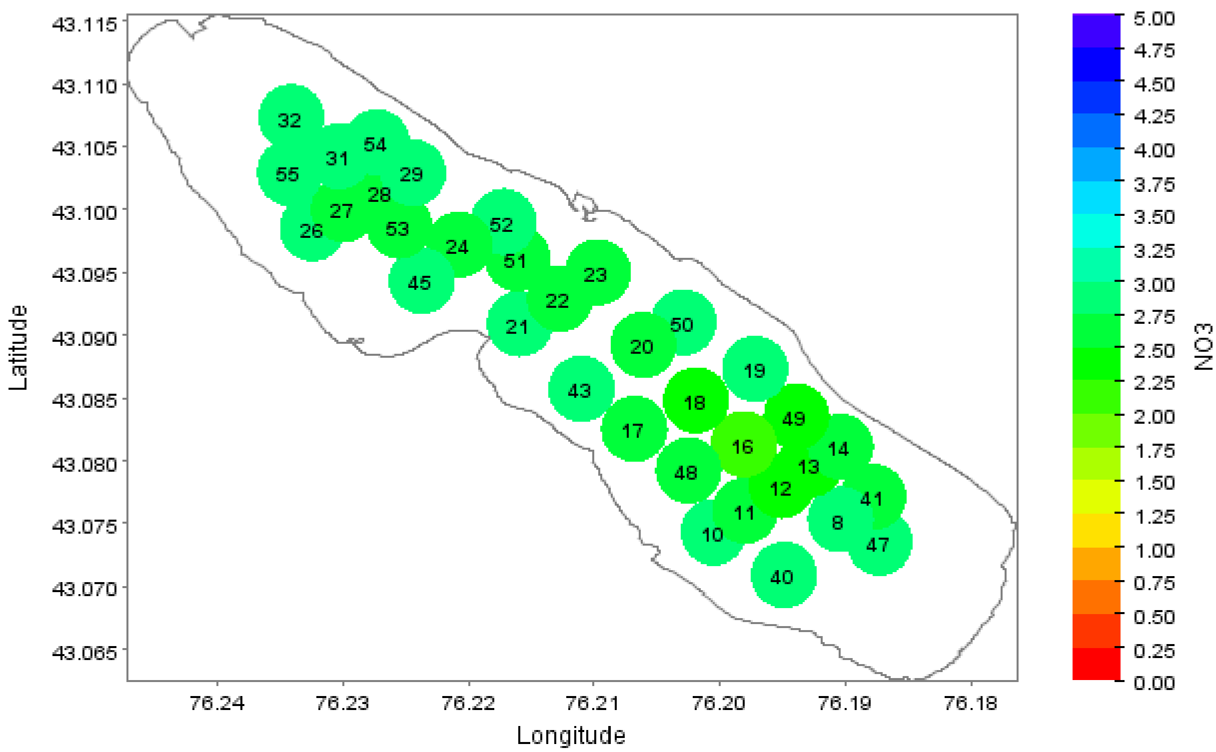
June 21, 2021



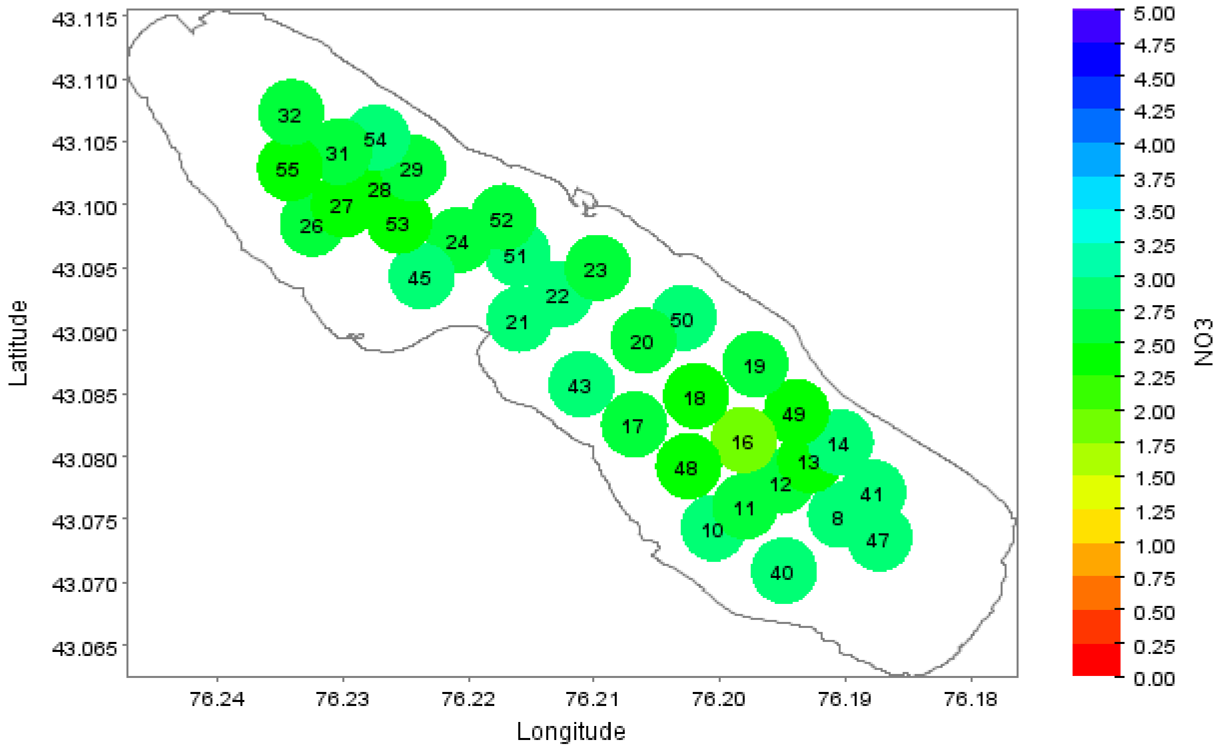
June 28, 2021



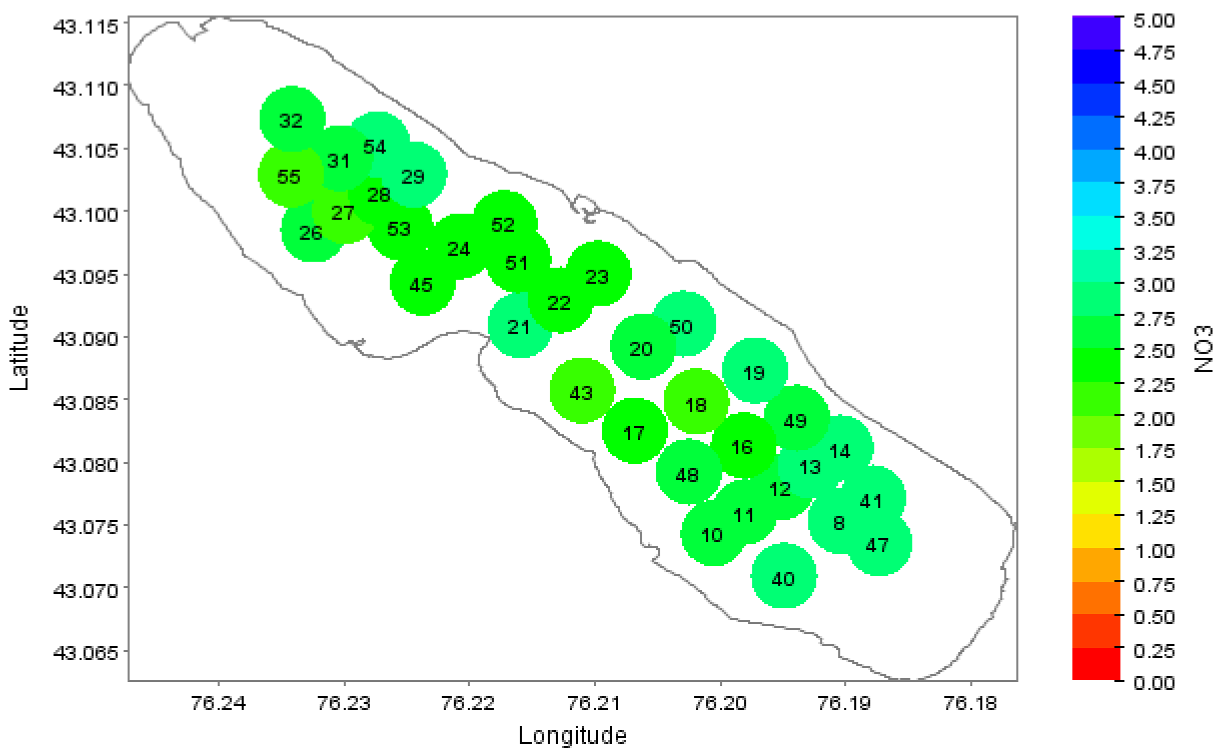
July 6, 2021



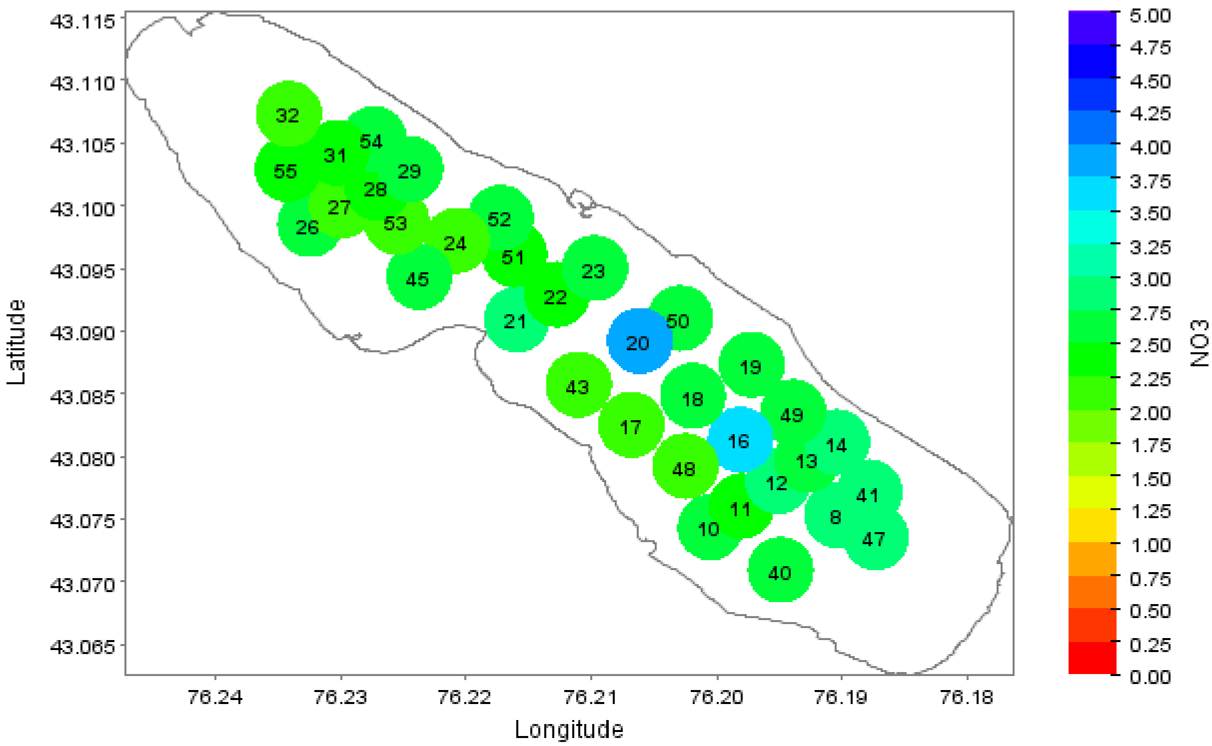
July 12, 2021



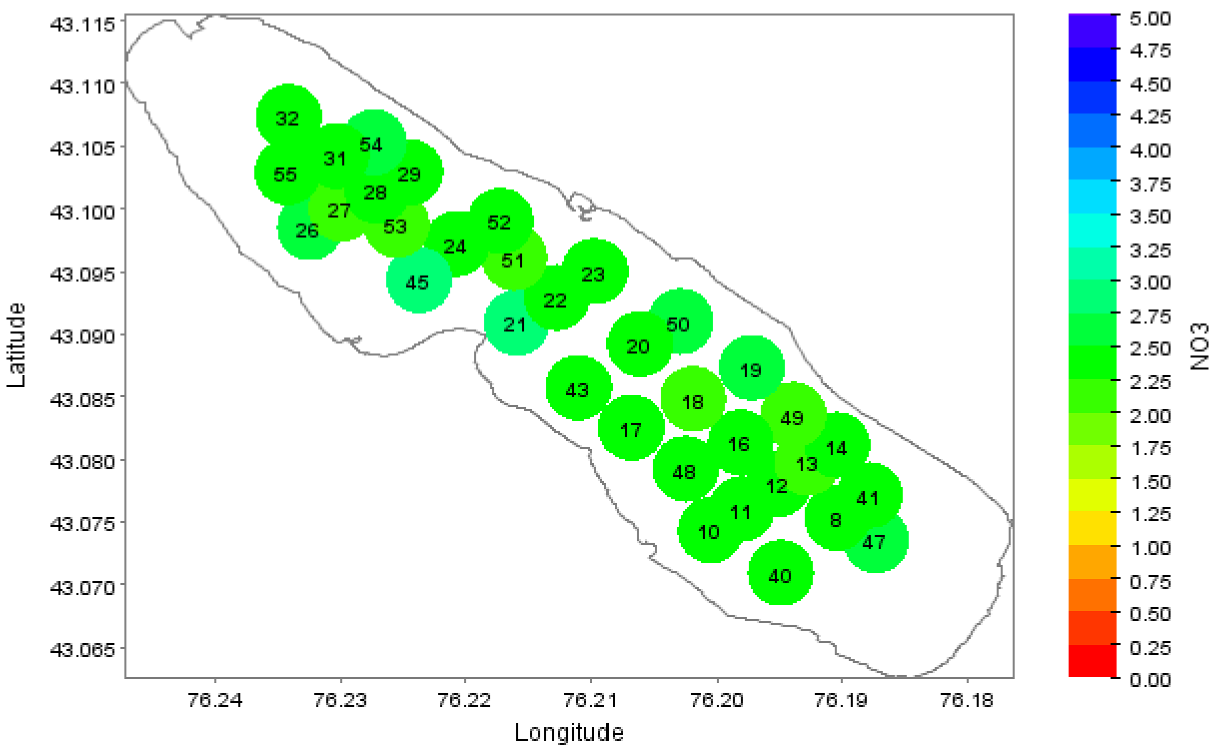
July 19, 2021



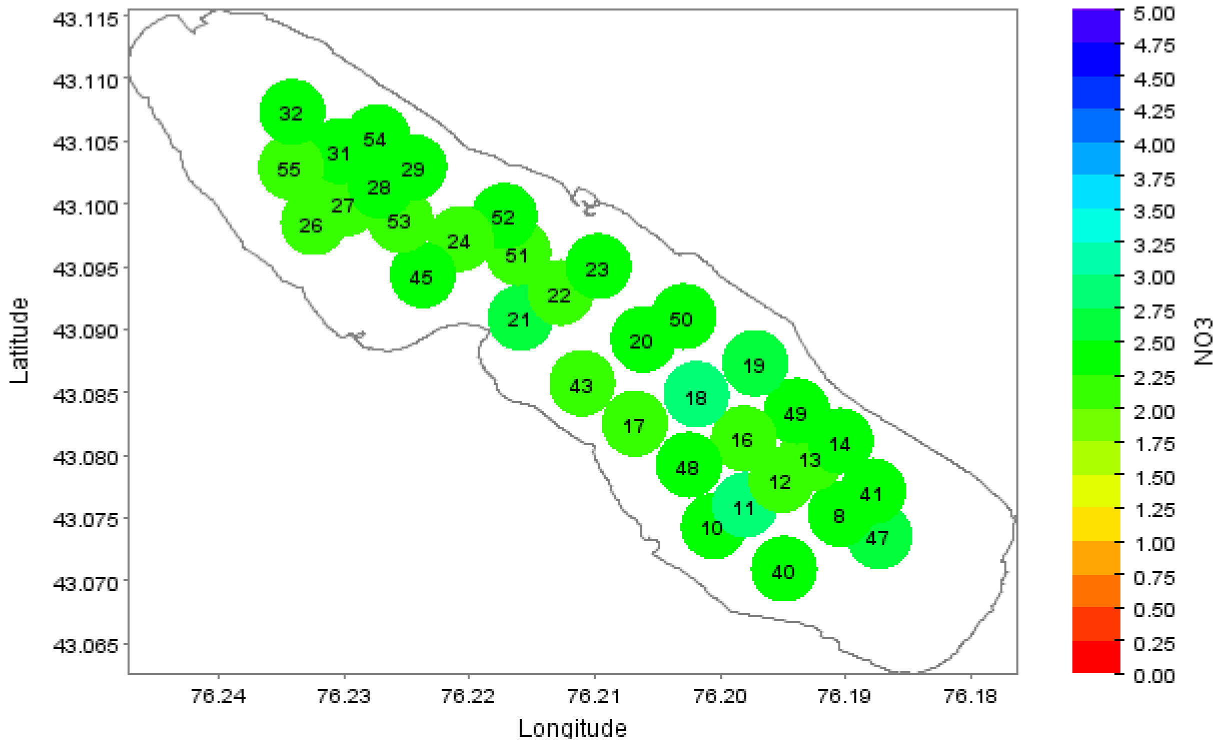
July 26, 2021



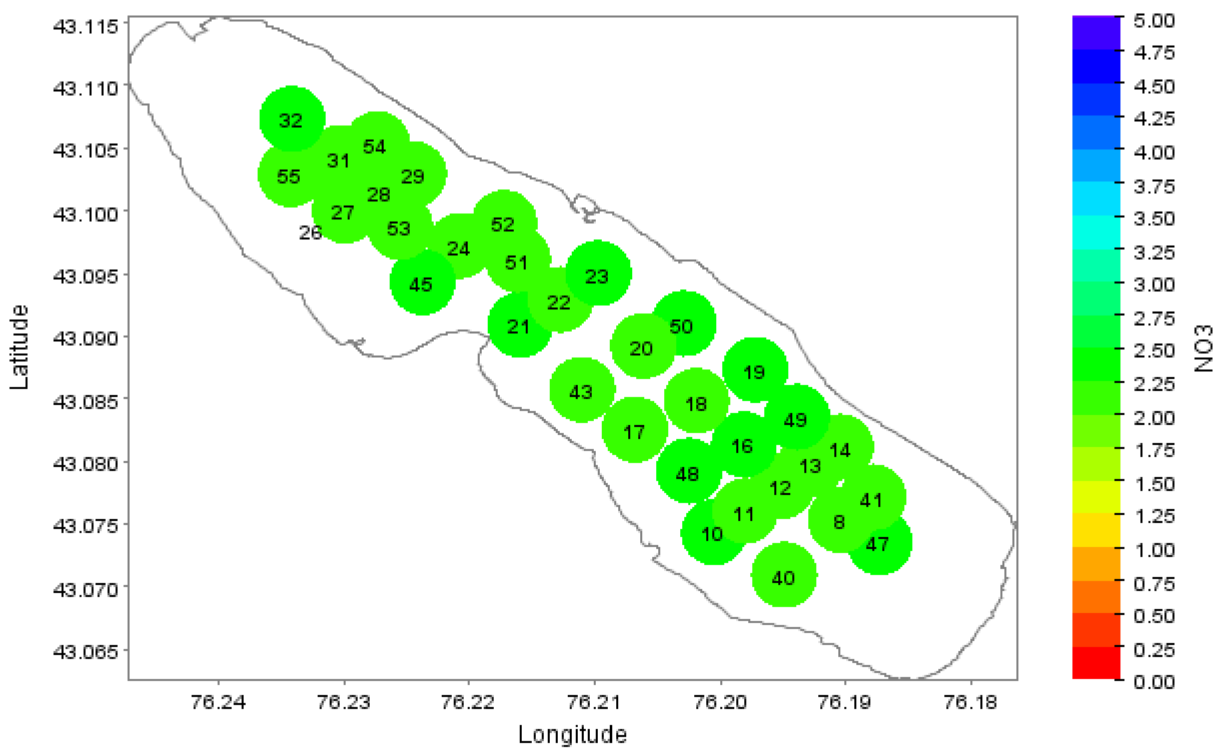
August 2, 2021



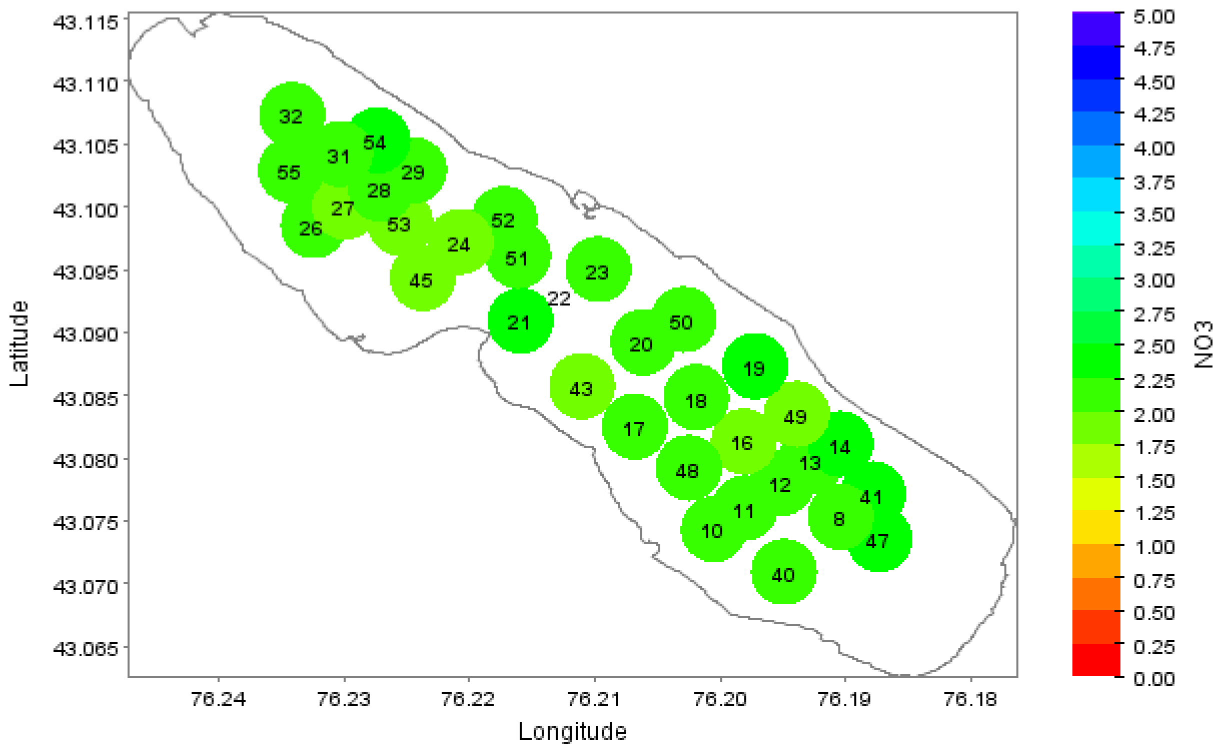
August 10, 2021



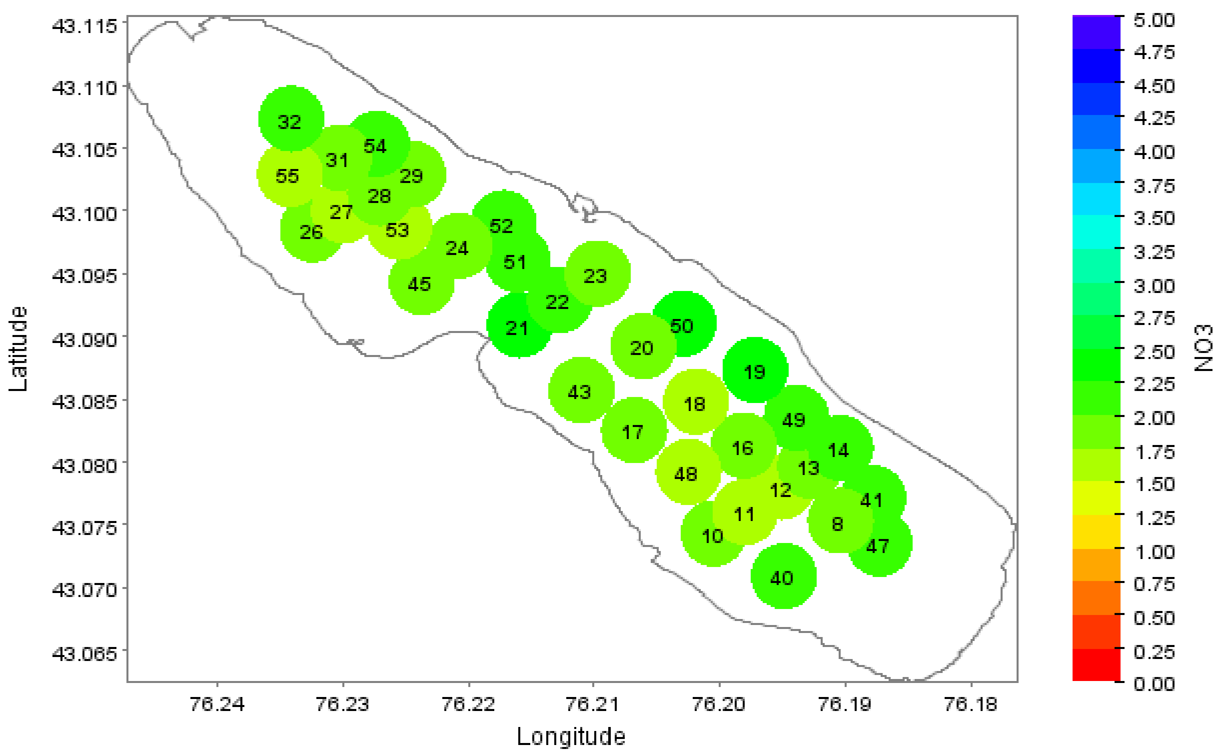
August 16, 2021



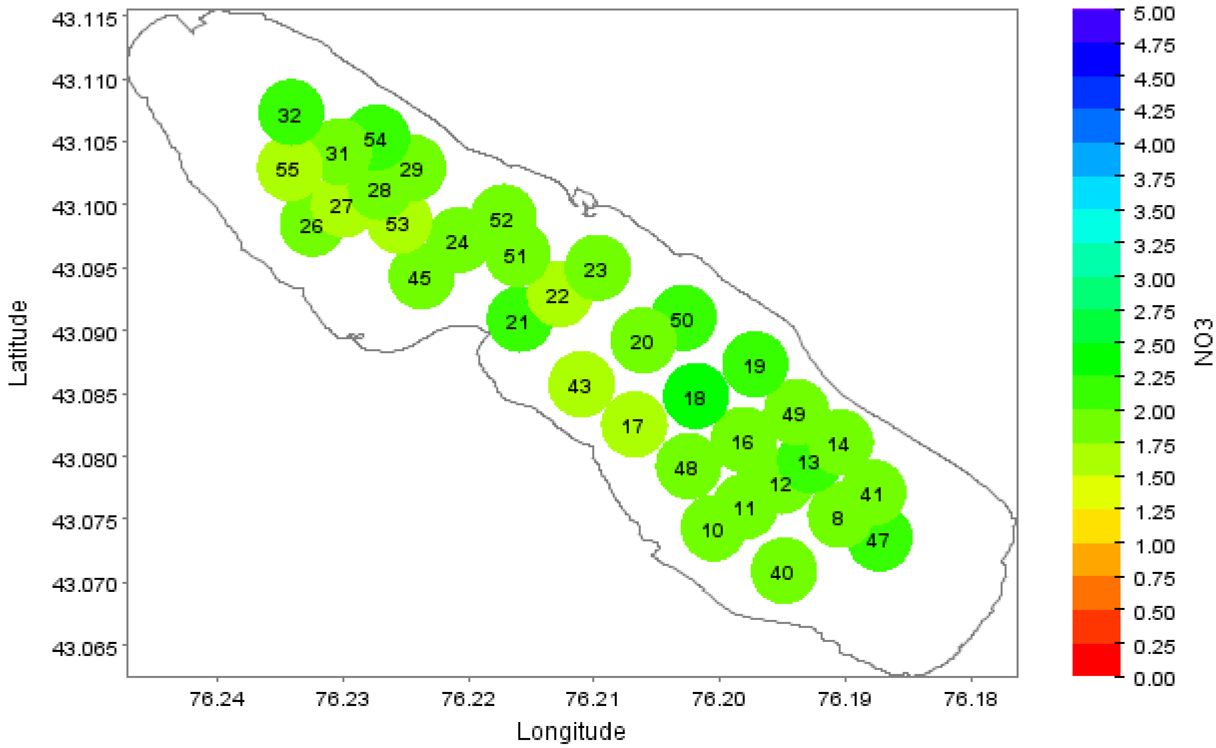
August 23, 2021



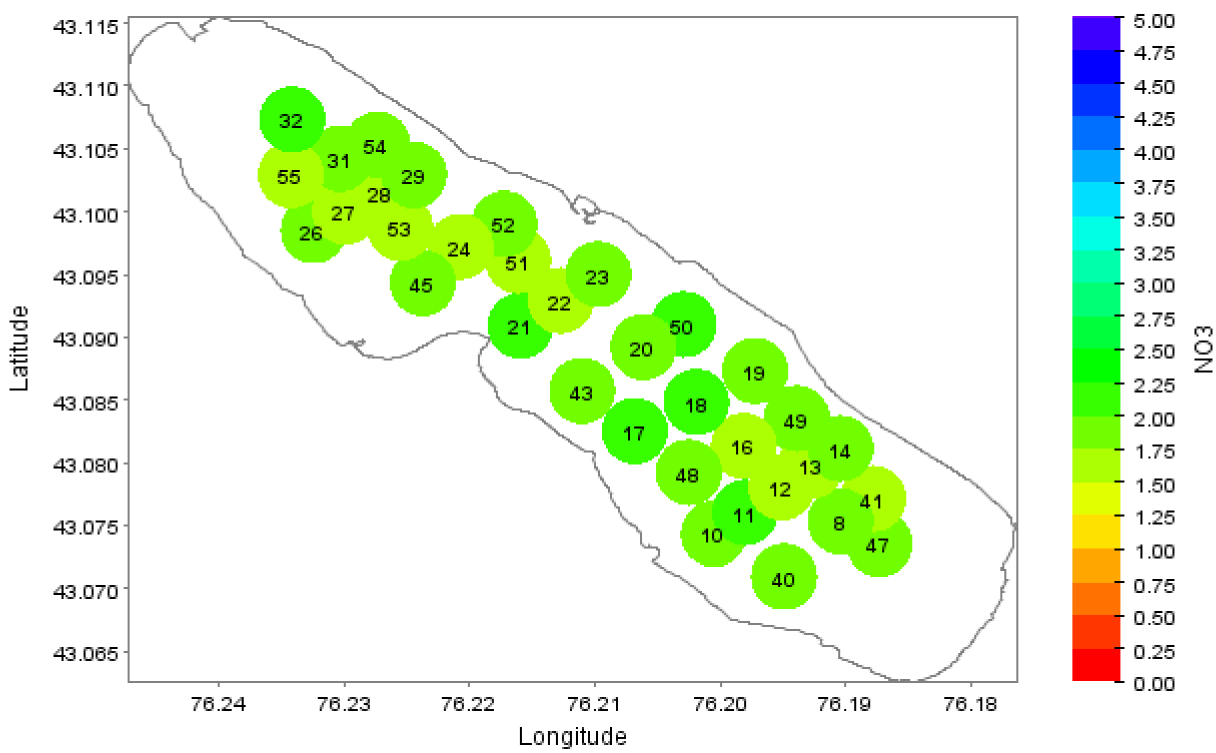
August 30, 2021



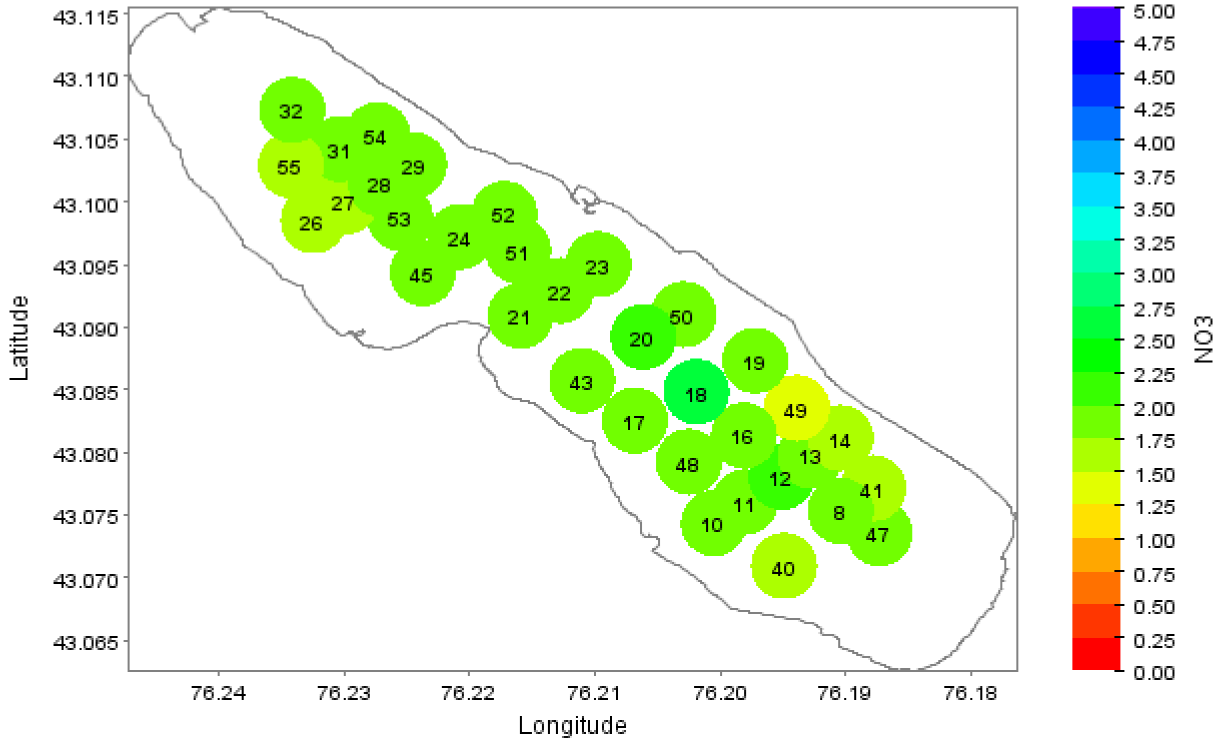
September 7, 2021



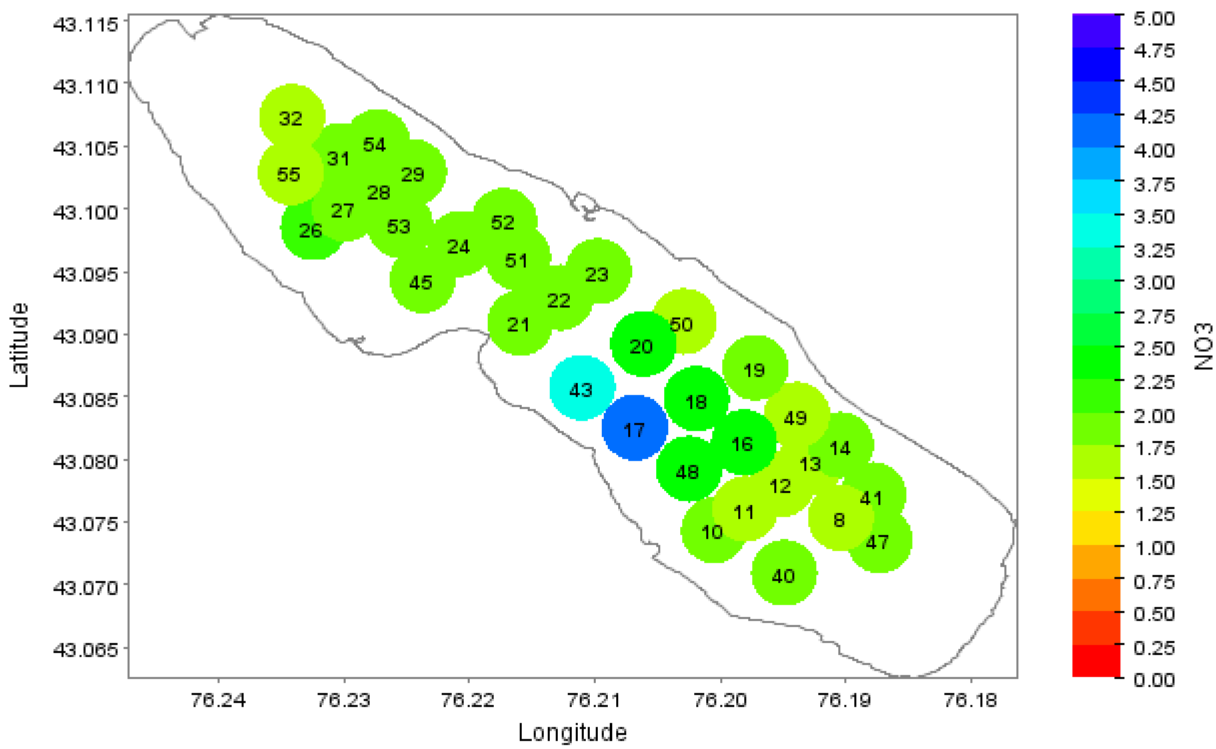
September 13, 2021



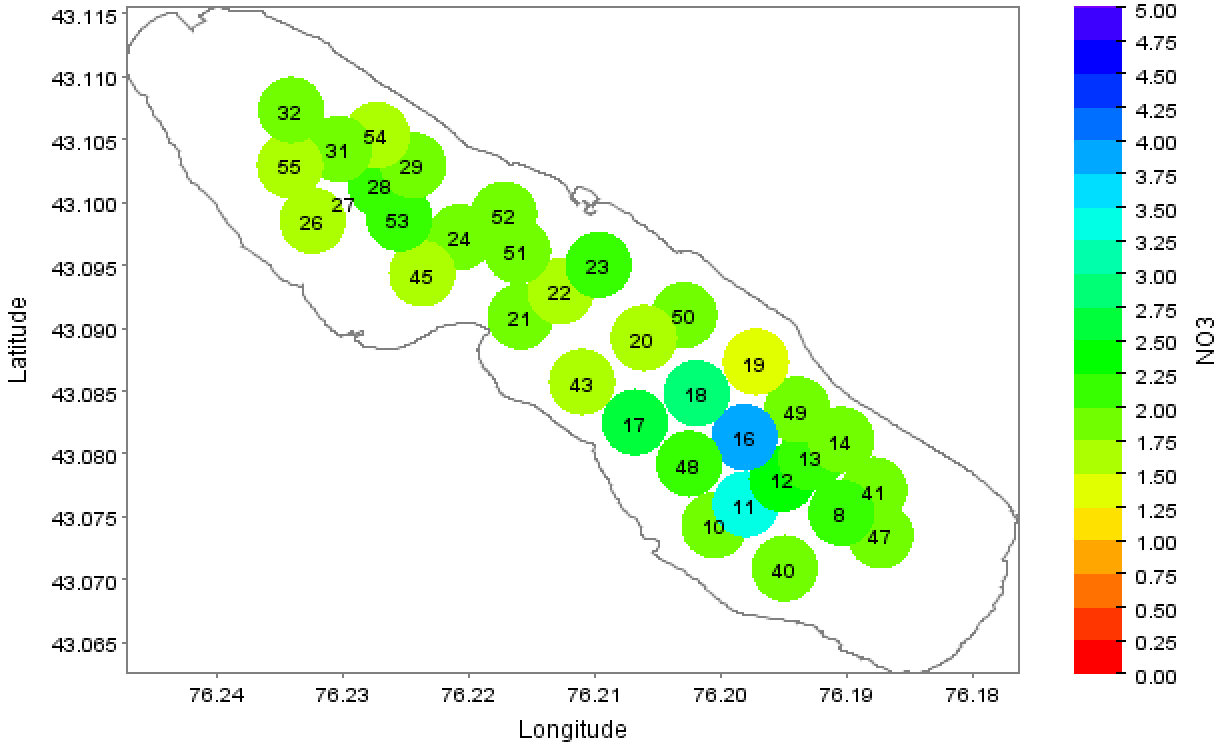
September 20, 2021



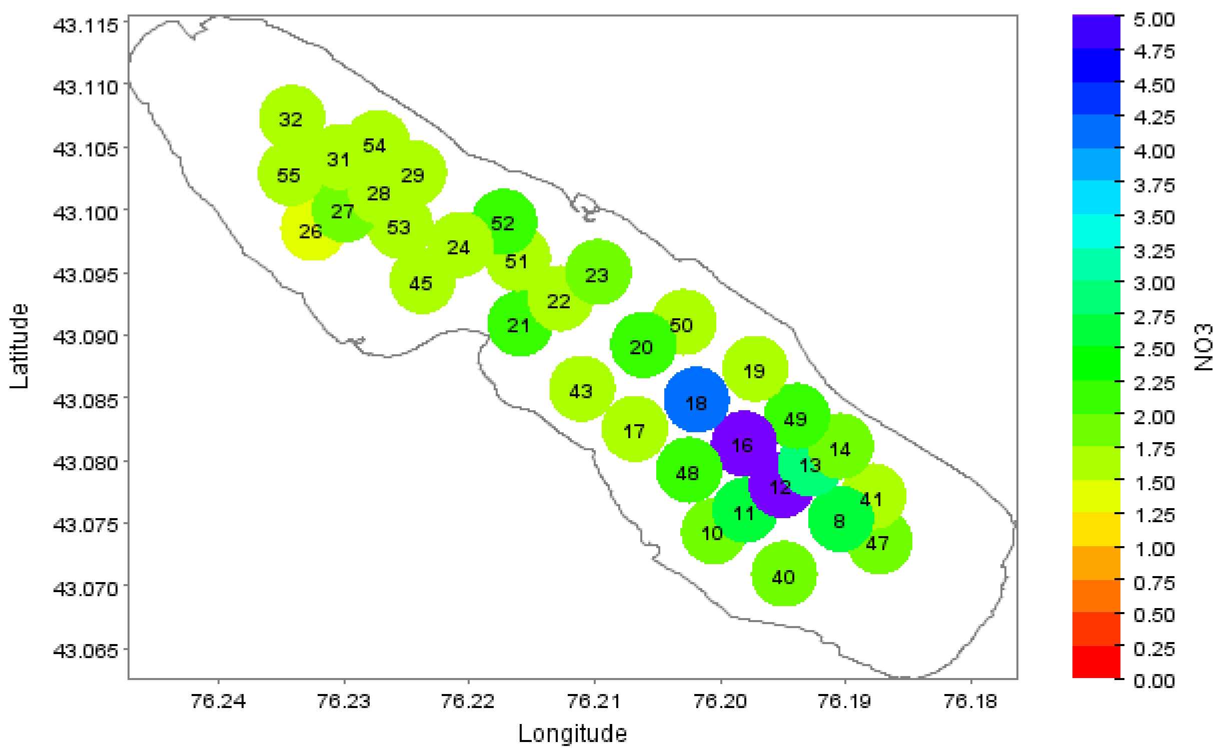
September 27, 2021



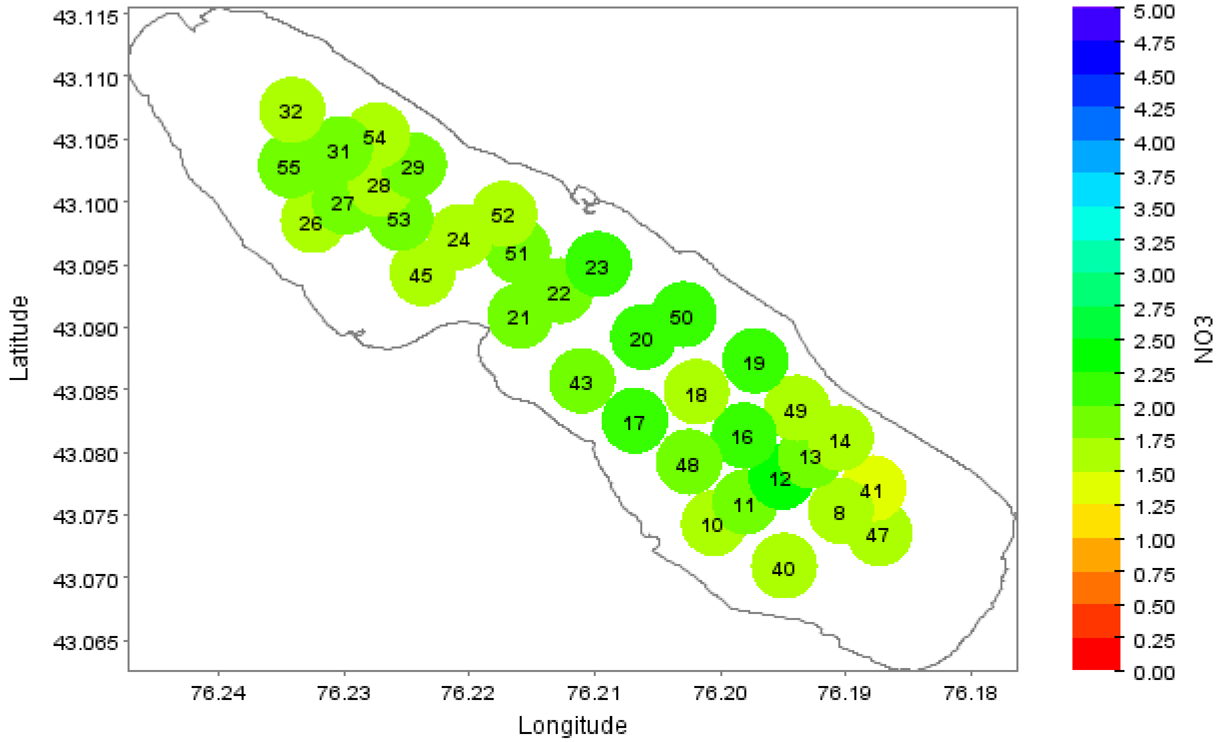
October 4, 2021



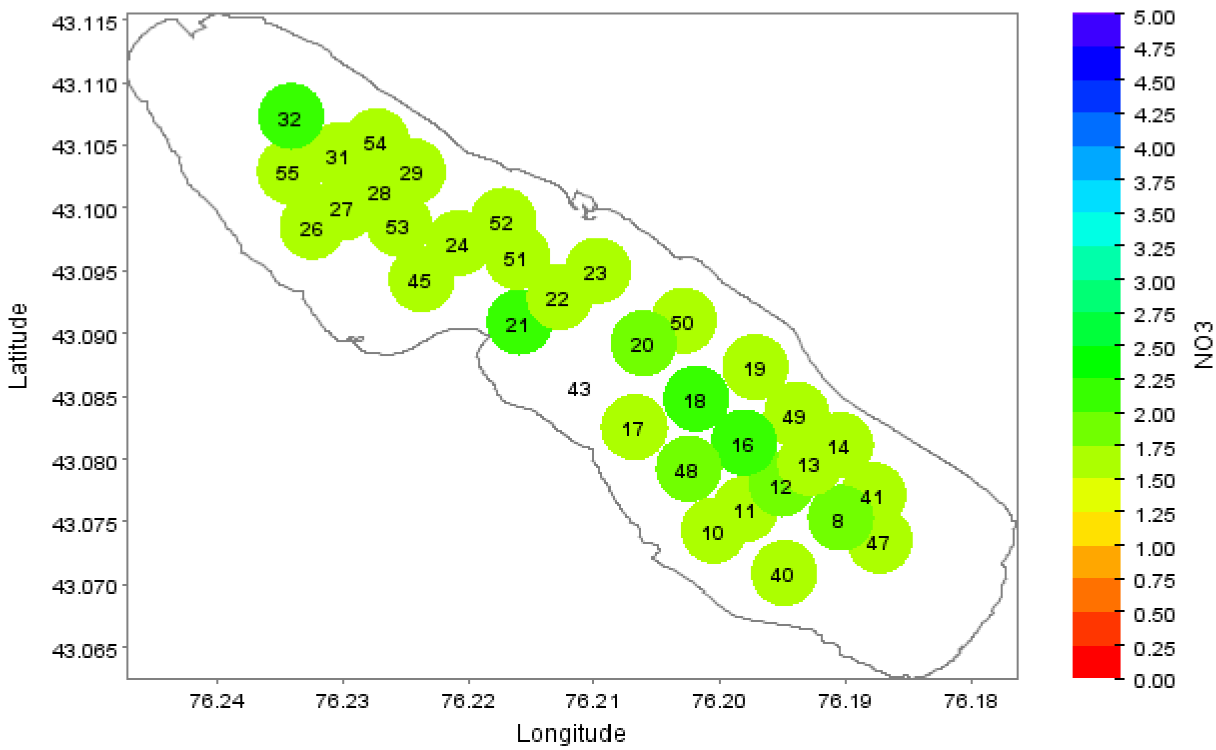
October 11, 2021



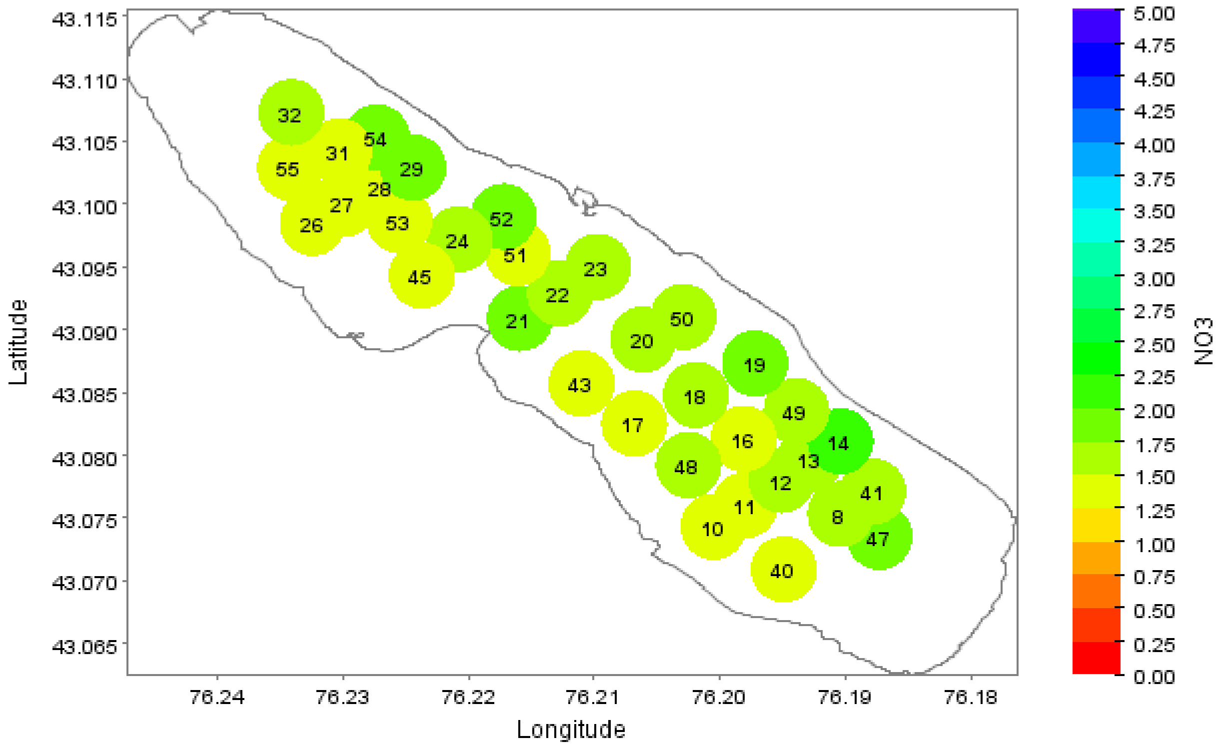
October 20, 2021



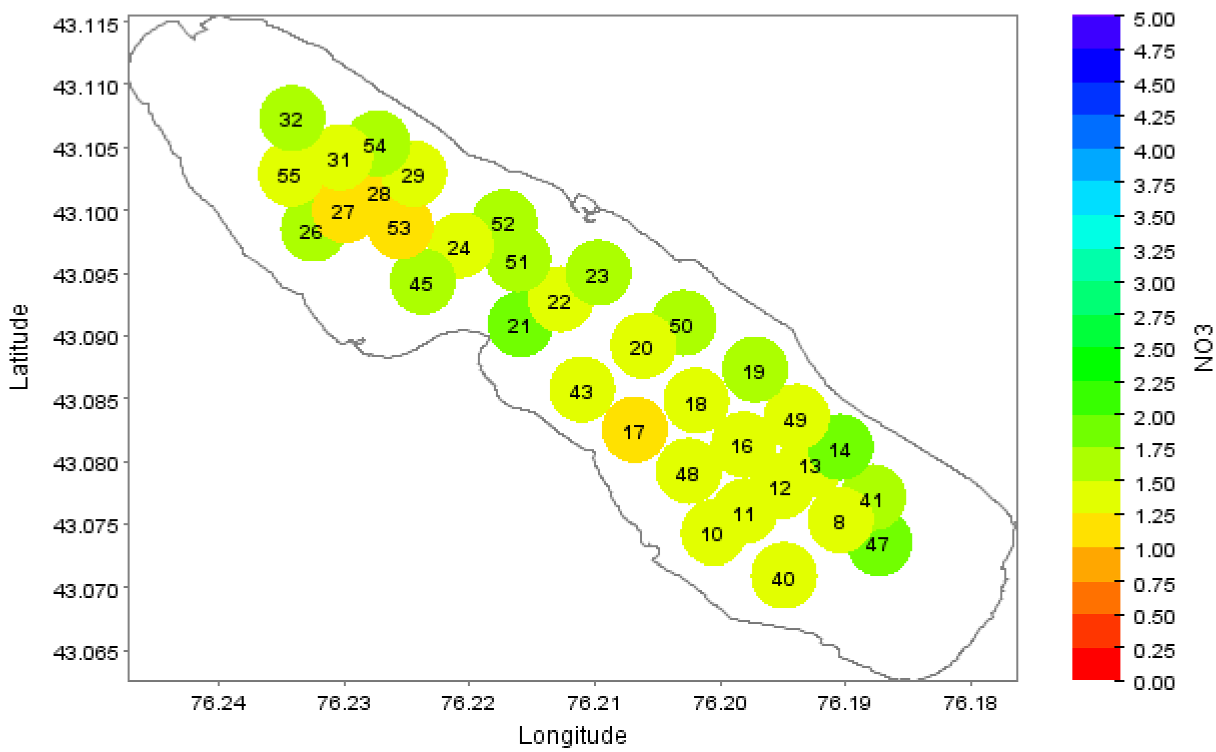
October 25, 2021



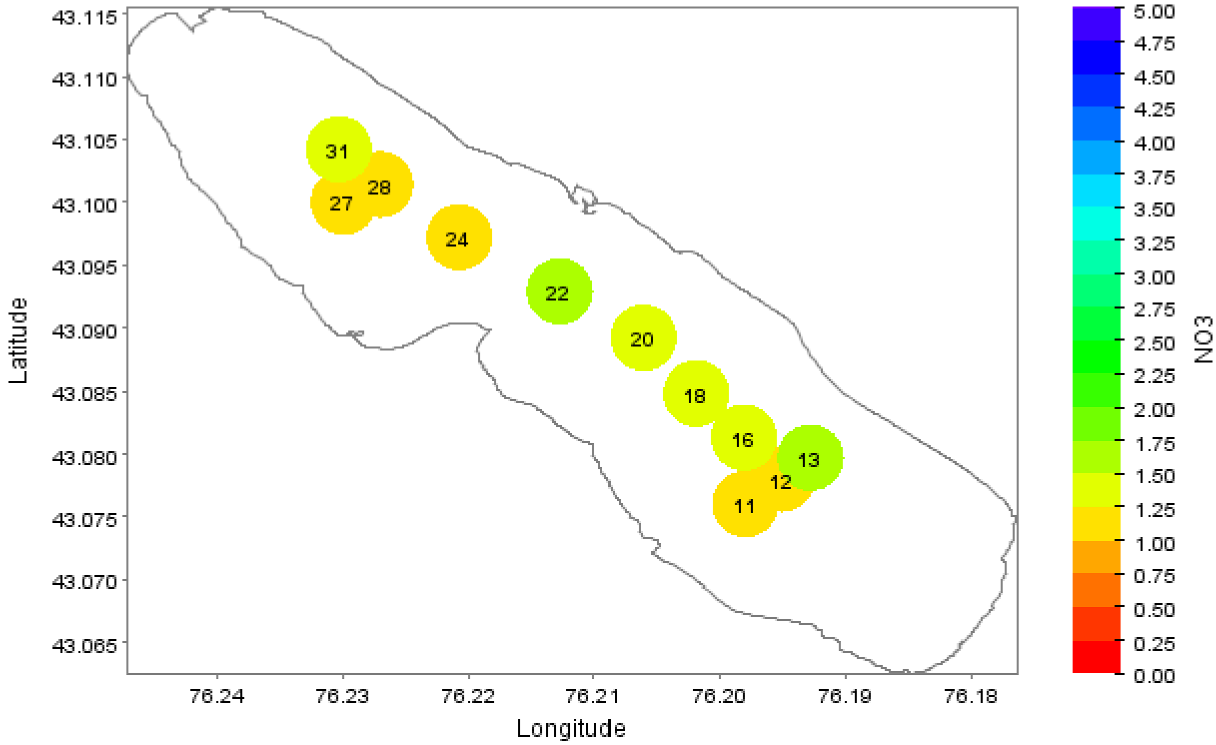
November 03, 2021



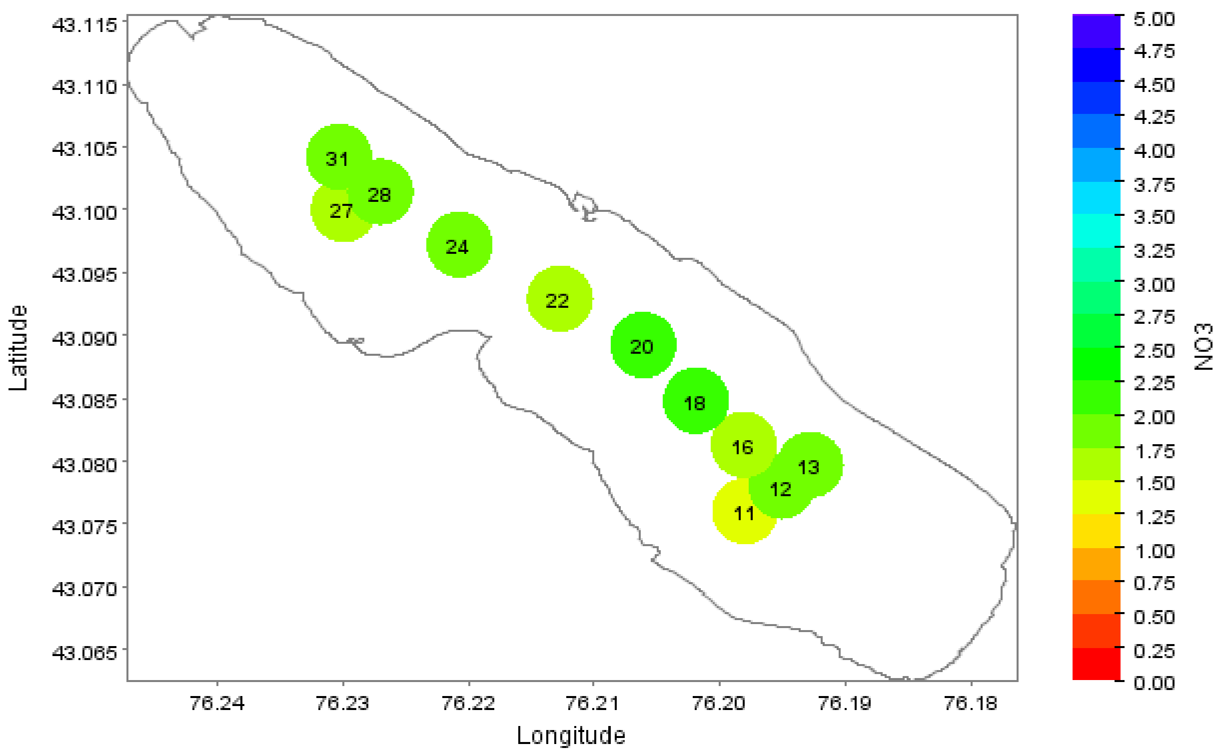
November 9, 2021



November 16, 2021



November 22, 2021



APPENDIX 5D - DATA USABILITY SUMMARY REPORT: ONONDAGA LAKE 2021 SURFACE WATER MONITORING ASSOCIATED WITH NITRATE ADDITION

APPENDIX 5D:

DATA USABILITY SUMMARY REPORT

ONONDAGA LAKE 2021 SURFACE WATER MONITORING ASSOCIATED WITH NITRATE ADDITION ONONDAGA COUNTY, NEW YORK

Prepared For:

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APRIL 2022

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LIST OF ATTACHMENTS

SECTION 5D1 DATA USABILITY SUMMARY

Surface water samples were collected as part of the 2021 nitrate addition sampling in the hypolimnion efforts for Onondaga Lake from May 11, 2021 through November 24, 2021. Analytical results from these samples were validated and reviewed by Parsons for usability with respect to the following requirements:

- Operations and Monitoring Plan for Adding Nitrate Full Scale to the Hypolimnion of Onondaga Lake (Parsons and UFI);
- Quality Assurance Project Plan (QAPP) for Onondaga Lake Construction and Post-Construction Media Monitoring (Surface Water, Biota and Sediment) (Parsons. Anchor QEA and Upstate Freshwater Institute [UFI]); and
- USEPA Region II Standard Operating Procedures (SOPs) for inorganic data review (see Section 5D2 for citations).

Upstate Freshwater Institute (UFI) in Syracuse, New York collected all the samples reported herein.

The analytical laboratories for this project were Eurofins – Frontier and UFI. These laboratories are certified by the State of New York to conduct laboratory analyses for this project through the National Environmental Laboratory Accreditation Conference (NELAC) and the New State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP).

5D1.1 Laboratory Data Packages

The laboratory data package turnaround time, defined as the time from sample receipt by the laboratory to receipt of the analytical data packages by Parsons, was 10-69 days for the samples.

The data packages received from the laboratories were paginated, complete, and overall were of good quality. Comments on specific quality control (QC) and other requirements are discussed in detail in the attached data validation report which is summarized by sample media in Section 5D2.

5D1.2 Sampling and Chain-of-Custody

The samples were collected, shipped under a chain-of-custody (COC) record, and received at the laboratories within one to three days of sampling. All samples were received intact and in good condition at the laboratories with the exception of mercury and methyl mercury samples collected on 8/9/21. These samples were received by the laboratory at 11.6ºC.

5D1.3 Laboratory Analytical Methods

The surface water samples were collected from the site and analyzed for total and/or dissolved low level mercury, methyl mercury, nitrite, nitrate-nitrite, reactive phosphate, and/or ammonia. Summaries of deviations from the Work Plan, QAPP, or USEPA Region II SOPs concerning these laboratory analyses are presented in Subsections 5D1.3.1 through 5D1.3.3. The data qualifications resulting from the data validation review and statements on the laboratory analytical precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) are discussed for each analytical method by media in Section 5D2. The laboratory data were reviewed and may be qualified with the following validation flags:

"U" - not detected at the value given
"UJ" - estimated and not detected at the value given
"J" - estimated at the value given
"J+" - estimated biased high at the value given
"J-" - estimated biased low at the value given
"N" - presumptive evidence at the value given
"R" - unusable value

The validated laboratory data were tabulated and are presented in Attachment A.

5D1.3.1 Low Level Mercury Analysis

Surface water sample results reported herein were analyzed by Eurofins for low level mercury using the USEPA 1631E analytical method. Certain reported results for the low level mercury samples were considered estimated based upon instrument calibrations, field duplicate precision, dissolved mercury results significantly higher than total mercury results, sample receipt temperature, and methyl mercury results higher than total mercury results; and qualified as not detected based upon blank contamination. Certain dissolved mercury results were considered unusable and qualified “R” based upon laboratory contamination during filtration. The reported low level mercury analytical results were considered 97.3% complete (i.e., usable) for the data presented by Eurofins. PARCCS requirements were met overall.

5D1.3.2 Methyl Mercury Analysis

Surface water sample results reported herein were analyzed by Eurofins for methyl mercury using the USEPA 1630 analytical method. Certain reported results for the methyl mercury samples were qualified as estimated based upon matrix spike recoveries, laboratory control sample (LCS) recoveries, field duplicate precision, sample receipt temperature, and methyl mercury results higher than total mercury results; and qualified as not detected based upon blank contamination. The reported methyl mercury analytical results were considered 100% complete (i.e., usable) for the data presented by Eurofins. PARCCS requirements were met.

5D1.3.3 Other Surface Water Analyses

Surface water sample results for other parameters reported herein were analyzed by UFI for nitrite, nitrate-nitrite, reactive phosphate, and/or ammonia using the SM4500 analytical method. Certain reported results for these parameters were qualified as estimated based upon matrix spike recoveries and field duplicate precision; and qualified as not detected based upon blank contamination. The reported analytical results for these parameters were considered 100% complete (i.e., usable) for the data presented by UFI. PARCCS requirements were met.

SECTION 5D2 DATA VALIDATION REPORT

5D2.1 Surface Water Samples

Data review has been completed for data packages generated by Eurofins and UFI containing surface water sample results collected from the site. The specific samples contained in these data packages, the analyses performed, and the validated laboratory data were tabulated and are presented in Attachment A. All of these samples were shipped under a COC record and received intact by the analytical laboratory.

Data validation was performed for all samples in accordance with the project work plan and QAPP as well as the USEPA Region II SOP HW-2c, Revision 15 “Mercury and Cyanide Data Validation”. This data validation and usability report is presented by analysis type.

5D2.1.1 Total and Dissolved Low Level Mercury

The following items were reviewed for compliancy in the low level mercury analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Initial and continuing calibration, laboratory preparation blank, and field/equipment blank contamination
- Matrix spike / matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- Field duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of initial calibration verifications, blank contamination, and field duplicate precision as discussed below.

Initial Calibration Verifications

All initial calibration verifications were analyzed at the appropriate frequency with recoveries within the 79-121%R QC limit with the exception of the high initial calibration verification recovery for total mercury (123%R) associated with samples collected 7/7/21. Therefore, positive total mercury results were considered estimated, possibly biased high, and qualified “J+” for the affected samples.

Blank Contamination

The QC equipment blanks associated with samples collected on 5/11/21 and 8/17/21 contained total mercury at concentrations of 0.18 and 0.12 ng/L, respectively; the QC field blanks associated with samples collected on 7/13/21, 8/31/21, 9/8/21, 9/14/21, 9/21/21, 9/28/21, 10/5/21, 10/12/21, and 11/10/21 contained total mercury at concentrations of 0.31, 0.17, 0.67, 0.68, 0.27, 0.53, 1.19, 0.37, and 0.08 ng/L, respectively; laboratory preparation blanks associated with project samples contained total mercury at a concentration ranging 0.08-0.87 ng/L; laboratory initial calibration blanks associated with project samples contained total mercury at a concentration ranging 0.01-0.25 ng/L; laboratory continuing calibration blanks associated with project samples contained total mercury at a concentration ranging 0.003-2.18 ng/L; and laboratory filtration blanks associated with dissolved mercury samples collected on 6/29/21, 7/13/21, 9/8/21, 10/5/21, 11/10/21, and 11/16/21 contained dissolved mercury at concentrations of 0.4, 1.35, 4.74, 0.58, 0.68, and 0.21 ng/L, respectively. Therefore, associated mercury results less than validation action concentrations were considered not detected and qualified "U" for the affected samples.

It should be noted that field blanks and equipment blanks with the exception of the equipment blanks collected prior to the commencement of the 2021 surface water sampling, are not analyzed for dissolved mercury and do not have filter blanks associated with them.

Field Duplicate Precision

All field duplicate precision results were considered acceptable with the exception of the precision for total mercury associated with the parent samples/field duplicate samples OL-3612-01/-02 (85%RPD), OL-3616-01/-02 (102%RPD), and OL-3634-01/-02 (43%RPD); and dissolved mercury associated with the parent samples/field duplicate samples OL-3612-01/-02 (56%RPD), OL-3623-01/-02 (38%RPD), OL-3644-01/-02 (72%RPD), OL-3653-01/-02 (88%RPD), OL-3669-01/-02 (56%RPD), and OL-3689-01/-02 (81%RPD). Therefore, the mercury results were considered estimated and qualified "J" for the affected parent samples and field duplicates.

Usability

All total and dissolved mercury sample results were considered usable following data validation with the exception of the dissolved mercury results for samples OL-3623-01, -02, OL-3653-01, -02, and -04 based upon laboratory contamination during filtration discussed below.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The total and dissolved low level mercury data presented by Eurofins were 97.3% complete (i.e., usable). The validated low level mercury laboratory data are tabulated and presented in Attachment A.

It was noted that dissolved mercury was significantly higher than total mercury for samples OL-3623-01, OL-3653-02, -04. Mercury results were considered estimated and qualified "J" for the affected samples.

It was noted by the laboratory for dissolved mercury samples OL-3623-01 and -02 that "mercury concentrations were found in the laboratory filtration blank at a level exceeding the action limit. Dissolved mercury results for this order at that same concentration level is suspected to also have a high bias and should not be used." Therefore, dissolved mercury results were considered unusable and qualified "R" for the affected samples.

It was noted that samples collected on 8/9/21 were received by the laboratory at a temperature of 11.6ºC. Therefore, results were considered estimated with positive results qualified "J" and nondetected results qualified "UJ" for the affected samples.

It was noted that methyl mercury results were higher than total mercury results in samples OL-3637-01, -02, and -05. Therefore, results were considered estimated with positive results qualified "J" and nondetected results qualified "UJ" for the affected samples.

It was noted by the laboratory for dissolved mercury samples OL-3653-01, -02, and -04 that "contamination was found during filtration that affected dissolved mercury results of samples OL-3653-01, -02, and -04. Dissolved mercury results for these selected samples were compromised and should not be utilized." Therefore, dissolved mercury results were considered unusable and qualified "R" for the affected samples.

5D2.1.2 Methyl Mercury

The following items were reviewed for compliancy in the methyl mercury analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Initial and continuing calibration verifications
- Initial and continuing calibration, laboratory preparation blank, and field/equipment blank contamination
- Matrix spike / matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- Field duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of blank contamination, matrix spike recoveries, LCS recoveries, and field duplicate precision as discussed below.

Blank Contamination

The laboratory initial calibration blanks associated with project samples contained methyl mercury at a concentration ranging 0.003-0.037 ng/L; laboratory continuing calibration blanks associated with project samples contained methyl mercury at a concentration ranging 0.0007-0.025 ng/L; laboratory preparation blanks associated with project samples contained methyl mercury at a concentration ranging 0.027-0.904 ng/L; the field blank associated with samples collected on 9/14/21 contained methyl mercury at a concentration of 0.027 ng/L; and the equipment blank associated with samples collected on 11/16/21 contained methyl mercury at a concentration 0.040 ng/L. Therefore, methyl mercury results less than validation action concentrations were considered not detected and qualified “U” for the affected samples.

Matrix Spike Recoveries

All matrix spike recoveries were considered acceptable and within the 65-130%R QC limit with the exception of the matrix spike recoveries for methyl mercury associated with samples OL-3604-03 (64.5%R), OL-3634-01 (59.1%R, 52.0%R), OL-3637-01 (64.4%R), OL-3661-01 (57.4%R, 32.2%R), OL-3677-01 (64.3%R), OL-3681-04 (56.2%R), OL-3685-01 (131%R), and OL-3685-02 (137%R). Therefore, methyl mercury results where matrix spike recoveries fell below the QC limit were considered estimated with positive results qualified “J” and nondetected results qualified “UJ” for the affected samples. Positive methyl mercury results where matrix spike recoveries exceeded the QC limit were considered estimated and qualified “J” for the affected samples.

LCS Recoveries

All LCS recoveries were considered acceptable and within the 65-135%R QC limit with the exception of the low LCS recoveries for methyl mercury (34.9%R, 25.6%R) associated with samples collected on 11/16/21. Therefore, results were considered estimated, possibly biased low, with positive results qualified “J-” and nondetected results qualified “UJ” for the affected samples.

Field Duplicate Precision

All field duplicate precision results were considered acceptable with the exception of the precision for methyl mercury associated with the parent samples/field duplicate samples OL-3616-01/-02 (128%RPD), OL-3620-01/-02 (77%RPD), OL-3627-01/-02 (83%RPD), OL-3630-01/-02 (39%RPD), OL-3634-01/-02 (40%RPD), OL-3637-01/-02 (174%RPD), OL-3648-01/-02 (78%RPD), OL-3689-01/-02 (70%RPD), OL-3693-01/-02 (60%RPD), and OL-3697-01/-02 (55%RPD). Therefore, the methyl mercury results were considered estimated and qualified “J” for the affected parent sample and field duplicate.

Usability

All methyl mercury sample results were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The methyl mercury data presented by Eurofins were 100% complete (i.e., usable). The validated methyl mercury laboratory data are tabulated and presented in Attachment A.

It was noted that samples collected on 8/9/21 were received by the laboratory at a temperature of 11.6ºC. Therefore, results were considered estimated with positive results qualified “J” and nondetected results qualified “UJ” for the affected samples.

It was noted that methyl mercury results were higher than total mercury results in samples OL-3637-01, -02, and -05. Therefore, results were considered estimated with positive results qualified “J” and nondetected results qualified “UJ” for the affected samples.

It was noted that methyl mercury containers for samples collected on 10/5/21 were improperly preserved at the laboratory and could not be analyzed.

5D2.1.3 Nitrite, Nitrate-Nitrite, Reactive Phosphate, and Ammonia

All custody documentation, holding times, matrix spike recoveries, laboratory duplicate precision, laboratory control sample recoveries, laboratory method blank contamination, QC field blank contamination, initial and continuing calibration verifications, field duplicate precision, and quantitation limits were reviewed for compliance. Validation qualification of the sample results for these parameters was not required with the exception of the following:

- Ammonia results for sample OL-3601-01 and its field duplicate OL-3601-02 were considered estimated and qualified “J” based upon poor field duplicate precision (41%RPD).
- Ammonia results for sample OL-3621-01 and its field duplicate OL-3621-02 were considered estimated and qualified “J” based upon poor field duplicate precision (59%RPD).
- Ammonia results for sample OL-3631-01 and its field duplicate OL-3631-02 were considered estimated and qualified “J” based upon poor field duplicate precision (123%RPD).
- Ammonia results for sample OL-3654-01 and its field duplicate OL-3654-02 were considered estimated and qualified “J” based upon poor field duplicate precision (81%RPD).
- Reactive phosphate results for sample OL-3670-06 and its field duplicate OL-3670-07 were considered estimated and qualified “J” based upon poor field duplicate precision (179%RPD).
- Ammonia results for sample OL-3682-01 and its field duplicate OL-3682-02 were considered estimated and qualified “J” based upon poor field duplicate precision (32%RPD).
- The nitrate-nitrite result for sample OL-3628-02 was considered estimated and qualified “J” based upon a low matrix spike recovery (72%R; QC limit 85-115%R).
- The nitrate-nitrite result for sample OL-3695-02 was considered estimated and qualified “J” based upon a low matrix spike recovery (77%R; QC limit 85-115%R).
- Ammonia results for samples collected on 5/11/21, 7/13/21, 8/3/21, 8/9/21, 8/24/21, 8/31/21, 9/21/21, 9/28/21, 10/19/21, 10/27/21, and 11/2/21 that were less than validation action concentrations were considered not detected and qualified “U” based upon field blank contamination (87, 70.1, 86.2, 21.0, 19.6, 50.8, 91.4, 83, 15.7, 91.7, and 159.9 µg/L, respectively).

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The data for these parameters presented by UFI were 100% complete (i.e., usable). The validated laboratory data are tabulated and presented in Attachment A.

ATTACHMENT A – VALIDATED LABORATORY DATA

								Parameter Name	Mercury		Mercury		Methyl Mercury		Nitrogen, Nitrite		Nitrogen, Ammonia (As N)		Nitrogen, Nitrate-Nitrite	
								Method	E1631		E1631		E1630		E353.2		E350.1		E350.1	
								Fraction	T		D		T		T		T		T	
								Units	ug/l		ug/l		ug/l		mg/L		mg/L		mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix												
QC	OL-3600-01			4/12/2021	1D00106	Water	EB	WQ	0.00008	U	0.00008	U								
QC	OL-3600-02			4/12/2021	1D00106	Water	EB	WQ	0.00008	U	0.00008	U								
QC	OL-3600-03			4/19/2021	1D00106	Water	EB	WQ	0.00008	U	0.00008	U								
QC	OL-3600-04			4/19/2021	1D00106	Water	EB	WQ	0.00008	U	0.00008	U								
QC	OL-3600-05			4/12/2021	1D00106	Water	FB	WQ	0.00008	U	0.00008	U								
DEEP_S	OL-3601-01	6.6	6.6	5/11/2021	UFI CHM 2021-034	Water	REG	SW							0.035		0.091	J	3	
DEEP_S	OL-3601-02	6.6	6.6	5/11/2021	UFI CHM 2021-034	Water	FD	SW							0.035		0.06	UJ	3.1	
DEEP_S	OL-3601-03	39.6	39.6	5/11/2021	UFI CHM 2021-034	Water	REG	SW							0.038		0.079	U	3.1	
DEEP_S	OL-3601-04	59.4	59.4	5/11/2021	UFI CHM 2021-034	Water	REG	SW							0.039		0.12		3.1	
QC	OL-3601-05			5/11/2021	UFI CHM 2021-034	Water	FB	WQ							0.006	U	0.087		0.03	U
DEEP_S	OL-3604-01	6.6	6.6	5/11/2021	1E00072	Water	REG	SW	0.00078		0.00023	J	0.000026	U						
DEEP_S	OL-3604-02	6.6	6.6	5/11/2021	1E00072	Water	FD	SW	0.00093				0.000026	U						
DEEP_S	OL-3604-03	39.6	39.6	5/11/2021	1E00072	Water	REG	SW	0.00039	J			0.000026	UJ						
DEEP_S	OL-3604-04	59.4	59.4	5/11/2021	1E00072	Water	REG	SW	0.00058				0.000026	U						
QC	OL-3604-05			5/11/2021	1E00072	Water	FB	WQ	0.00008	U			0.000025	U						
QC	OL-3604-06			5/11/2021	1E00072	Water	EB	WQ	0.00018	J			0.000026	U						
DEEP_S	OL-3609-01	6.6	6.6	6/15/2021	UFI CHM 2021-057	Water	REG	SW							0.067		0.092		3.092	
DEEP_S	OL-3609-02	6.6	6.6	6/15/2021	UFI CHM 2021-057	Water	FD	SW							0.067		0.082		3.082	
DEEP_S	OL-3609-03	39.6	39.6	6/15/2021	UFI CHM 2021-057	Water	REG	SW							0.04		0.167		2.893	
DEEP_S	OL-3609-04	59.4	59.4	6/15/2021	UFI CHM 2021-057	Water	REG	SW							0.06		0.203		2.635	
QC	OL-3609-05			6/15/2021	UFI CHM 2021-057	Water	FB	WQ							0.006	U	0.052		0.016	J
DEEP_S	OL-3612-01	6.6	6.6	6/15/2021	1F00106	Water	REG	SW	0.00205	J	0.00064	J	0.000026	U						
DEEP_S	OL-3612-02	6.6	6.6	6/15/2021	1F00106	Water	FD	SW	0.00083	J	0.00036	J	0.000026	U						
DEEP_S	OL-3612-03	39.6	39.6	6/15/2021	1F00106	Water	REG	SW	0.0005	U			0.000025	U						
DEEP_S	OL-3612-04	59.4	59.4	6/15/2021	1F00106	Water	REG	SW	0.00048	J			0.000026	U						
QC	OL-3612-05			6/15/2021	1F00106	Water	FB	WQ	0.00008	U			0.000026	U						
DEEP_S	OL-3614-01	6.6	6.6	6/29/2021	UFI CHM 2021-070	Water	REG	SW							0.0579		0.0319	J	2.953	
DEEP_S	OL-3614-02	6.6	6.6	6/29/2021	UFI CHM 2021-070	Water	FD	SW							0.0575		0.0239	J	3.028	
DEEP_S	OL-3614-03	39.6	39.6	6/29/2021	UFI CHM 2021-070	Water	REG	SW							0.0739		0.045	U	2.852	
DEEP_S	OL-3614-04	59.4	59.4	6/29/2021	UFI CHM 2021-070	Water	REG	SW							0.0225		0.045	U	2.353	
QC	OL-3614-05			6/29/2021	UFI CHM 2021-070	Water	FB	WQ							0.006	U	0.045	U	0.0175	J
DEEP_S	OL-3616-01	6.6	6.6	6/29/2021	1F00189	Water	REG	SW	0.00387	J	0.00215		0.000029	J						
DEEP_S	OL-3616-02	6.6	6.6	6/29/2021	1F00189	Water	FD	SW	0.00125	J			0.00013	J						
DEEP_S	OL-3616-03	39.6	39.6	6/29/2021	1F00189	Water	REG	SW	0.00308				0.000026	U						
DEEP_S	OL-3616-04	59.4	59.4	6/29/2021	1F00189	Water	REG	SW	0.00234				0.000026	U						
QC	OL-3616-05			6/29/2021	1F00189	Water	FB	WQ	0.00008	U			0.000026	U						
DEEP_S	OL-3617-01	6.6	6.6	7/7/2021	UFI CHM 2021-070	Water	REG	SW							0.0524		0.0315	J	2.883	
DEEP_S	OL-3617-02	6.6	6.6	7/7/2021	UFI CHM 2021-070	Water	FD	SW							0.0521		0.0296	J	2.903	
DEEP_S	OL-3617-03	39.6	39.6	7/7/2021	UFI CHM 2021-070	Water	REG	SW							0.0189		0.045	U	2.805	
DEEP_S	OL-3617-04	46.2	46.2	7/7/2021	UFI CHM 2021-070	Water	REG	SW												
DEEP_S	OL-3617-05	52.8	52.8	7/7/2021	UFI CHM 2021-070	Water	REG	SW							0.0118		0.045	U	2.723	
DEEP_S	OL-3617-06	59.4	59.4	7/7/2021	UFI CHM 2021-070	Water	REG	SW							0.0307		0.0741		2.007	
DEEP_S	OL-3617-07	59.4	59.4	7/7/2021	UFI CHM 2021-070	Water	FD	SW												
QC	OL-3617-08			7/7/2021	UFI CHM 2021-070	Water	FB	WQ							0.006	U	0.045	U	0.0128	J
DEEP_S	OL-3620-01	6.6	6.6	7/7/2021	1G00033	Water	REG	SW	0.00105	J+			0.000046	J						
DEEP_S	OL-3620-02	6.6	6.6	7/7/2021	1G00033	Water	FD	SW	0.00104	J+			0.0001	J						
DEEP_S	OL-3620-03	39.6	39.6	7/7/2021	1G00033	Water	REG	SW	0.00070	J+			0.000072							
DEEP_S	OL-3620-04	52.8	52.8	7/7/2021	1G00033	Water	REG	SW	0.00245	J+			0.000026	U						
DEEP_S	OL-3620-05	59.4	59.4	7/7/2021	1G00033	Water	REG	SW	0.00110	J+			0.000026	U						
QC	OL-3620-06			7/7/2021	1G00033	Water	FB	WQ	0.00008	U			0.000026	U						
DEEP_S	OL-3621-01	6.6	6.6	7/13/2021	UFI CHM 2021-070	Water	REG	SW							0.0564		0.0876	J	2.913	
DEEP_S	OL-3621-02	6.6	6.6	7/13/2021	UFI CHM 2021-070	Water	FD	SW							0.057		0.1611	J	2.9	
DEEP_S	OL-3621-03	39.6	39.6	7/13/2021	UFI CHM 2021-070	Water	REG	SW							0.0329		0.1172		2.864	

								Parameter Name	Mercury		Mercury		Methyl Mercury		Nitrogen, Nitrite		Nitrogen, Ammonia (As N)		Nitrogen, Nitrate-Nitrite	
								Method	E1631		E1631		E1630		E353.2		E350.1		E350.1	
								Fraction	T		D		T		T		T		T	
								Units	ug/l		ug/l		ug/l		mg/L		mg/L		mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix												
DEEP_S	OL-3621-04	52.8	52.8	7/13/2021	UFI CHM 2021-070	Water	REG	SW							0.0214		0.045	U	2.626	
DEEP_S	OL-3621-05	59.4	59.4	7/13/2021	UFI CHM 2021-070	Water	REG	SW							0.0303		0.1254		2.232	
QC	OL-3621-06			7/13/2021	UFI CHM 2021-070	Water	FB	WQ							0.006	U	0.0701		0.0273	J
DEEP_S	OL-3623-01	6.6	6.6	7/13/2021	1G00061	Water	REG	SW	0.00174			R	0.000073							
DEEP_S	OL-3623-02	6.6	6.6	7/13/2021	1G00061	Water	FD	SW	0.00121			R	0.000065							
DEEP_S	OL-3623-03	39.6	39.6	7/13/2021	1G00061	Water	REG	SW	0.00159				0.000026	U						
DEEP_S	OL-3623-04	52.8	52.8	7/13/2021	1G00061	Water	REG	SW	0.0009				0.000026	U						
DEEP_S	OL-3623-05	59.4	59.4	7/13/2021	1G00061	Water	REG	SW	0.00124				0.000026	U						
QC	OL-3623-06			7/13/2021	1G00061	Water	FB	WQ	0.00031	J			0.000026	U						
DEEP_S	OL-3624-01	6.6	6.6	7/20/2021	UFI CHM 2021-081	Water	REG	SW							0.0490		0.0214	J	2.521	
DEEP_S	OL-3624-02	6.6	6.6	7/20/2021	UFI CHM 2021-081	Water	FD	SW							0.0488		0.0233	J	2.501	
DEEP_S	OL-3624-03	39.6	39.6	7/20/2021	UFI CHM 2021-081	Water	REG	SW							0.0262		0.037	J	2.718	
DEEP_S	OL-3624-04	46.2	46.2	7/20/2021	UFI CHM 2021-081	Water	REG	SW												
DEEP_S	OL-3624-05	52.8	52.8	7/20/2021	UFI CHM 2021-081	Water	REG	SW							0.0120		0.0383	J	2.445	
DEEP_S	OL-3624-06	59.4	59.4	7/20/2021	UFI CHM 2021-081	Water	REG	SW							0.0329		0.1718		1.975	
DEEP_S	OL-3624-07	59.4	59.4	7/20/2021	UFI CHM 2021-081	Water	FD	SW												
QC	OL-3624-08			7/20/2021	UFI CHM 2021-081	Water	FB	WQ							0.006	U	0.0196	J	0.03	U
DEEP_S	OL-3627-01	6.6	6.6	7/20/2021	1G00117	Water	REG	SW	0.00076				0.000044	J						
DEEP_S	OL-3627-02	6.6	6.6	7/20/2021	1G00117	Water	FD	SW	0.00100				0.00011	J						
DEEP_S	OL-3627-03	39.6	39.6	7/20/2021	1G00117	Water	REG	SW	0.00047	J			0.000026	U						
DEEP_S	OL-3627-04	52.8	52.8	7/20/2021	1G00117	Water	REG	SW	0.00058				0.000026	U						
DEEP_S	OL-3627-05	59.4	59.4	7/20/2021	1G00117	Water	REG	SW	0.00061				0.000025	U						
QC	OL-3627-06			7/20/2021	1G00117	Water	FB	WQ	0.00008	U			0.000025	U						
DEEP_S	OL-3628-01	6.6	6.6	7/27/2021	UFI CHM 2021-081	Water	REG	SW							0.0408		0.0133	J	2.459	
DEEP_S	OL-3628-02	6.6	6.6	7/27/2021	UFI CHM 2021-081	Water	FD	SW							0.0426		0.0406	J	2.415	J
DEEP_S	OL-3628-03	39.6	39.6	7/27/2021	UFI CHM 2021-081	Water	REG	SW							0.0262		0.0183	J	2.841	
DEEP_S	OL-3628-04	52.8	52.8	7/27/2021	UFI CHM 2021-081	Water	REG	SW							0.0087		0.0665		2.43	
DEEP_S	OL-3628-05	59.4	59.4	7/27/2021	UFI CHM 2021-081	Water	REG	SW							0.0114		0.2341		1.905	
QC	OL-3628-06			7/27/2021	UFI CHM 2021-081	Water	FB	WQ							0.0021	J	0.045	U	0.03	U
DEEP_S	OL-3630-01	6.6	6.6	7/27/2021	1G00178	Water	REG	SW	0.00059		0.00009	J	0.000080	J						
DEEP_S	OL-3630-02	6.6	6.6	7/27/2021	1G00178	Water	FD	SW	0.00054				0.000054	J						
DEEP_S	OL-3630-03	39.6	39.6	7/27/2021	1G00178	Water	REG	SW	0.00015	J			0.000025	U						
DEEP_S	OL-3630-04	52.8	52.8	7/27/2021	1G00178	Water	REG	SW	0.00013	J			0.000026	U						
DEEP_S	OL-3630-05	59.4	59.4	7/27/2021	1G00178	Water	REG	SW	0.00020	J			0.000026	U						
QC	OL-3630-06			7/27/2021	1G00178	Water	FB	WQ	0.00008	U			0.000026	U						
DEEP_S	OL-3631-01	6.6	6.6	8/3/2021	UFI CHM 2021-099	Water	REG	SW							0.0453		0.0691	UJ	2.869	
DEEP_S	OL-3631-02	6.6	6.6	8/3/2021	UFI CHM 2021-099	Water	FD	SW							0.0464		0.291	J	2.721	
DEEP_S	OL-3631-03	39.6	39.6	8/3/2021	UFI CHM 2021-099	Water	REG	SW							0.0315		0.08	U	2.659	
DEEP_S	OL-3631-04	46.2	46.2	8/3/2021	UFI CHM 2021-099	Water	REG	SW												
DEEP_S	OL-3631-05	52.8	52.8	8/3/2021	UFI CHM 2021-099	Water	REG	SW							0.0103		0.2497		2.639	
DEEP_S	OL-3631-06	59.4	59.4	8/3/2021	UFI CHM 2021-099	Water	REG	SW							0.0045	J	0.4622		2.197	
DEEP_S	OL-3631-07	59.4	59.4	8/3/2021	UFI CHM 2021-099	Water	FD	SW												
QC	OL-3631-08			8/3/2021	UFI CHM 2021-099	Water	FB	WQ							0.006	U	0.0862		0.03	U
DEEP_S	OL-3634-01	6.6	6.6	8/3/2021	1H00020	Water	REG	SW	0.00088	J			0.00053	J						
DEEP_S	OL-3634-02	6.6	6.6	8/3/2021	1H00020	Water	FD	SW	0.00057	J			0.00035	J						
DEEP_S	OL-3634-03	39.6	39.6	8/3/2021	1H00020	Water	REG	SW	0.0004	J			0.000026	U						
DEEP_S	OL-3634-04	52.8	52.8	8/3/2021	1H00020	Water	REG	SW	0.00043	J			0.000043	J						
DEEP_S	OL-3634-05	59.4	59.4	8/3/2021	1H00020	Water	REG	SW	0.00060				0.000026	U						
QC	OL-3634-06			8/3/2021	1H00020	Water	FB	WQ	0.00008	U			0.000026	U						
DEEP_S	OL-3635-01	6.6	6.6	8/9/2021	UFI CHM 2021-099	Water	REG	SW							0.0462		0.0364	J	2.469	
DEEP_S	OL-3635-02	6.6	6.6	8/9/2021	UFI CHM 2021-099	Water	FD	SW							0.0466		0.0496		2.399	
DEEP_S	OL-3635-03	39.6	39.6	8/9/2021	UFI CHM 2021-099	Water	REG	SW							0.0065		0.1216		2.328	
DEEP_S	OL-3635-04	52.8	52.8	8/9/2021	UFI CHM 2021-099	Water	REG	SW							0.0031	J	0.2088		1.908	

								Parameter Name	Mercury		Mercury		Methyl Mercury		Nitrogen, Nitrite		Nitrogen, Ammonia (As N)		Nitrogen, Nitrate-Nitrite	
								Method	E1631		E1631		E1630		E353.2		E350.1		E350.1	
								Fraction	T		D		T		T		T		T	
								Units	ug/l		ug/l		ug/l		mg/L		mg/L		mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix												
DEEP_S	OL-3635-05	59.4	59.4	8/9/2021	UFI CHM 2021-099	Water	REG	SW							0.0024	J	0.3362		2.474	
QC	OL-3635-06			8/9/2021	UFI CHM 2021-099	Water	FB	WQ							0.006	U	0.0210	J	0.012	J
DEEP_S	OL-3637-01	6.6	6.6	8/9/2021	1H00073	Water	REG	SW	0.0005	UJ	0.00008	UJ	0.00135	J						
DEEP_S	OL-3637-02	6.6	6.6	8/9/2021	1H00073	Water	FD	SW	0.00008	UJ			0.000092	J						
DEEP_S	OL-3637-03	39.6	39.6	8/9/2021	1H00073	Water	REG	SW	0.00008	UJ			0.00005	UJ						
DEEP_S	OL-3637-04	52.8	52.8	8/9/2021	1H00073	Water	REG	SW	0.0005	UJ	0.00015	J	0.000026	UJ						
DEEP_S	OL-3637-05	59.4	59.4	8/9/2021	1H00073	Water	REG	SW	0.00008	UJ			0.00011	J						
QC	OL-3637-06			8/9/2021	1H00073	Water	FB	WQ	0.00008	UJ			0.000026	UJ						
DEEP_S	OL-3638-01	6.6	6.6	8/17/2021	UFI CHM 2021-107	Water	REG	SW							0.0470		0.0326	J	2.6	
DEEP_S	OL-3638-02	6.6	6.6	8/17/2021	UFI CHM 2021-107	Water	FD	SW							0.0487		0.0281	J	2.606	
DEEP_S	OL-3638-03	39.6	39.6	8/17/2021	UFI CHM 2021-107	Water	REG	SW							0.0079		0.099		2.516	
DEEP_S	OL-3638-04	46.2	46.2	8/17/2021	UFI CHM 2021-107	Water	REG	SW												
DEEP_S	OL-3638-05	52.8	52.8	8/17/2021	UFI CHM 2021-107	Water	REG	SW							0.0188		0.2809		2.427	
DEEP_S	OL-3638-06	59.4	59.4	8/17/2021	UFI CHM 2021-107	Water	REG	SW							0.0060	J	0.3989		2.243	
DEEP_S	OL-3638-07	59.4	59.4	8/17/2021	UFI CHM 2021-107	Water	FD	SW												
QC	OL-3638-08			8/17/2021	UFI CHM 2021-107	Water	FB	WQ							0.006	U	0.045	U	0.0137	J
DEEP_S	OL-3641-01	6.6	6.6	8/17/2021	1H00106	Water	REG	SW	0.00044	J			0.000083							
DEEP_S	OL-3641-02	6.6	6.6	8/17/2021	1H00106	Water	FD	SW	0.00047	J			0.000099							
DEEP_S	OL-3641-03	39.6	39.6	8/17/2021	1H00106	Water	REG	SW	0.00025	J			0.000038	J						
DEEP_S	OL-3641-04	52.8	52.8	8/17/2021	1H00106	Water	REG	SW	0.00048	J			0.000052							
DEEP_S	OL-3641-05	59.4	59.4	8/17/2021	1H00106	Water	REG	SW	0.00057				0.000060							
QC	OL-3641-06			8/17/2021	1H00106	Water	FB	WQ	0.00008	U			0.000026	U						
QC	OL-3641-07			8/17/2021	1H00106	Water	EB	WQ	0.00012	J			0.000026	U						
DEEP_S	OL-3642-01	6.6	6.6	8/24/2021	UFI CHM 2021-107	Water	REG	SW							0.0376		0.0298	J	1.612	
DEEP_S	OL-3642-02	6.6	6.6	8/24/2021	UFI CHM 2021-107	Water	FD	SW							0.0382		0.0616		1.5	
DEEP_S	OL-3642-03	39.6	39.6	8/24/2021	UFI CHM 2021-107	Water	REG	SW							0.0101		0.1248		2.122	
DEEP_S	OL-3642-04	52.8	52.8	8/24/2021	UFI CHM 2021-107	Water	REG	SW							0.0202		0.2686		1.801	
DEEP_S	OL-3642-05	59.4	59.4	8/24/2021	UFI CHM 2021-107	Water	REG	SW							0.0277		0.5516		1.977	
QC	OL-3642-06			8/24/2021	UFI CHM 2021-107	Water	FB	WQ							0.006	U	0.0196	J	0.015	J
DEEP_S	OL-3644-01	6.6	6.6	8/24/2021	1H00139	Water	REG	SW	0.00104		0.00048	J	0.00014							
DEEP_S	OL-3644-02	6.6	6.6	8/24/2021	1H00139	Water	FD	SW	0.00075		0.00102	J	0.000093							
DEEP_S	OL-3644-03	39.6	39.6	8/24/2021	1H00139	Water	REG	SW	0.00073				0.000026	U						
DEEP_S	OL-3644-04	52.8	52.8	8/24/2021	1H00139	Water	REG	SW	0.00027	J	0.00008	U	0.000026	U						
DEEP_S	OL-3644-05	59.4	59.4	8/24/2021	1H00139	Water	REG	SW	0.00049	J			0.000043	J						
QC	OL-3644-06			8/24/2021	1H00139	Water	FB	WQ	0.00008	U			0.000026	U						
DEEP_S	OL-3645-01	6.6	6.6	8/31/2021	UFI CHM 2021-107	Water	REG	SW							0.0509		0.0494	U	2.024	
DEEP_S	OL-3645-02	6.6	6.6	8/31/2021	UFI CHM 2021-107	Water	FD	SW							0.0518		0.0535		1.941	
DEEP_S	OL-3645-03	39.6	39.6	8/31/2021	UFI CHM 2021-107	Water	REG	SW							0.0061		0.132		2.21	
DEEP_S	OL-3645-04	46.2	46.2	8/31/2021	UFI CHM 2021-107	Water	REG	SW												
DEEP_S	OL-3645-05	52.8	52.8	8/31/2021	UFI CHM 2021-107	Water	REG	SW							0.0184		0.2755		1.895	
DEEP_S	OL-3645-06	59.4	59.4	8/31/2021	UFI CHM 2021-107	Water	REG	SW							0.0320		0.3274		1.812	
DEEP_S	OL-3645-07	59.4	59.4	8/31/2021	UFI CHM 2021-107	Water	FD	SW												
QC	OL-3645-08			8/31/2021	UFI CHM 2021-107	Water	FB	WQ							0.006	U	0.0508		0.03	U
DEEP_S	OL-3648-01	6.6	6.6	8/31/2021	1I00004	Water	REG	SW	0.00045	J			0.000098	J						
DEEP_S	OL-3648-02	6.6	6.6	8/31/2021	1I00004	Water	FD	SW	0.00054				0.000043	J						
DEEP_S	OL-3648-03	39.6	39.6	8/31/2021	1I00004	Water	REG	SW	0.00032	J			0.000026	U						
DEEP_S	OL-3648-04	52.8	52.8	8/31/2021	1I00004	Water	REG	SW	0.00031	J			0.00005	U						
DEEP_S	OL-3648-05	59.4	59.4	8/31/2021	1I00004	Water	REG	SW	0.00031	J			0.000026	U						
QC	OL-3648-06			8/31/2021	1I00004	Water	FB	WQ	0.00017	J			0.000026	U						
DEEP_S	OL-3650-01	6.6	6.6	9/8/2021	UFI CHM 2021-130	Water	REG	SW							0.0533		0.0880		2.116	
DEEP_S	OL-3650-02	6.6	6.6	9/8/2021	UFI CHM 2021-130	Water	FD	SW							0.0542		0.1087		2.077	
DEEP_S	OL-3650-03	39.6	39.6	9/8/2021	UFI CHM 2021-130	Water	REG	SW							0.0101		0.1203		2	
DEEP_S	OL-3650-04	52.8	52.8	9/8/2021	UFI CHM 2021-130	Water	REG	SW							0.0250		0.4337		1.869	

								Parameter Name	Mercury		Mercury		Methyl Mercury		Nitrogen, Nitrite		Nitrogen, Ammonia (As N)		Nitrogen, Nitrate-Nitrite	
								Method	E1631		E1631		E1630		E353.2		E350.1		E350.1	
								Fraction	T		D		T		T		T		T	
								Units	ug/l		ug/l		ug/l		mg/L		mg/L		mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix												
DEEP_S	OL-3650-05	59.4	59.4	9/8/2021	UFI CHM 2021-130	Water	REG	SW							0.0317		0.5741		2.655	
QC	OL-3650-06			9/8/2021	UFI CHM 2021-130	Water	FB	WQ							0.006	U	0.045	U	0.03	U
DEEP_S	OL-3653-01	6.6	6.6	9/8/2021	1I00037	Water	REG	SW	0.00097			R	0.000060							
DEEP_S	OL-3653-02	6.6	6.6	9/8/2021	1I00037	Water	FD	SW	0.00098	J		R	0.000076							
DEEP_S	OL-3653-03	39.6	39.6	9/8/2021	1I00037	Water	REG	SW	0.00074				0.000054							
DEEP_S	OL-3653-04	52.8	52.8	9/8/2021	1I00037	Water	REG	SW	0.00115	J		R	0.000043	J						
DEEP_S	OL-3653-05	59.4	59.4	9/8/2021	1I00037	Water	REG	SW	0.00100				0.000060							
QC	OL-3653-06			9/8/2021	1I00037	Water	FB	WQ	0.00067				0.000026	U						
DEEP_S	OL-3654-01	6.6	6.6	9/14/2021	UFI CHM 2021-130	Water	REG	SW							0.0565		0.0323	J	1.969	
DEEP_S	OL-3654-02	6.6	6.6	9/14/2021	UFI CHM 2021-130	Water	FD	SW							0.0568		0.0761	J	1.947	
DEEP_S	OL-3654-03	39.6	39.6	9/14/2021	UFI CHM 2021-130	Water	REG	SW							0.0027	J	0.193		1.775	
DEEP_S	OL-3654-04	46.2	46.2	9/14/2021	UFI CHM 2021-130	Water	REG	SW												
DEEP_S	OL-3654-05	52.8	52.8	9/14/2021	UFI CHM 2021-130	Water	REG	SW							0.0177		0.4556		1.555	
DEEP_S	OL-3654-06	59.4	59.4	9/14/2021	UFI CHM 2021-130	Water	REG	SW							0.0379		0.9280		2.27	
DEEP_S	OL-3654-07	59.4	59.4	9/14/2021	UFI CHM 2021-130	Water	FD	SW												
QC	OL-3654-08			9/14/2021	UFI CHM 2021-130	Water	FB	WQ							0.006	U	0.045	U	0.03	U
DEEP_S	OL-3657-01	6.6	6.6	9/14/2021	1I00067	Water	REG	SW	0.00090				0.0001							
DEEP_S	OL-3657-02	6.6	6.6	9/14/2021	1I00067	Water	FD	SW	0.00080				0.0008							
DEEP_S	OL-3657-03	39.6	39.6	9/14/2021	1I00067	Water	REG	SW	0.00097				0.000058							
DEEP_S	OL-3657-04	52.8	52.8	9/14/2021	1I00067	Water	REG	SW	0.00139				0.000041	J						
DEEP_S	OL-3657-05	59.4	59.4	9/14/2021	1I00067	Water	REG	SW	0.00136				0.000093							
QC	OL-3657-06			9/14/2021	1I00067	Water	FB	WQ	0.00068				0.000027	J						
DEEP_S	OL-3658-01	6.6	6.6	9/21/2021	UFI CHM 2021-130	Water	REG	SW							0.0436		0.0877	U	2.087	
DEEP_S	OL-3658-02	6.6	6.6	9/21/2021	UFI CHM 2021-130	Water	FD	SW							0.0443		0.0755	U	1.887	
DEEP_S	OL-3658-03	39.6	39.6	9/21/2021	UFI CHM 2021-130	Water	REG	SW							0.0027	J	0.2413		1.766	
DEEP_S	OL-3658-04	52.8	52.8	9/21/2021	UFI CHM 2021-130	Water	REG	SW							0.0165		0.6366		1.642	
DEEP_S	OL-3658-05	59.4	59.4	9/21/2021	UFI CHM 2021-130	Water	REG	SW							0.0237		1.0420		2.251	
QC	OL-3658-06			9/21/2021	UFI CHM 2021-130	Water	FB	WQ							0.0024	J	0.0914		0.016	J
DEEP_S	OL-3661-01	6.6	6.6	9/21/2021	1I00122	Water	REG	SW	0.00061		0.00027	J	0.000026	UJ						
DEEP_S	OL-3661-02	6.6	6.6	9/21/2021	1I00122	Water	FD	SW	0.00049	J	0.00047	J	0.000026	U						
DEEP_S	OL-3661-03	39.6	39.6	9/21/2021	1I00122	Water	REG	SW	0.00042	J			0.000026	U						
DEEP_S	OL-3661-04	52.8	52.8	9/21/2021	1I00122	Water	REG	SW	0.00085		0.00057		0.000026	U						
DEEP_S	OL-3661-05	59.4	59.4	9/21/2021	1I00122	Water	REG	SW	0.00104				0.000026	U						
QC	OL-3661-06			9/21/2021	1I00122	Water	FB	WQ	0.00027	J			0.000026	U						
DEEP_S	OL-3662-01	6.6	6.6	9/28/2021	UFI CHM 2021-141	Water	REG	SW							0.0431		0.0551	U	2.389	
DEEP_S	OL-3662-02	6.6	6.6	9/28/2021	UFI CHM 2021-141	Water	FD	SW							0.0449		0.045	U	2.432	
DEEP_S	OL-3662-03	39.6	39.6	9/28/2021	UFI CHM 2021-141	Water	REG	SW							0.0044	J	0.202		1.924	
DEEP_S	OL-3662-04	46.2	46.2	9/28/2021	UFI CHM 2021-141	Water	REG	SW												
DEEP_S	OL-3662-05	52.8	52.8	9/28/2021	UFI CHM 2021-141	Water	REG	SW							0.0119		0.1397		1.859	
DEEP_S	OL-3662-06	59.4	59.4	9/28/2021	UFI CHM 2021-141	Water	REG	SW							0.0189		0.7178		2.521	
DEEP_S	OL-3662-07	59.4	59.4	9/28/2021	UFI CHM 2021-141	Water	FD	SW												
QC	OL-3662-08			9/28/2021	UFI CHM 2021-141	Water	FB	WQ							0.006	U	0.0830		0.03	U
DEEP_S	OL-3665-01	6.6	6.6	9/28/2021	1I00165	Water	REG	SW	0.00068				0.000026	U						
DEEP_S	OL-3665-02	6.6	6.6	9/28/2021	1I00165	Water	FD	SW	0.00066				0.000025	U						
DEEP_S	OL-3665-03	39.6	39.6	9/28/2021	1I00165	Water	REG	SW	0.00074				0.000026	U						
DEEP_S	OL-3665-04	52.8	52.8	9/28/2021	1I00165	Water	REG	SW	0.00088				0.000026	U						
DEEP_S	OL-3665-05	59.4	59.4	9/28/2021	1I00165	Water	REG	SW	0.00097				0.000089							
QC	OL-3665-06			9/28/2021	1I00165	Water	FB	WQ	0.00053				0.000026	U						
DEEP_S	OL-3666-01	6.6	6.6	10/5/2021	UFI CHM 2021-141	Water	REG	SW							0.0578		0.045	U	2.351	
DEEP_S	OL-3666-02	6.6	6.6	10/5/2021	UFI CHM 2021-141	Water	FD	SW							0.0542		0.045	U	2.381	
DEEP_S	OL-3666-03	39.6	39.6	10/5/2021	UFI CHM 2021-141	Water	REG	SW							0.0067		0.2519		1.769	
DEEP_S	OL-3666-04	52.8	52.8	10/5/2021	UFI CHM 2021-141	Water	REG	SW							0.0058	J	0.6413		2.203	
DEEP_S	OL-3666-05	59.4	59.4	10/5/2021	UFI CHM 2021-141	Water	REG	SW							0.0143		0.9009		3.584	

								Parameter Name	Mercury		Mercury		Methyl Mercury		Nitrogen, Nitrite		Nitrogen, Ammonia (As N)		Nitrogen, Nitrate-Nitrite	
								Method	E1631		E1631		E1630		E353.2		E350.1		E350.1	
								Fraction	T		D		T		T		T		T	
								Units	ug/l		ug/l		ug/l		mg/L		mg/L		mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix												
QC	OL-3666-06			10/5/2021	UFI CHM 2021-141	Water	FB	WQ							0.006	U	0.045	U	0.03	U
DEEP_S	OL-3669-01	6.6	6.6	10/5/2021	1J00028	Water	REG	SW	0.0005	U	0.0005	UJ								
DEEP_S	OL-3669-02	6.6	6.6	10/5/2021	1J00028	Water	FD	SW	0.00059	U	0.00062	J								
DEEP_S	OL-3669-03	39.6	39.6	10/5/2021	1J00028	Water	REG	SW	0.0005	U										
DEEP_S	OL-3669-04	52.8	52.8	10/5/2021	1J00028	Water	REG	SW	0.00065	U	0.00084									
DEEP_S	OL-3669-05	59.4	59.4	10/5/2021	1J00028	Water	REG	SW	0.00083	U										
QC	OL-3669-06			10/5/2021	1J00028	Water	FB	WQ	0.00119											
DEEP_S	OL-3670-01	6.6	6.6	10/12/2021	UFI CHM 2021-141	Water	REG	SW							0.0507		0.0495		2.137	
DEEP_S	OL-3670-02	6.6	6.6	10/12/2021	UFI CHM 2021-141	Water	FD	SW							0.0505		0.045	U	2.183	
DEEP_S	OL-3670-03	39.6	39.6	10/12/2021	UFI CHM 2021-141	Water	REG	SW							0.006	U	0.254		1.685	
DEEP_S	OL-3670-04	46.2	46.2	10/12/2021	UFI CHM 2021-141	Water	REG	SW												
DEEP_S	OL-3670-05	52.8	52.8	10/12/2021	UFI CHM 2021-141	Water	REG	SW							0.0121		0.1403		2.109	
DEEP_S	OL-3670-06	59.4	59.4	10/12/2021	UFI CHM 2021-141	Water	REG	SW							0.0160		1.2560		6.443	
DEEP_S	OL-3670-07	59.4	59.4	10/12/2021	UFI CHM 2021-141	Water	FD	SW												
QC	OL-3670-08			10/12/2021	UFI CHM 2021-141	Water	FB	WQ							0.006	J	0.045	U	0.0300	J
DEEP_S	OL-3673-01	6.6	6.6	10/12/2021	1J00073	Water	REG	SW	0.00041	J			0.000031	J						
DEEP_S	OL-3673-02	6.6	6.6	10/12/2021	1J00073	Water	FD	SW	0.00039	J			0.000026	U						
DEEP_S	OL-3673-03	39.6	39.6	10/12/2021	1J00073	Water	REG	SW	0.00059				0.000045	J						
DEEP_S	OL-3673-04	52.8	52.8	10/12/2021	1J00073	Water	REG	SW	0.00057				0.000072							
DEEP_S	OL-3673-05	59.4	59.4	10/12/2021	1J00073	Water	REG	SW	0.00119				0.000060							
QC	OL-3673-06			10/12/2021	1J00073	Water	FB	WQ	0.00037	J			0.000026	U						
DEEP_S	OL-3674-01	6.6	6.6	10/19/2021	UFI CHM 2021-159	Water	REG	SW							0.0439		0.0914		2.031	
DEEP_S	OL-3674-02	6.6	6.6	10/19/2021	UFI CHM 2021-159	Water	FD	SW							0.0434		0.0820		1.962	
DEEP_S	OL-3674-03	39.6	39.6	10/19/2021	UFI CHM 2021-159	Water	REG	SW							0.0220		0.8911		1.684	
DEEP_S	OL-3674-04	52.8	52.8	10/19/2021	UFI CHM 2021-159	Water	REG	SW							0.0217		0.8528		1.576	
DEEP_S	OL-3674-05	59.4	59.4	10/19/2021	UFI CHM 2021-159	Water	REG	SW							0.0181		0.9191		1.581	
QC	OL-3674-06			10/19/2021	UFI CHM 2021-159	Water	FB	WQ							0.006	U	0.0157	J	0.03	U
DEEP_S	OL-3677-01	6.6	6.6	10/19/2021	1J00118	Water	REG	SW	0.00169		0.00042	J	0.000079	J						
DEEP_S	OL-3677-02	6.6	6.6	10/19/2021	1J00118	Water	FD	SW	0.00165		0.00050		0.000065							
DEEP_S	OL-3677-03	39.6	39.6	10/19/2021	1J00118	Water	REG	SW	0.00103				0.000064							
DEEP_S	OL-3677-04	52.8	52.8	10/19/2021	1J00118	Water	REG	SW	0.00117		0.00046	J	0.000075							
DEEP_S	OL-3677-05	59.4	59.4	10/19/2021	1J00118	Water	REG	SW	0.00080				0.000080							
QC	OL-3677-06			10/19/2021	1J00118	Water	FB	WQ	0.00008	U			0.000026	U						
DEEP_S	OL-3678-01	6.6	6.6	10/27/2021	UFI CHM 2021-159	Water	REG	SW							0.0410		0.2556		2.212	
DEEP_S	OL-3678-02	6.6	6.6	10/27/2021	UFI CHM 2021-159	Water	FD	SW							0.0411		0.2228		2.266	
DEEP_S	OL-3678-03	39.6	39.6	10/27/2021	UFI CHM 2021-159	Water	REG	SW							0.0408		0.1874		2.237	
DEEP_S	OL-3678-04	46.2	46.2	10/27/2021	UFI CHM 2021-159	Water	REG	SW												
DEEP_S	OL-3678-05	52.8	52.8	10/27/2021	UFI CHM 2021-159	Water	REG	SW							0.0312		0.8573		1.724	
DEEP_S	OL-3678-06	59.4	59.4	10/27/2021	UFI CHM 2021-159	Water	REG	SW							0.0315		0.9104		1.909	
DEEP_S	OL-3678-07	59.4	59.4	10/27/2021	UFI CHM 2021-159	Water	FD	SW												
QC	OL-3678-08			10/27/2021	UFI CHM 2021-159	Water	FB	WQ							0.006	U	0.0917		0.03	U
DEEP_S	OL-3681-01	6.6	6.6	10/27/2021	1J00176	Water	REG	SW	0.00072		0.00035	J	0.00005	U						
DEEP_S	OL-3681-02	6.6	6.6	10/27/2021	1J00176	Water	FD	SW	0.00060		0.00026	J	0.00005	U						
DEEP_S	OL-3681-03	39.6	39.6	10/27/2021	1J00176	Water	REG	SW	0.00054				0.00005	U						
DEEP_S	OL-3681-04	52.8	52.8	10/27/2021	1J00176	Water	REG	SW	0.00080				0.00005	UJ						
DEEP_S	OL-3681-05	59.4	59.4	10/27/2021	1J00176	Water	REG	SW	0.00095				0.00005	U						
QC	OL-3681-06			10/27/2021	1J00176	Water	FB	WQ	0.00008	U			0.000026	U						
DEEP_S	OL-3682-01	6.6	6.6	11/2/2021	UFI CHM 2021-159	Water	REG	SW							0.0402		0.0911	UJ	1.909	
DEEP_S	OL-3682-02	6.6	6.6	11/2/2021	UFI CHM 2021-159	Water	FD	SW							0.0418		0.1259	UJ	1.9	
DEEP_S	OL-3682-03	39.6	39.6	11/2/2021	UFI CHM 2021-159	Water	REG	SW							0.0412		0.1708		1.898	
DEEP_S	OL-3682-04	52.8	52.8	11/2/2021	UFI CHM 2021-159	Water	REG	SW							0.0311		1.0018		1.539	
DEEP_S	OL-3682-05	59.4	59.4	11/2/2021	UFI CHM 2021-159	Water	REG	SW							0.0249		1.100		1.663	
QC	OL-3682-06			11/2/2021	UFI CHM 2021-159	Water	FB	WQ							0.006	U	0.1599		0.03	U

								Parameter Name	Mercury		Mercury		Methyl Mercury		Nitrogen, Nitrite		Nitrogen, Ammonia (As N)		Nitrogen, Nitrate-Nitrite	
								Method	E1631		E1631		E1630		E353.2		E350.1		E350.1	
								Fraction	T		D		T		T		T		T	
								Units	ug/l		ug/l		ug/l		mg/L		mg/L		mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix												
DEEP_S	OL-3685-01	6.6	6.6	11/2/2021	1K00016	Water	REG	SW	0.00153		0.00045	J	0.000064	J						
DEEP_S	OL-3685-02	6.6	6.6	11/2/2021	1K00016	Water	FD	SW	0.00151		0.00048	J	0.000057	J						
DEEP_S	OL-3685-03	39.6	39.6	11/2/2021	1K00016	Water	REG	SW	0.00103				0.000075							
DEEP_S	OL-3685-04	52.8	52.8	11/2/2021	1K00016	Water	REG	SW	0.00128				0.000063							
DEEP_S	OL-3685-05	59.4	59.4	11/2/2021	1K00016	Water	REG	SW	0.00142				0.0001							
QC	OL-3685-06			11/2/2021	1K00016	Water	FB	WQ	0.00008	U			0.000026	U						
DEEP_S	OL-3686-01	6.6	6.6	11/10/2021	UFI CHM 2021-170	Water	REG	SW							0.0407		0.1938		1.714	
DEEP_S	OL-3686-02	6.6	6.6	11/10/2021	UFI CHM 2021-170	Water	FD	SW							0.0406		0.2282		1.661	
DEEP_S	OL-3686-03	39.6	39.6	11/10/2021	UFI CHM 2021-170	Water	REG	SW							0.0410		0.1523		1.824	
DEEP_S	OL-3686-04	46.2	46.2	11/10/2021	UFI CHM 2021-170	Water	REG	SW												
DEEP_S	OL-3686-05	52.8	52.8	11/10/2021	UFI CHM 2021-170	Water	REG	SW							0.0401		0.8693		1.353	
DEEP_S	OL-3686-06	59.4	59.4	11/10/2021	UFI CHM 2021-170	Water	REG	SW							0.0325		1.1425		1.264	
DEEP_S	OL-3686-07	59.4	59.4	11/10/2021	UFI CHM 2021-170	Water	FD	SW												
QC	OL-3686-08			11/10/2021	UFI CHM 2021-170	Water	FB	WQ							0.006	U	0.0774		0.03	U
DEEP_S	OL-3689-01	6.6	6.6	11/10/2021	1K00072	Water	REG	SW	0.00062		0.00102	J	0.000075	J						
DEEP_S	OL-3689-02	6.6	6.6	11/10/2021	1K00072	Water	FD	SW	0.00058		0.0005	UJ	0.00005	UJ						
DEEP_S	OL-3689-03	39.6	39.6	11/10/2021	1K00072	Water	REG	SW	0.00050				0.000040	J						
DEEP_S	OL-3689-04	52.8	52.8	11/10/2021	1K00072	Water	REG	SW	0.00085				0.00005	U						
DEEP_S	OL-3689-05	59.4	59.4	11/10/2021	1K00072	Water	REG	SW	0.00136				0.000041	J						
QC	OL-3689-06			11/10/2021	1K00072	Water	FB	WQ	0.0005	U			0.000026	U						
DEEP_S	OL-3690-01	6.6	6.6	11/16/2021	UFI CHM 2021-170	Water	REG	SW							0.0384		0.1748		1.705	
DEEP_S	OL-3690-02	6.6	6.6	11/16/2021	UFI CHM 2021-170	Water	FD	SW							0.0387		0.1392		1.681	
DEEP_S	OL-3690-03	39.6	39.6	11/16/2021	UFI CHM 2021-170	Water	REG	SW							0.0380		0.1514		1.698	
DEEP_S	OL-3690-04	59.4	59.4	11/16/2021	UFI CHM 2021-170	Water	REG	SW							0.0524		0.7255		1.192	
QC	OL-3690-05			11/16/2021	UFI CHM 2021-170	Water	FB	WQ							0.006	U	0.045	U	0.03	U
DEEP_S	OL-3693-01	6.6	6.6	11/16/2021	1K00133	Water	REG	SW	0.00124		0.00036	J	0.0001	J						
DEEP_S	OL-3693-02	6.6	6.6	11/16/2021	1K00133	Water	FD	SW	0.00126		0.00042	J	0.000056	J						
DEEP_S	OL-3693-03	39.6	39.6	11/16/2021	1K00133	Water	REG	SW	0.00096				0.00005	UJ						
DEEP_S	OL-3693-04	59.4	59.4	11/16/2021	1K00133	Water	REG	SW	0.00115				0.000050	J-						
QC	OL-3693-05			11/16/2021	1K00133	Water	FB	WQ	0.00008	U			0.000026	UJ						
QC	OL-3693-06			11/16/2021	1K00133	Water	EB	WQ	0.00008	U			0.000040	J						
DEEP_S	OL-3695-01	6.6	6.6	11/23/2021	UFI CHM 2021-170	Water	REG	SW							0.0480		0.2089		1.804	
DEEP_S	OL-3695-02	6.6	6.6	11/23/2021	UFI CHM 2021-170	Water	FD	SW							0.0477		0.2142		1.808	J
DEEP_S	OL-3695-03	39.6	39.6	11/23/2021	UFI CHM 2021-170	Water	REG	SW							0.0472		0.2175		1.794	
DEEP_S	OL-3695-04	59.4	59.4	11/23/2021	UFI CHM 2021-170	Water	REG	SW							0.0475		0.2233		1.8	
QC	OL-3695-05			11/23/2021	UFI CHM 2021-170	Water	FB	WQ							0.006	U	0.045	U	0.01	J
DEEP_S	OL-3697-01	6.6	6.6	11/23/2021	1K00170	Water	REG	SW	0.00111		0.00029	J	0.00011	J						
DEEP_S	OL-3697-02	6.6	6.6	11/23/2021	1K00170	Water	FD	SW	0.00103		0.00027	J	0.000065	J						
DEEP_S	OL-3697-03	39.6	39.6	11/23/2021	1K00170	Water	REG	SW	0.00130				0.000044	J						
DEEP_S	OL-3697-04	59.4	59.4	11/23/2021	1K00170	Water	REG	SW	0.00109				0.000041	J						
QC	OL-3697-05			11/23/2021	1K00170	Water	FB	WQ	0.00008	U			0.000026	U						

							Parameter Name		Reactive Phosphorous	
							Method		E350.1	
							Fraction		T	
							Units		mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix		
QC	OL-3600-01			4/12/2021	1D00106	Water	EB	WQ		
QC	OL-3600-02			4/12/2021	1D00106	Water	EB	WQ		
QC	OL-3600-03			4/19/2021	1D00106	Water	EB	WQ		
QC	OL-3600-04			4/19/2021	1D00106	Water	EB	WQ		
QC	OL-3600-05			4/12/2021	1D00106	Water	FB	WQ		
DEEP_S	OL-3601-01	6.6	6.6	5/11/2021	UFI CHM 2021-034	Water	REG	SW		
DEEP_S	OL-3601-02	6.6	6.6	5/11/2021	UFI CHM 2021-034	Water	FD	SW		
DEEP_S	OL-3601-03	39.6	39.6	5/11/2021	UFI CHM 2021-034	Water	REG	SW		
DEEP_S	OL-3601-04	59.4	59.4	5/11/2021	UFI CHM 2021-034	Water	REG	SW		
QC	OL-3601-05			5/11/2021	UFI CHM 2021-034	Water	FB	WQ		
DEEP_S	OL-3604-01	6.6	6.6	5/11/2021	1E00072	Water	REG	SW		
DEEP_S	OL-3604-02	6.6	6.6	5/11/2021	1E00072	Water	FD	SW		
DEEP_S	OL-3604-03	39.6	39.6	5/11/2021	1E00072	Water	REG	SW		
DEEP_S	OL-3604-04	59.4	59.4	5/11/2021	1E00072	Water	REG	SW		
QC	OL-3604-05			5/11/2021	1E00072	Water	FB	WQ		
QC	OL-3604-06			5/11/2021	1E00072	Water	EB	WQ		
DEEP_S	OL-3609-01	6.6	6.6	6/15/2021	UFI CHM 2021-057	Water	REG	SW		
DEEP_S	OL-3609-02	6.6	6.6	6/15/2021	UFI CHM 2021-057	Water	FD	SW		
DEEP_S	OL-3609-03	39.6	39.6	6/15/2021	UFI CHM 2021-057	Water	REG	SW		
DEEP_S	OL-3609-04	59.4	59.4	6/15/2021	UFI CHM 2021-057	Water	REG	SW		
QC	OL-3609-05			6/15/2021	UFI CHM 2021-057	Water	FB	WQ		
DEEP_S	OL-3612-01	6.6	6.6	6/15/2021	1F00106	Water	REG	SW		
DEEP_S	OL-3612-02	6.6	6.6	6/15/2021	1F00106	Water	FD	SW		
DEEP_S	OL-3612-03	39.6	39.6	6/15/2021	1F00106	Water	REG	SW		
DEEP_S	OL-3612-04	59.4	59.4	6/15/2021	1F00106	Water	REG	SW		
QC	OL-3612-05			6/15/2021	1F00106	Water	FB	WQ		
DEEP_S	OL-3614-01	6.6	6.6	6/29/2021	UFI CHM 2021-070	Water	REG	SW		
DEEP_S	OL-3614-02	6.6	6.6	6/29/2021	UFI CHM 2021-070	Water	FD	SW		
DEEP_S	OL-3614-03	39.6	39.6	6/29/2021	UFI CHM 2021-070	Water	REG	SW		
DEEP_S	OL-3614-04	59.4	59.4	6/29/2021	UFI CHM 2021-070	Water	REG	SW		
QC	OL-3614-05			6/29/2021	UFI CHM 2021-070	Water	FB	WQ		
DEEP_S	OL-3616-01	6.6	6.6	6/29/2021	1F00189	Water	REG	SW		
DEEP_S	OL-3616-02	6.6	6.6	6/29/2021	1F00189	Water	FD	SW		
DEEP_S	OL-3616-03	39.6	39.6	6/29/2021	1F00189	Water	REG	SW		
DEEP_S	OL-3616-04	59.4	59.4	6/29/2021	1F00189	Water	REG	SW		
QC	OL-3616-05			6/29/2021	1F00189	Water	FB	WQ		
DEEP_S	OL-3617-01	6.6	6.6	7/7/2021	UFI CHM 2021-070	Water	REG	SW		
DEEP_S	OL-3617-02	6.6	6.6	7/7/2021	UFI CHM 2021-070	Water	FD	SW		
DEEP_S	OL-3617-03	39.6	39.6	7/7/2021	UFI CHM 2021-070	Water	REG	SW		
DEEP_S	OL-3617-04	46.2	46.2	7/7/2021	UFI CHM 2021-070	Water	REG	SW	0.0009	J
DEEP_S	OL-3617-05	52.8	52.8	7/7/2021	UFI CHM 2021-070	Water	REG	SW	0.0009	J
DEEP_S	OL-3617-06	59.4	59.4	7/7/2021	UFI CHM 2021-070	Water	REG	SW	0.0010	J
DEEP_S	OL-3617-07	59.4	59.4	7/7/2021	UFI CHM 2021-070	Water	FD	SW	0.0010	J
QC	OL-3617-08			7/7/2021	UFI CHM 2021-070	Water	FB	WQ	0.0018	U
DEEP_S	OL-3620-01	6.6	6.6	7/7/2021	1G00033	Water	REG	SW		
DEEP_S	OL-3620-02	6.6	6.6	7/7/2021	1G00033	Water	FD	SW		
DEEP_S	OL-3620-03	39.6	39.6	7/7/2021	1G00033	Water	REG	SW		
DEEP_S	OL-3620-04	52.8	52.8	7/7/2021	1G00033	Water	REG	SW		
DEEP_S	OL-3620-05	59.4	59.4	7/7/2021	1G00033	Water	REG	SW		
QC	OL-3620-06			7/7/2021	1G00033	Water	FB	WQ		
DEEP_S	OL-3621-01	6.6	6.6	7/13/2021	UFI CHM 2021-070	Water	REG	SW		
DEEP_S	OL-3621-02	6.6	6.6	7/13/2021	UFI CHM 2021-070	Water	FD	SW		
DEEP_S	OL-3621-03	39.6	39.6	7/13/2021	UFI CHM 2021-070	Water	REG	SW		

								Parameter Name	Reactive Phosphorous	
								Method	E350.1	
								Fraction	T	
								Units	mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix		
DEEP_S	OL-3621-04	52.8	52.8	7/13/2021	UFI CHM 2021-070	Water	REG	SW		
DEEP_S	OL-3621-05	59.4	59.4	7/13/2021	UFI CHM 2021-070	Water	REG	SW		
QC	OL-3621-06			7/13/2021	UFI CHM 2021-070	Water	FB	WQ		
DEEP_S	OL-3623-01	6.6	6.6	7/13/2021	1G00061	Water	REG	SW		
DEEP_S	OL-3623-02	6.6	6.6	7/13/2021	1G00061	Water	FD	SW		
DEEP_S	OL-3623-03	39.6	39.6	7/13/2021	1G00061	Water	REG	SW		
DEEP_S	OL-3623-04	52.8	52.8	7/13/2021	1G00061	Water	REG	SW		
DEEP_S	OL-3623-05	59.4	59.4	7/13/2021	1G00061	Water	REG	SW		
QC	OL-3623-06			7/13/2021	1G00061	Water	FB	WQ		
DEEP_S	OL-3624-01	6.6	6.6	7/20/2021	UFI CHM 2021-081	Water	REG	SW		
DEEP_S	OL-3624-02	6.6	6.6	7/20/2021	UFI CHM 2021-081	Water	FD	SW		
DEEP_S	OL-3624-03	39.6	39.6	7/20/2021	UFI CHM 2021-081	Water	REG	SW		
DEEP_S	OL-3624-04	46.2	46.2	7/20/2021	UFI CHM 2021-081	Water	REG	SW	0.0018	U
DEEP_S	OL-3624-05	52.8	52.8	7/20/2021	UFI CHM 2021-081	Water	REG	SW	0.0010	J
DEEP_S	OL-3624-06	59.4	59.4	7/20/2021	UFI CHM 2021-081	Water	REG	SW	0.0014	J
DEEP_S	OL-3624-07	59.4	59.4	7/20/2021	UFI CHM 2021-081	Water	FD	SW	0.0019	
QC	OL-3624-08			7/20/2021	UFI CHM 2021-081	Water	FB	WQ	0.0008	J
DEEP_S	OL-3627-01	6.6	6.6	7/20/2021	1G00117	Water	REG	SW		
DEEP_S	OL-3627-02	6.6	6.6	7/20/2021	1G00117	Water	FD	SW		
DEEP_S	OL-3627-03	39.6	39.6	7/20/2021	1G00117	Water	REG	SW		
DEEP_S	OL-3627-04	52.8	52.8	7/20/2021	1G00117	Water	REG	SW		
DEEP_S	OL-3627-05	59.4	59.4	7/20/2021	1G00117	Water	REG	SW		
QC	OL-3627-06			7/20/2021	1G00117	Water	FB	WQ		
DEEP_S	OL-3628-01	6.6	6.6	7/27/2021	UFI CHM 2021-081	Water	REG	SW		
DEEP_S	OL-3628-02	6.6	6.6	7/27/2021	UFI CHM 2021-081	Water	FD	SW		
DEEP_S	OL-3628-03	39.6	39.6	7/27/2021	UFI CHM 2021-081	Water	REG	SW		
DEEP_S	OL-3628-04	52.8	52.8	7/27/2021	UFI CHM 2021-081	Water	REG	SW		
DEEP_S	OL-3628-05	59.4	59.4	7/27/2021	UFI CHM 2021-081	Water	REG	SW		
QC	OL-3628-06			7/27/2021	UFI CHM 2021-081	Water	FB	WQ		
DEEP_S	OL-3630-01	6.6	6.6	7/27/2021	1G00178	Water	REG	SW		
DEEP_S	OL-3630-02	6.6	6.6	7/27/2021	1G00178	Water	FD	SW		
DEEP_S	OL-3630-03	39.6	39.6	7/27/2021	1G00178	Water	REG	SW		
DEEP_S	OL-3630-04	52.8	52.8	7/27/2021	1G00178	Water	REG	SW		
DEEP_S	OL-3630-05	59.4	59.4	7/27/2021	1G00178	Water	REG	SW		
QC	OL-3630-06			7/27/2021	1G00178	Water	FB	WQ		
DEEP_S	OL-3631-01	6.6	6.6	8/3/2021	UFI CHM 2021-099	Water	REG	SW		
DEEP_S	OL-3631-02	6.6	6.6	8/3/2021	UFI CHM 2021-099	Water	FD	SW		
DEEP_S	OL-3631-03	39.6	39.6	8/3/2021	UFI CHM 2021-099	Water	REG	SW		
DEEP_S	OL-3631-04	46.2	46.2	8/3/2021	UFI CHM 2021-099	Water	REG	SW	0.0018	U
DEEP_S	OL-3631-05	52.8	52.8	8/3/2021	UFI CHM 2021-099	Water	REG	SW	0.0018	U
DEEP_S	OL-3631-06	59.4	59.4	8/3/2021	UFI CHM 2021-099	Water	REG	SW	0.0018	U
DEEP_S	OL-3631-07	59.4	59.4	8/3/2021	UFI CHM 2021-099	Water	FD	SW	0.0018	U
QC	OL-3631-08			8/3/2021	UFI CHM 2021-099	Water	FB	WQ	0.0018	U
DEEP_S	OL-3634-01	6.6	6.6	8/3/2021	1H00020	Water	REG	SW		
DEEP_S	OL-3634-02	6.6	6.6	8/3/2021	1H00020	Water	FD	SW		
DEEP_S	OL-3634-03	39.6	39.6	8/3/2021	1H00020	Water	REG	SW		
DEEP_S	OL-3634-04	52.8	52.8	8/3/2021	1H00020	Water	REG	SW		
DEEP_S	OL-3634-05	59.4	59.4	8/3/2021	1H00020	Water	REG	SW		
QC	OL-3634-06			8/3/2021	1H00020	Water	FB	WQ		
DEEP_S	OL-3635-01	6.6	6.6	8/9/2021	UFI CHM 2021-099	Water	REG	SW		
DEEP_S	OL-3635-02	6.6	6.6	8/9/2021	UFI CHM 2021-099	Water	FD	SW		
DEEP_S	OL-3635-03	39.6	39.6	8/9/2021	UFI CHM 2021-099	Water	REG	SW		
DEEP_S	OL-3635-04	52.8	52.8	8/9/2021	UFI CHM 2021-099	Water	REG	SW		

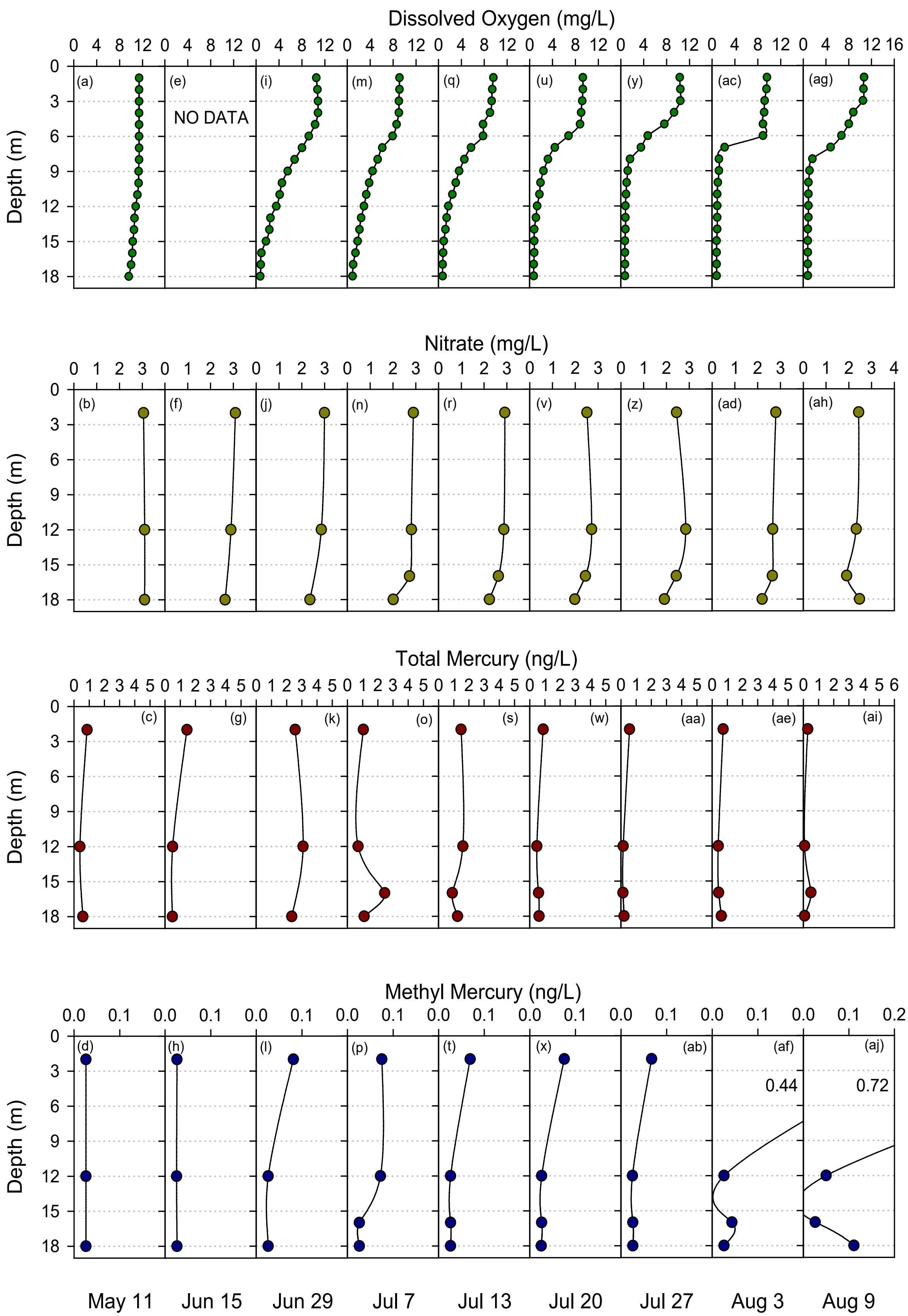
								Parameter Name	Reactive Phosphorous	
								Method	E350.1	
								Fraction	T	
								Units	mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix		
DEEP_S	OL-3635-05	59.4	59.4	8/9/2021	UFI CHM 2021-099	Water	REG	SW		
QC	OL-3635-06			8/9/2021	UFI CHM 2021-099	Water	FB	WQ		
DEEP_S	OL-3637-01	6.6	6.6	8/9/2021	1H00073	Water	REG	SW		
DEEP_S	OL-3637-02	6.6	6.6	8/9/2021	1H00073	Water	FD	SW		
DEEP_S	OL-3637-03	39.6	39.6	8/9/2021	1H00073	Water	REG	SW		
DEEP_S	OL-3637-04	52.8	52.8	8/9/2021	1H00073	Water	REG	SW		
DEEP_S	OL-3637-05	59.4	59.4	8/9/2021	1H00073	Water	REG	SW		
QC	OL-3637-06			8/9/2021	1H00073	Water	FB	WQ		
DEEP_S	OL-3638-01	6.6	6.6	8/17/2021	UFI CHM 2021-107	Water	REG	SW		
DEEP_S	OL-3638-02	6.6	6.6	8/17/2021	UFI CHM 2021-107	Water	FD	SW		
DEEP_S	OL-3638-03	39.6	39.6	8/17/2021	UFI CHM 2021-107	Water	REG	SW		
DEEP_S	OL-3638-04	46.2	46.2	8/17/2021	UFI CHM 2021-107	Water	REG	SW	0.0018	U
DEEP_S	OL-3638-05	52.8	52.8	8/17/2021	UFI CHM 2021-107	Water	REG	SW	0.0018	U
DEEP_S	OL-3638-06	59.4	59.4	8/17/2021	UFI CHM 2021-107	Water	REG	SW	0.0006	J
DEEP_S	OL-3638-07	59.4	59.4	8/17/2021	UFI CHM 2021-107	Water	FD	SW	0.0006	J
QC	OL-3638-08			8/17/2021	UFI CHM 2021-107	Water	FB	WQ	0.0018	U
DEEP_S	OL-3641-01	6.6	6.6	8/17/2021	1H00106	Water	REG	SW		
DEEP_S	OL-3641-02	6.6	6.6	8/17/2021	1H00106	Water	FD	SW		
DEEP_S	OL-3641-03	39.6	39.6	8/17/2021	1H00106	Water	REG	SW		
DEEP_S	OL-3641-04	52.8	52.8	8/17/2021	1H00106	Water	REG	SW		
DEEP_S	OL-3641-05	59.4	59.4	8/17/2021	1H00106	Water	REG	SW		
QC	OL-3641-06			8/17/2021	1H00106	Water	FB	WQ		
QC	OL-3641-07			8/17/2021	1H00106	Water	EB	WQ		
DEEP_S	OL-3642-01	6.6	6.6	8/24/2021	UFI CHM 2021-107	Water	REG	SW		
DEEP_S	OL-3642-02	6.6	6.6	8/24/2021	UFI CHM 2021-107	Water	FD	SW		
DEEP_S	OL-3642-03	39.6	39.6	8/24/2021	UFI CHM 2021-107	Water	REG	SW		
DEEP_S	OL-3642-04	52.8	52.8	8/24/2021	UFI CHM 2021-107	Water	REG	SW		
DEEP_S	OL-3642-05	59.4	59.4	8/24/2021	UFI CHM 2021-107	Water	REG	SW		
QC	OL-3642-06			8/24/2021	UFI CHM 2021-107	Water	FB	WQ		
DEEP_S	OL-3644-01	6.6	6.6	8/24/2021	1H00139	Water	REG	SW		
DEEP_S	OL-3644-02	6.6	6.6	8/24/2021	1H00139	Water	FD	SW		
DEEP_S	OL-3644-03	39.6	39.6	8/24/2021	1H00139	Water	REG	SW		
DEEP_S	OL-3644-04	52.8	52.8	8/24/2021	1H00139	Water	REG	SW		
DEEP_S	OL-3644-05	59.4	59.4	8/24/2021	1H00139	Water	REG	SW		
QC	OL-3644-06			8/24/2021	1H00139	Water	FB	WQ		
DEEP_S	OL-3645-01	6.6	6.6	8/31/2021	UFI CHM 2021-107	Water	REG	SW		
DEEP_S	OL-3645-02	6.6	6.6	8/31/2021	UFI CHM 2021-107	Water	FD	SW		
DEEP_S	OL-3645-03	39.6	39.6	8/31/2021	UFI CHM 2021-107	Water	REG	SW		
DEEP_S	OL-3645-04	46.2	46.2	8/31/2021	UFI CHM 2021-107	Water	REG	SW	0.0010	J
DEEP_S	OL-3645-05	52.8	52.8	8/31/2021	UFI CHM 2021-107	Water	REG	SW	0.0015	J
DEEP_S	OL-3645-06	59.4	59.4	8/31/2021	UFI CHM 2021-107	Water	REG	SW	0.0020	
DEEP_S	OL-3645-07	59.4	59.4	8/31/2021	UFI CHM 2021-107	Water	FD	SW	0.0025	
QC	OL-3645-08			8/31/2021	UFI CHM 2021-107	Water	FB	WQ	0.0018	U
DEEP_S	OL-3648-01	6.6	6.6	8/31/2021	1I00004	Water	REG	SW		
DEEP_S	OL-3648-02	6.6	6.6	8/31/2021	1I00004	Water	FD	SW		
DEEP_S	OL-3648-03	39.6	39.6	8/31/2021	1I00004	Water	REG	SW		
DEEP_S	OL-3648-04	52.8	52.8	8/31/2021	1I00004	Water	REG	SW		
DEEP_S	OL-3648-05	59.4	59.4	8/31/2021	1I00004	Water	REG	SW		
QC	OL-3648-06			8/31/2021	1I00004	Water	FB	WQ		
DEEP_S	OL-3650-01	6.6	6.6	9/8/2021	UFI CHM 2021-130	Water	REG	SW		
DEEP_S	OL-3650-02	6.6	6.6	9/8/2021	UFI CHM 2021-130	Water	FD	SW		
DEEP_S	OL-3650-03	39.6	39.6	9/8/2021	UFI CHM 2021-130	Water	REG	SW		
DEEP_S	OL-3650-04	52.8	52.8	9/8/2021	UFI CHM 2021-130	Water	REG	SW		

								Parameter Name	Reactive Phosphorous	
								Method	E350.1	
								Fraction	T	
								Units	mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix		
DEEP_S	OL-3650-05	59.4	59.4	9/8/2021	UFI CHM 2021-130	Water	REG	SW		
QC	OL-3650-06			9/8/2021	UFI CHM 2021-130	Water	FB	WQ		
DEEP_S	OL-3653-01	6.6	6.6	9/8/2021	1I00037	Water	REG	SW		
DEEP_S	OL-3653-02	6.6	6.6	9/8/2021	1I00037	Water	FD	SW		
DEEP_S	OL-3653-03	39.6	39.6	9/8/2021	1I00037	Water	REG	SW		
DEEP_S	OL-3653-04	52.8	52.8	9/8/2021	1I00037	Water	REG	SW		
DEEP_S	OL-3653-05	59.4	59.4	9/8/2021	1I00037	Water	REG	SW		
QC	OL-3653-06			9/8/2021	1I00037	Water	FB	WQ		
DEEP_S	OL-3654-01	6.6	6.6	9/14/2021	UFI CHM 2021-130	Water	REG	SW		
DEEP_S	OL-3654-02	6.6	6.6	9/14/2021	UFI CHM 2021-130	Water	FD	SW		
DEEP_S	OL-3654-03	39.6	39.6	9/14/2021	UFI CHM 2021-130	Water	REG	SW		
DEEP_S	OL-3654-04	46.2	46.2	9/14/2021	UFI CHM 2021-130	Water	REG	SW	0.0018	U
DEEP_S	OL-3654-05	52.8	52.8	9/14/2021	UFI CHM 2021-130	Water	REG	SW	0.0011	J
DEEP_S	OL-3654-06	59.4	59.4	9/14/2021	UFI CHM 2021-130	Water	REG	SW	0.0035	
DEEP_S	OL-3654-07	59.4	59.4	9/14/2021	UFI CHM 2021-130	Water	FD	SW	0.0045	
QC	OL-3654-08			9/14/2021	UFI CHM 2021-130	Water	FB	WQ	0.0018	U
DEEP_S	OL-3657-01	6.6	6.6	9/14/2021	1I00067	Water	REG	SW		
DEEP_S	OL-3657-02	6.6	6.6	9/14/2021	1I00067	Water	FD	SW		
DEEP_S	OL-3657-03	39.6	39.6	9/14/2021	1I00067	Water	REG	SW		
DEEP_S	OL-3657-04	52.8	52.8	9/14/2021	1I00067	Water	REG	SW		
DEEP_S	OL-3657-05	59.4	59.4	9/14/2021	1I00067	Water	REG	SW		
QC	OL-3657-06			9/14/2021	1I00067	Water	FB	WQ		
DEEP_S	OL-3658-01	6.6	6.6	9/21/2021	UFI CHM 2021-130	Water	REG	SW		
DEEP_S	OL-3658-02	6.6	6.6	9/21/2021	UFI CHM 2021-130	Water	FD	SW		
DEEP_S	OL-3658-03	39.6	39.6	9/21/2021	UFI CHM 2021-130	Water	REG	SW		
DEEP_S	OL-3658-04	52.8	52.8	9/21/2021	UFI CHM 2021-130	Water	REG	SW		
DEEP_S	OL-3658-05	59.4	59.4	9/21/2021	UFI CHM 2021-130	Water	REG	SW		
QC	OL-3658-06			9/21/2021	UFI CHM 2021-130	Water	FB	WQ		
DEEP_S	OL-3661-01	6.6	6.6	9/21/2021	1I00122	Water	REG	SW		
DEEP_S	OL-3661-02	6.6	6.6	9/21/2021	1I00122	Water	FD	SW		
DEEP_S	OL-3661-03	39.6	39.6	9/21/2021	1I00122	Water	REG	SW		
DEEP_S	OL-3661-04	52.8	52.8	9/21/2021	1I00122	Water	REG	SW		
DEEP_S	OL-3661-05	59.4	59.4	9/21/2021	1I00122	Water	REG	SW		
QC	OL-3661-06			9/21/2021	1I00122	Water	FB	WQ		
DEEP_S	OL-3662-01	6.6	6.6	9/28/2021	UFI CHM 2021-141	Water	REG	SW		
DEEP_S	OL-3662-02	6.6	6.6	9/28/2021	UFI CHM 2021-141	Water	FD	SW		
DEEP_S	OL-3662-03	39.6	39.6	9/28/2021	UFI CHM 2021-141	Water	REG	SW		
DEEP_S	OL-3662-04	46.2	46.2	9/28/2021	UFI CHM 2021-141	Water	REG	SW	0.0018	U
DEEP_S	OL-3662-05	52.8	52.8	9/28/2021	UFI CHM 2021-141	Water	REG	SW	0.0014	J
DEEP_S	OL-3662-06	59.4	59.4	9/28/2021	UFI CHM 2021-141	Water	REG	SW	0.0019	
DEEP_S	OL-3662-07	59.4	59.4	9/28/2021	UFI CHM 2021-141	Water	FD	SW	0.0019	
QC	OL-3662-08			9/28/2021	UFI CHM 2021-141	Water	FB	WQ	0.0018	U
DEEP_S	OL-3665-01	6.6	6.6	9/28/2021	1I00165	Water	REG	SW		
DEEP_S	OL-3665-02	6.6	6.6	9/28/2021	1I00165	Water	FD	SW		
DEEP_S	OL-3665-03	39.6	39.6	9/28/2021	1I00165	Water	REG	SW		
DEEP_S	OL-3665-04	52.8	52.8	9/28/2021	1I00165	Water	REG	SW		
DEEP_S	OL-3665-05	59.4	59.4	9/28/2021	1I00165	Water	REG	SW		
QC	OL-3665-06			9/28/2021	1I00165	Water	FB	WQ		
DEEP_S	OL-3666-01	6.6	6.6	10/5/2021	UFI CHM 2021-141	Water	REG	SW		
DEEP_S	OL-3666-02	6.6	6.6	10/5/2021	UFI CHM 2021-141	Water	FD	SW		
DEEP_S	OL-3666-03	39.6	39.6	10/5/2021	UFI CHM 2021-141	Water	REG	SW		
DEEP_S	OL-3666-04	52.8	52.8	10/5/2021	UFI CHM 2021-141	Water	REG	SW		
DEEP_S	OL-3666-05	59.4	59.4	10/5/2021	UFI CHM 2021-141	Water	REG	SW		

								Parameter Name	Reactive Phosphorous	
								Method	E350.1	
								Fraction	T	
								Units	mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix		
QC	OL-3666-06			10/5/2021	UFI CHM 2021-141	Water	FB	WQ		
DEEP_S	OL-3669-01	6.6	6.6	10/5/2021	1J00028	Water	REG	SW		
DEEP_S	OL-3669-02	6.6	6.6	10/5/2021	1J00028	Water	FD	SW		
DEEP_S	OL-3669-03	39.6	39.6	10/5/2021	1J00028	Water	REG	SW		
DEEP_S	OL-3669-04	52.8	52.8	10/5/2021	1J00028	Water	REG	SW		
DEEP_S	OL-3669-05	59.4	59.4	10/5/2021	1J00028	Water	REG	SW		
QC	OL-3669-06			10/5/2021	1J00028	Water	FB	WQ		
DEEP_S	OL-3670-01	6.6	6.6	10/12/2021	UFI CHM 2021-141	Water	REG	SW		
DEEP_S	OL-3670-02	6.6	6.6	10/12/2021	UFI CHM 2021-141	Water	FD	SW		
DEEP_S	OL-3670-03	39.6	39.6	10/12/2021	UFI CHM 2021-141	Water	REG	SW		
DEEP_S	OL-3670-04	46.2	46.2	10/12/2021	UFI CHM 2021-141	Water	REG	SW	0.0018	U
DEEP_S	OL-3670-05	52.8	52.8	10/12/2021	UFI CHM 2021-141	Water	REG	SW	0.0018	U
DEEP_S	OL-3670-06	59.4	59.4	10/12/2021	UFI CHM 2021-141	Water	REG	SW	0.0180	J
DEEP_S	OL-3670-07	59.4	59.4	10/12/2021	UFI CHM 2021-141	Water	FD	SW	0.0010	J
QC	OL-3670-08			10/12/2021	UFI CHM 2021-141	Water	FB	WQ	0.0018	U
DEEP_S	OL-3673-01	6.6	6.6	10/12/2021	1J00073	Water	REG	SW		
DEEP_S	OL-3673-02	6.6	6.6	10/12/2021	1J00073	Water	FD	SW		
DEEP_S	OL-3673-03	39.6	39.6	10/12/2021	1J00073	Water	REG	SW		
DEEP_S	OL-3673-04	52.8	52.8	10/12/2021	1J00073	Water	REG	SW		
DEEP_S	OL-3673-05	59.4	59.4	10/12/2021	1J00073	Water	REG	SW		
QC	OL-3673-06			10/12/2021	1J00073	Water	FB	WQ		
DEEP_S	OL-3674-01	6.6	6.6	10/19/2021	UFI CHM 2021-159	Water	REG	SW		
DEEP_S	OL-3674-02	6.6	6.6	10/19/2021	UFI CHM 2021-159	Water	FD	SW		
DEEP_S	OL-3674-03	39.6	39.6	10/19/2021	UFI CHM 2021-159	Water	REG	SW		
DEEP_S	OL-3674-04	52.8	52.8	10/19/2021	UFI CHM 2021-159	Water	REG	SW		
DEEP_S	OL-3674-05	59.4	59.4	10/19/2021	UFI CHM 2021-159	Water	REG	SW		
QC	OL-3674-06			10/19/2021	UFI CHM 2021-159	Water	FB	WQ		
DEEP_S	OL-3677-01	6.6	6.6	10/19/2021	1J00118	Water	REG	SW		
DEEP_S	OL-3677-02	6.6	6.6	10/19/2021	1J00118	Water	FD	SW		
DEEP_S	OL-3677-03	39.6	39.6	10/19/2021	1J00118	Water	REG	SW		
DEEP_S	OL-3677-04	52.8	52.8	10/19/2021	1J00118	Water	REG	SW		
DEEP_S	OL-3677-05	59.4	59.4	10/19/2021	1J00118	Water	REG	SW		
QC	OL-3677-06			10/19/2021	1J00118	Water	FB	WQ		
DEEP_S	OL-3678-01	6.6	6.6	10/27/2021	UFI CHM 2021-159	Water	REG	SW		
DEEP_S	OL-3678-02	6.6	6.6	10/27/2021	UFI CHM 2021-159	Water	FD	SW		
DEEP_S	OL-3678-03	39.6	39.6	10/27/2021	UFI CHM 2021-159	Water	REG	SW		
DEEP_S	OL-3678-04	46.2	46.2	10/27/2021	UFI CHM 2021-159	Water	REG	SW	0.0036	
DEEP_S	OL-3678-05	52.8	52.8	10/27/2021	UFI CHM 2021-159	Water	REG	SW	0.0053	
DEEP_S	OL-3678-06	59.4	59.4	10/27/2021	UFI CHM 2021-159	Water	REG	SW	0.0053	
DEEP_S	OL-3678-07	59.4	59.4	10/27/2021	UFI CHM 2021-159	Water	FD	SW	0.0065	
QC	OL-3678-08			10/27/2021	UFI CHM 2021-159	Water	FB	WQ	0.0018	U
DEEP_S	OL-3681-01	6.6	6.6	10/27/2021	1J00176	Water	REG	SW		
DEEP_S	OL-3681-02	6.6	6.6	10/27/2021	1J00176	Water	FD	SW		
DEEP_S	OL-3681-03	39.6	39.6	10/27/2021	1J00176	Water	REG	SW		
DEEP_S	OL-3681-04	52.8	52.8	10/27/2021	1J00176	Water	REG	SW		
DEEP_S	OL-3681-05	59.4	59.4	10/27/2021	1J00176	Water	REG	SW		
QC	OL-3681-06			10/27/2021	1J00176	Water	FB	WQ		
DEEP_S	OL-3682-01	6.6	6.6	11/2/2021	UFI CHM 2021-159	Water	REG	SW		
DEEP_S	OL-3682-02	6.6	6.6	11/2/2021	UFI CHM 2021-159	Water	FD	SW		
DEEP_S	OL-3682-03	39.6	39.6	11/2/2021	UFI CHM 2021-159	Water	REG	SW		
DEEP_S	OL-3682-04	52.8	52.8	11/2/2021	UFI CHM 2021-159	Water	REG	SW		
DEEP_S	OL-3682-05	59.4	59.4	11/2/2021	UFI CHM 2021-159	Water	REG	SW		
QC	OL-3682-06			11/2/2021	UFI CHM 2021-159	Water	FB	WQ		

								Parameter Name Method Fraction Units	Reactive Phosphorous E350.1 T mg/L	
Location ID	Field Sample ID	Start Depth	End Depth	Sampled	SDG	Medium	Sample Type	Matrix		
DEEP_S	OL-3685-01	6.6	6.6	11/2/2021	1K00016	Water	REG	SW		
DEEP_S	OL-3685-02	6.6	6.6	11/2/2021	1K00016	Water	FD	SW		
DEEP_S	OL-3685-03	39.6	39.6	11/2/2021	1K00016	Water	REG	SW		
DEEP_S	OL-3685-04	52.8	52.8	11/2/2021	1K00016	Water	REG	SW		
DEEP_S	OL-3685-05	59.4	59.4	11/2/2021	1K00016	Water	REG	SW		
QC	OL-3685-06			11/2/2021	1K00016	Water	FB	WQ		
DEEP_S	OL-3686-01	6.6	6.6	11/10/2021	UFI CHM 2021-170	Water	REG	SW		
DEEP_S	OL-3686-02	6.6	6.6	11/10/2021	UFI CHM 2021-170	Water	FD	SW		
DEEP_S	OL-3686-03	39.6	39.6	11/10/2021	UFI CHM 2021-170	Water	REG	SW		
DEEP_S	OL-3686-04	46.2	46.2	11/10/2021	UFI CHM 2021-170	Water	REG	SW	0.0063	
DEEP_S	OL-3686-05	52.8	52.8	11/10/2021	UFI CHM 2021-170	Water	REG	SW	0.0082	
DEEP_S	OL-3686-06	59.4	59.4	11/10/2021	UFI CHM 2021-170	Water	REG	SW	0.0088	
DEEP_S	OL-3686-07	59.4	59.4	11/10/2021	UFI CHM 2021-170	Water	FD	SW	0.0114	
QC	OL-3686-08			11/10/2021	UFI CHM 2021-170	Water	FB	WQ	0.0018	U
DEEP_S	OL-3689-01	6.6	6.6	11/10/2021	1K00072	Water	REG	SW		
DEEP_S	OL-3689-02	6.6	6.6	11/10/2021	1K00072	Water	FD	SW		
DEEP_S	OL-3689-03	39.6	39.6	11/10/2021	1K00072	Water	REG	SW		
DEEP_S	OL-3689-04	52.8	52.8	11/10/2021	1K00072	Water	REG	SW		
DEEP_S	OL-3689-05	59.4	59.4	11/10/2021	1K00072	Water	REG	SW		
QC	OL-3689-06			11/10/2021	1K00072	Water	FB	WQ		
DEEP_S	OL-3690-01	6.6	6.6	11/16/2021	UFI CHM 2021-170	Water	REG	SW		
DEEP_S	OL-3690-02	6.6	6.6	11/16/2021	UFI CHM 2021-170	Water	FD	SW		
DEEP_S	OL-3690-03	39.6	39.6	11/16/2021	UFI CHM 2021-170	Water	REG	SW		
DEEP_S	OL-3690-04	59.4	59.4	11/16/2021	UFI CHM 2021-170	Water	REG	SW		
QC	OL-3690-05			11/16/2021	UFI CHM 2021-170	Water	FB	WQ		
DEEP_S	OL-3693-01	6.6	6.6	11/16/2021	1K00133	Water	REG	SW		
DEEP_S	OL-3693-02	6.6	6.6	11/16/2021	1K00133	Water	FD	SW		
DEEP_S	OL-3693-03	39.6	39.6	11/16/2021	1K00133	Water	REG	SW		
DEEP_S	OL-3693-04	59.4	59.4	11/16/2021	1K00133	Water	REG	SW		
QC	OL-3693-05			11/16/2021	1K00133	Water	FB	WQ		
QC	OL-3693-06			11/16/2021	1K00133	Water	EB	WQ		
DEEP_S	OL-3695-01	6.6	6.6	11/23/2021	UFI CHM 2021-170	Water	REG	SW		
DEEP_S	OL-3695-02	6.6	6.6	11/23/2021	UFI CHM 2021-170	Water	FD	SW		
DEEP_S	OL-3695-03	39.6	39.6	11/23/2021	UFI CHM 2021-170	Water	REG	SW		
DEEP_S	OL-3695-04	59.4	59.4	11/23/2021	UFI CHM 2021-170	Water	REG	SW		
QC	OL-3695-05			11/23/2021	UFI CHM 2021-170	Water	FB	WQ		
DEEP_S	OL-3697-01	6.6	6.6	11/23/2021	1K00170	Water	REG	SW		
DEEP_S	OL-3697-02	6.6	6.6	11/23/2021	1K00170	Water	FD	SW		
DEEP_S	OL-3697-03	39.6	39.6	11/23/2021	1K00170	Water	REG	SW		
DEEP_S	OL-3697-04	59.4	59.4	11/23/2021	1K00170	Water	REG	SW		
QC	OL-3697-05			11/23/2021	1K00170	Water	FB	WQ		

APPENDIX 5E - PLOTS OF DISSOLVED OXYGEN, NITRATE, TOTAL MERCURY AND METHYLMERCURY CONCENTRATIONS WITH DEPTH AT SOUTH DEEP FOR 2021



Dissolved Oxygen (mg/L)
Nitrate (mg/L)
Total Mercury (ng/L)
Methyl Mercury (ng/L)
Depth (m)
NO DATA
0.44
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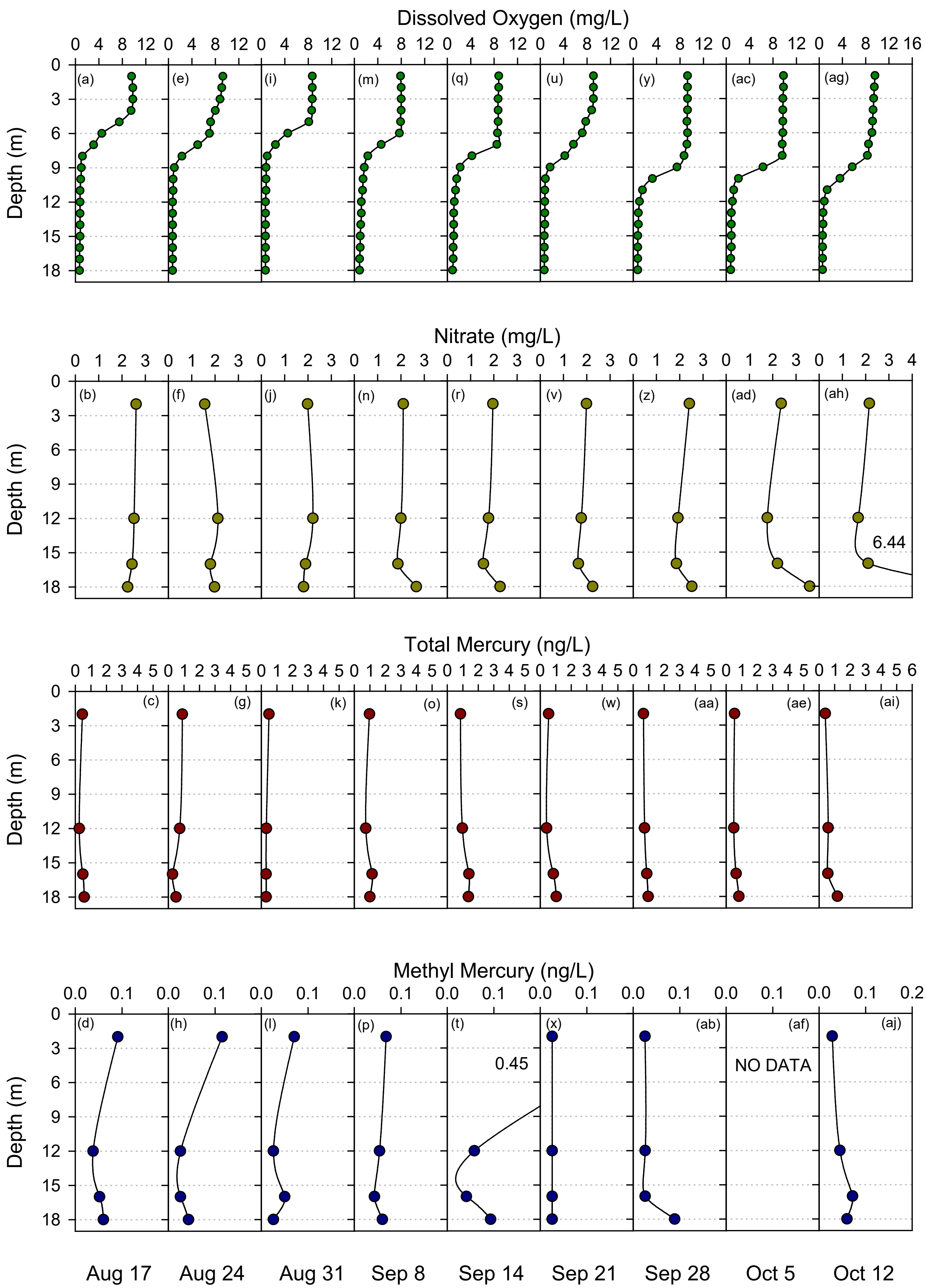
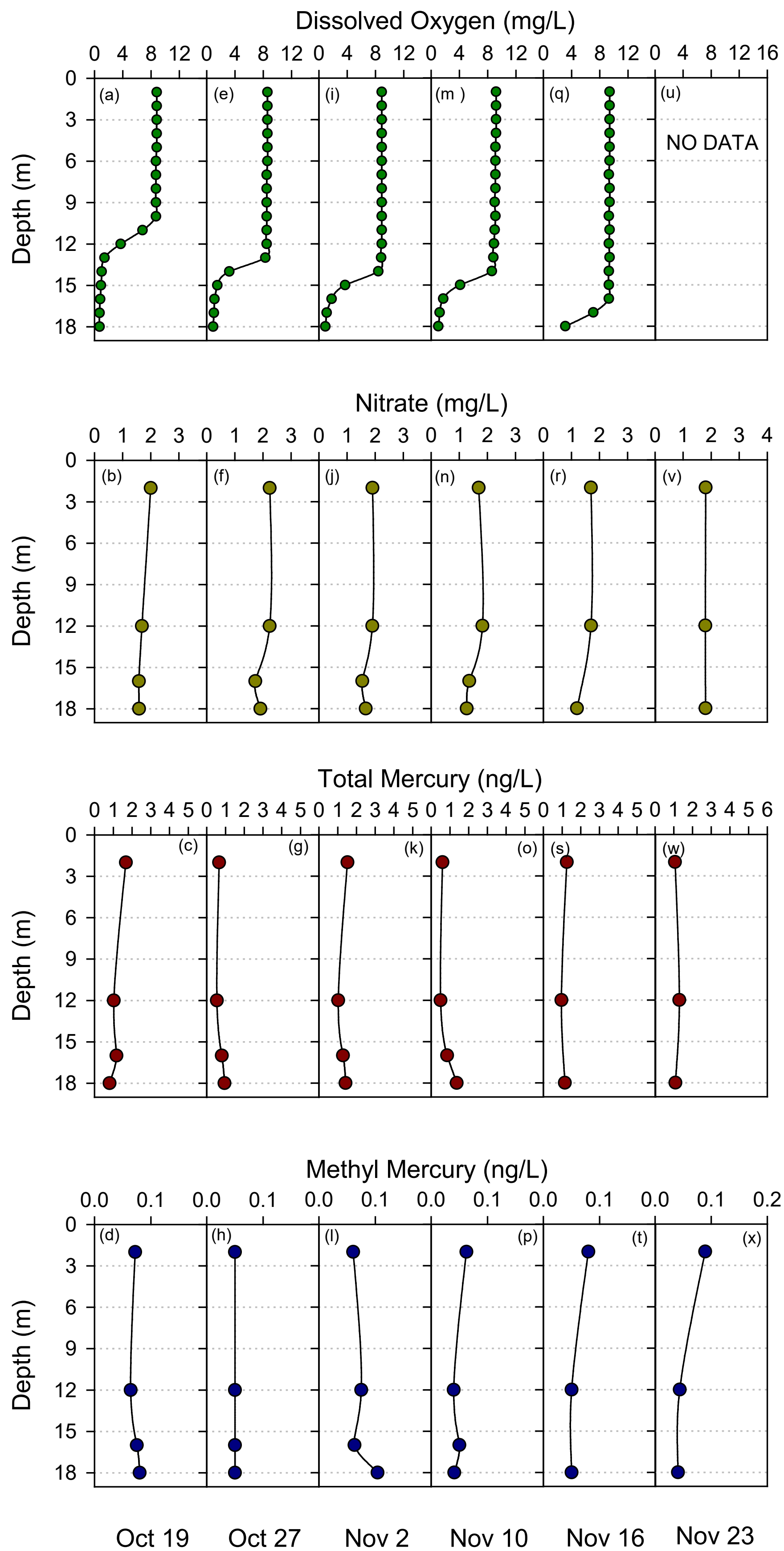
May 11
Jun 15
Jun 29
Jul 7
Jul 13
Jul 20
Jul 27
Aug 3
Aug 9



Dissolved Oxygen (mg/L)
Nitrate (mg/L)
Total Mercury (ng/L)
Methyl Mercury (ng/L)
Depth (m)
6.44
0.45
NO DATA
Aug 17
Aug 24
Aug 31
Sep 8
Sep 14
Sep 21
Sep 28
Oct 5
Oct 12



Dissolved Oxygen (mg/L)
Nitrate (mg/L)
Total Mercury (ng/L)
Methyl Mercury (ng/L)
Depth (m)
(a)
(e)
(i)
(m)
(q)
(u)
NO DATA
(b)
(f)
(j)
(n)
(r)
(v)
(c)
(g)
(k)
(o)
(s)
(w)
(d)
(h)
(l)
(p)
(t)
(x)
Oct 19
Oct 27
Nov 2
Nov 10
Nov 16
Nov 23

APPENDIX 6A - MEMORANDUM: ONONDAGA LAKE SEDIMENT CAP MONITORING- EVENT-BASED MONITORING EVALUATION

290 Elwood Davis Road, Suite 340
Liverpool, New York 13088
315.453.9009

Memorandum

May 13, 2022

To: Edward Glaza, PE, Parsons

From: Matt Henderson, PE, and Abagayle Hilton, Anchor QEA, LLC

cc: Paul LaRosa, PE, and Deirdre Reidy, Anchor QEA, LLC

Re: Onondaga Lake Sediment Cap Monitoring – Event-Based Monitoring Evaluation

In accordance with Section 6.3.2 (Event-based Monitoring of the Sediment Cap) of the *Onondaga Lake Monitoring and Maintenance Plan* (OLMMP; Parsons 2018), the following three extreme event conditions are being used to trigger required event-based monitoring of the cap:

- A 50-year or greater wind-generated wave event
- A 50-year or greater tributary flow event
- A seismic event measuring 5.5 or larger on the Richter scale within 30 miles of Onondaga Lake

Publicly available data obtained from January 1, 2021, through April 17, 2022, were analyzed to determine if event-based monitoring of the cap has been triggered by one or more of these events. Based on the summary of 2021 and 2022 data presented and described in this memorandum, event-based physical monitoring of the cap was not triggered during this time period.

Wind-Generated Wave Event Evaluation

In accordance with the OLMMP, the occurrence of a wind-generated wave event may warrant monitoring in certain remediation areas, depending on the wave direction (e.g., from the northwest). Because wave measurements are not collected in Onondaga Lake, wind data reported from the meteorological station at Hancock International Airport (located approximately 5 miles east of Onondaga Lake) were reviewed and analyzed to determine if a 50-year wind event may have occurred in the directions affecting the remediation areas. This analysis is based on wind speed, assuming that a 50-year wind event corresponds to a 50-year wind-generated wave event.

The wind speed data were grouped by the recorded wind direction, and the maximum recorded wind speed for each direction was compared to the 50-year event threshold value (as presented in Table 6.4A of the OLMMP). Table 1 summarizes the comparison between the threshold 50-year return-interval wind speeds and maximum recorded wind speeds for January 2021 through April 17, 2022.

Table 1
50-Year Event Wind Speeds Compared to Maximum Recorded Wind Speeds for January 2021 through April 17, 2022

Remediation Area	Wind Direction (degrees from north[1])	50-Year Event Wind Speed (mph)	Maximum Recorded Wind Speed for January 2020 to May 1, 2021 (mph)	Date of Measured Maximum Wind Speed
RA-A and RA-F1	330 to 100	45	34.0	1/17/2022
RA-B	330 to 130	45	34.0	1/17/2022
RA-C	0 to 130	42	34.0	1/17/2022
RA-D	320 to 30	44	24.0	3/3/2022
RA-E	280 to 340	56	36.0	6/21/2021
RA-F2	130 to 220	55	43.0	06/21/2021

Notes:
1. Wind directions are reported using the "blowing from" convention (e.g., winds from 45° are blowing from the northeast).
mph: miles per hour

The highest recorded wind speeds affecting each remediation area did not exceed the threshold that would trigger monitoring. Figures 1a and 1b present the wind speed data and highlight the peak measured wind speeds in relation to the 50-year return-interval wind speed for 2021 (January to December 2021) and early 2022 (January to April 2022) data, respectively.

Tributary Flow Event Evaluation

During periods of high precipitation or snowmelt, the tributaries to the lake could potentially produce erosive forces on the cap at the mouths of the tributaries due to increased flow velocity. For prior monitoring periods, the lake tributaries included Ninemile Creek, which discharges into Remediation Area (RA)-A; Harbor Brook, which discharges through the Outboard Area into RA-D and RA-E; and Onondaga Creek, which discharges into RA-E.

The U.S. Geological Survey (USGS) gage 04230300, Ninemile Creek at Lakeland, New York, was discontinued effective October 1, 2019. The discontinuation of the gage came as a result of the Onondaga County Department of Water and Environment Protection decision that they are no longer funding this station due to the needs of their program changing. Similarly, USGS gage 04240100, Harbor Brook at Syracuse, New York, was discontinued on October 1, 2020. The USGS gage 04240010, Onondaga Creek at Spencer Street, Syracuse, New York, continues to operate.

Due to the discontinuation of two of the three tributary gages, a regression analysis was performed in 2021 using the remaining operating gage and the last full year of available data from the discontinued gages were used to evaluate if a high flow event was likely to have occurred in one of the tributaries. This approach was similar to the approach presented in Honeywell's February 10, 2020 letter to the New York State Department of Environmental Conservation regarding the Ninemile Creek USGS Gauge Station Discontinuation (Honeywell 2020), to determine if a 50-year flow event occurred in any of these tributaries. Daily averaged flow rate data were downloaded from the following gage websites maintained by USGS through April 17, 2022 (all available data):

- USGS 04240010, Onondaga Creek at Spencer Street, Syracuse, New York (USGS 2021a) (January 1, 2021, to April 17, 2022)
- USGS 04240300, Ninemile Creek at Lakeland, New York (USGS 2021b) (discontinued)
- USGS 04240100, Harbor Brook at Syracuse, New York (USGS 2021c) (discontinued)

The regression analysis was performed using the daily averaged flow data to determine the flows in Ninemile Creek and Harbor Brook for the periods when these gages were not operational. For the regression analysis to determine Ninemile Creek flows, the daily averaged flow rate dataset for 2018 was used (because it was the last complete dataset), which were then compared to Onondaga Creek daily averaged flow from the same year. Similarly, the last full year of daily mean flow data (2019) were used in the computation of the Harbor Brook flow data after the discontinuation of the gage.

Using the regression analysis and the daily-averaged flows rates obtained from the USGS Onondaga Creek at Spencer Street gage from January 1, 2021, to April 17, 2022, the maximum daily averaged flow rates from the measured data and computed flow rates were compared to the 50-year return-interval flow rates for each tributary (as presented in Table 6.4B of the OLMMP). Table 2 summarizes the comparison of the measured and computed flow rate data to the computed 50-year return-interval flow rates.

Table 2
50-Year Event Flow Rates Compared to Maximum Recorded and Computed Flow Rates for January 2021 through April 17, 2022

Tributary/Remediation Area	50-Year Event Flow Rate (cfs)	Maximum Flow Rate for January 2021 to April 17, 2022 (cfs)	Date of Maximum Flow Rate
Onondaga Creek (RA-E)	4,400	1800.0	8/19/2021
Ninemile Creek (RA-A)	3,300	1,886.3	8/19/2021
Harbor Brook (Outboard Area, RA-D, RA-E)	800	59.7	8/19/2021

Note:
cfs: cubic feet per second

The threshold extreme flow rates were not exceeded within the monitoring period based on the average daily flow rates recorded at the USGS gage; therefore, cap monitoring was not performed as a result of an event-based trigger. Figures 2a and 2b present the daily average flow rate data and highlight the maximum flow rate events for each of the tributaries for 2021 and early 2022 data, respectively.

Seismic Event Evaluation

Although a significant earthquake in Central New York State is not common, a large magnitude occurrence could disrupt the cap stability and potentially damage the integrity of the cap layers. An earthquake could also cause differential settlement of the armor layer and layer mixing, resulting in lost integrity of the chemical isolation layer. The USGS Earthquake Hazards Program website data (USGS 2022) were reviewed to determine if a seismic event of 5.5 or larger on the Richter scale occurred within 30 miles of Onondaga Lake between January 1, 2021, and April 17, 2022. It was determined that there were no seismic events of magnitude 5.5 or larger within 30 miles of Onondaga Lake during this time period.

References

Honeywell, 2020. Letter to: Timothy J. Larson, New York State Department of Environmental Conservation. Regarding: Ninemile Creek USGS Gauge Station Discontinuation. February 10, 2020.

Parsons, 2018. *Onondaga Lake Monitoring and Maintenance Plan*. Prepared for Honeywell. June 2018.

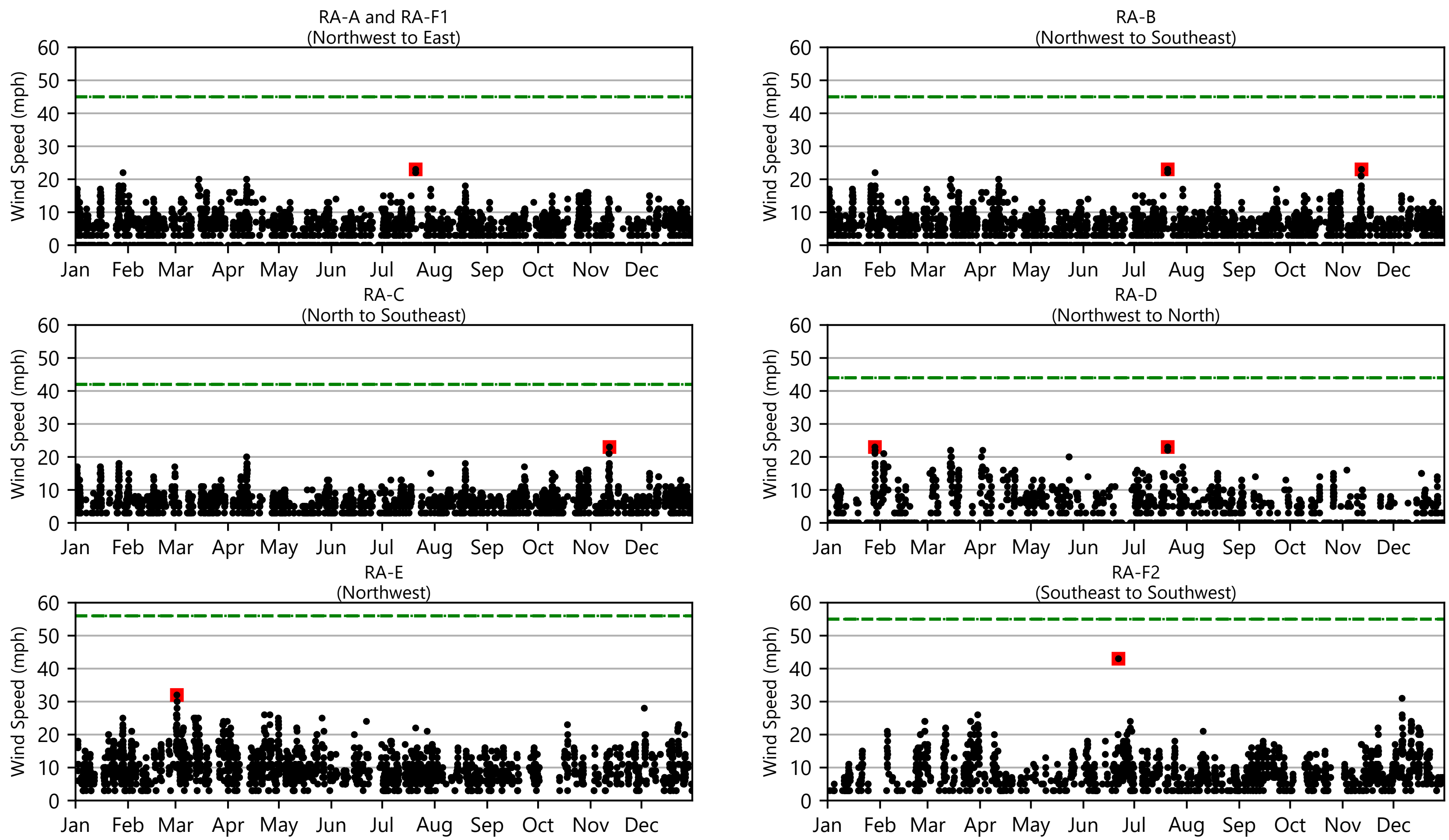
USGS (U.S. Geological Survey), 2021a. "USGS 04240010 Onondaga Creek at Spencer Street, Syracuse NY." *National Water Information System: Web interface*. Last modified: May 1, 2021; accessed May 1, 2021. Available at: https://waterdata.usgs.gov/nwis/uv?site_no=04240010.

USGS, 2021b. "USGS 04240300 Ninemile Creek at Lakeland NY." *National Water Information System: Web interface*. Last modified: May 1, 2021; accessed May 1, 2021. Available at: https://waterdata.usgs.gov/nwis/uv?site_no=04240300.

USGS, 2021c. "USGS 04240100 Harbor Brook at Syracuse NY." *National Water Information System: Web interface*. Last modified: May 1, 2021; accessed May 1, 2021. Available at: https://waterdata.usgs.gov/nwis/uv?site_no=04240100.

USGS, 2022. "Earthquakes." *Earthquake Hazards Program*. Last modified: May 1, 2021; accessed May 1, 2021. Available at: https://earthquake.usgs.gov/earthquakes/.

Figures



Notes:
1. Wind data are from Hancock International Airport from January 1, 2021, to December 31, 2021.
2. Wind speeds and direction data were reported hourly from the National Climatic Data Center.
3. Calm winds are excluded from the directional wind speed plotting shown.
4. The maximum recorded hourly wind speed for the monitoring period is highlighted in red.

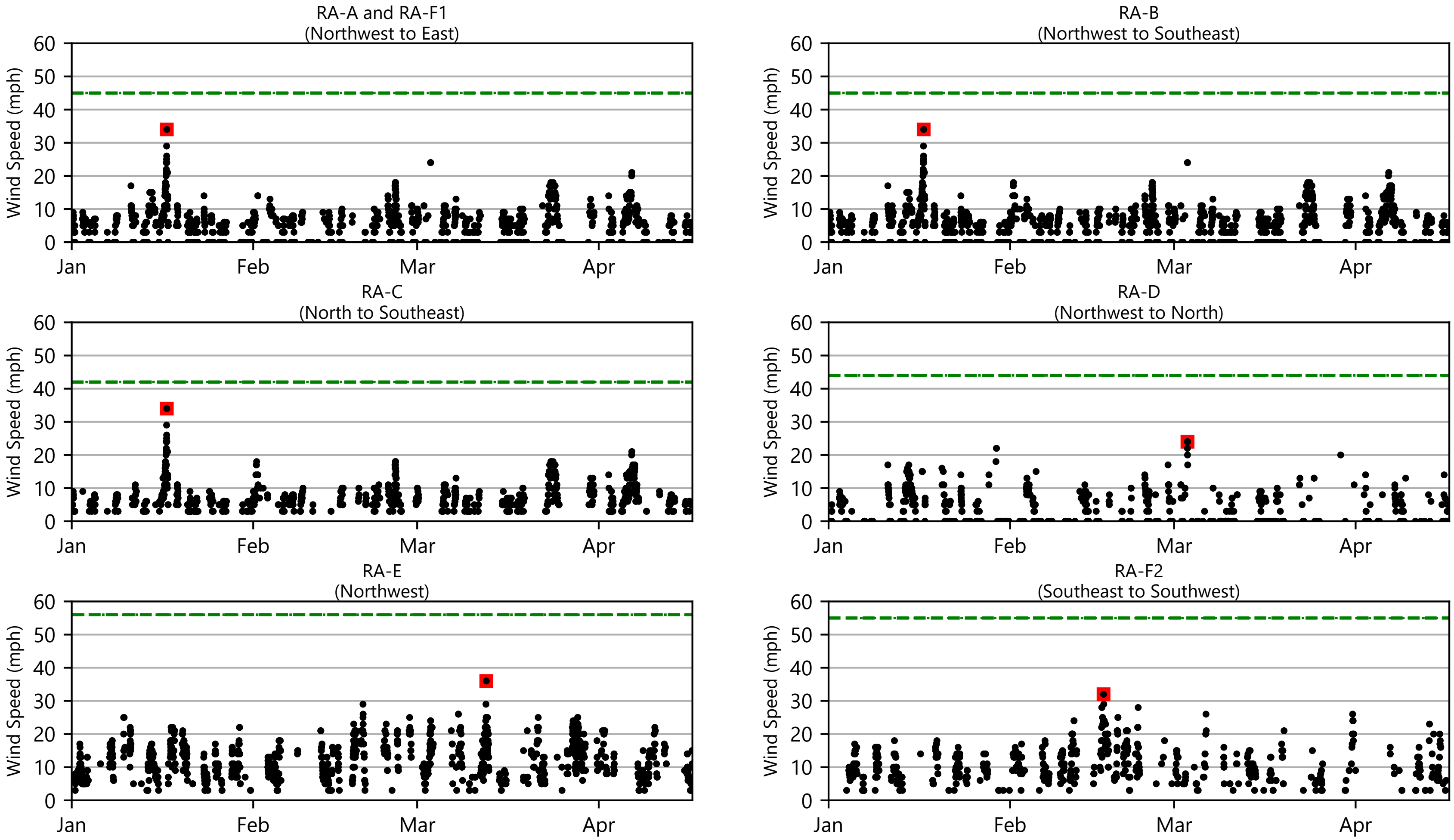
Maximum Recorded Wind Speed
50-Year Event Wind Speed

Publish Date: 05/12/2022 17:53 PM | User: AH
File Path: \\athena\Syracuse\Projects\Honeywell\Onondaga_Lake_OLMMS_(E60287)\ANALYSIS\Wind_and_Wave\results\Monitoring_2022_Memo\NCDC_winddata_processing_Year2020_AH.py

Prepared By: A. Hilton
Reviewed By: M. Henderson

ANCHOR QEA

Figure 1a
Wind Speed Evaluation January 2021 - December 2021
Event-based Monitoring Evaluation
Onondaga Lake Monitoring and Maintenance



Notes:
1. Wind data are from Hancock International Airport from January 1, 2022, to April 17, 2022.
2. Wind speeds and direction data were reported hourly from the National Climatic Data Center.
3. Calm winds are excluded from the directional wind speed plotting shown.
4. The maximum recorded hourly wind speed for the monitoring period is highlighted in red.

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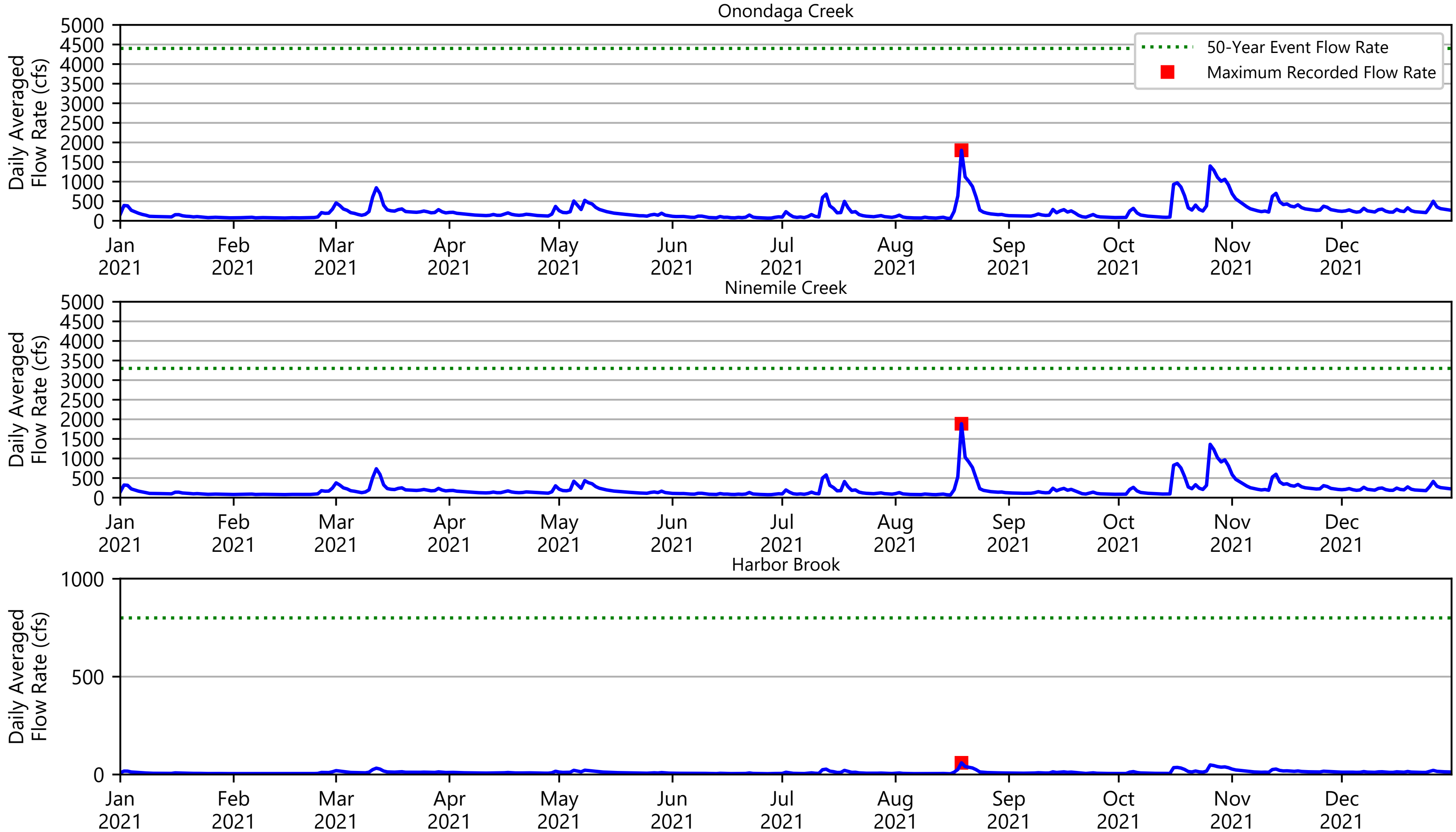
Prepared By: A. Hilton
Reviewed By: M. Henderson

ANCHOR QEA

Figure 1b
Wind Speed Evaluation January 2022 - April 2022
Event-based Monitoring Evaluation
Onondaga Lake Monitoring and Maintenance



Notes:
1. Flow data are reported as average daily flow rates from each U.S. Geological Survey (USGS) gage station from January 1, 2021, to December 31, 2021.
2. Data Sources: Onondaga Creek: USGS Gage No. 04240010, Ninemile Creek: Based on regression analysis, Harbor Brook: Based on regression analysis
3. The maximum daily averaged flow rates for the monitoring period are highlighted in red.
4. The Ninemile Creek USGS gage was discontinued in October 2019, and the Harbor Brook in October 2020. See the monitoring report for more information.

Publish Date: 05/13/2022 09:29 AM | User: AH
File Path: \\athena\Syracuse\Projects\Honeywell\Onondaga_Lake_OLMMS_(E60287)\ANALYSIS\Wind_and_Wave\results\Monitoring_2022_Memo\USGS_flowrate_processing_DailyAvg_Regress-Ninemile21.py

Prepared By: A. Hilton
Reviewed By: M. Henderson

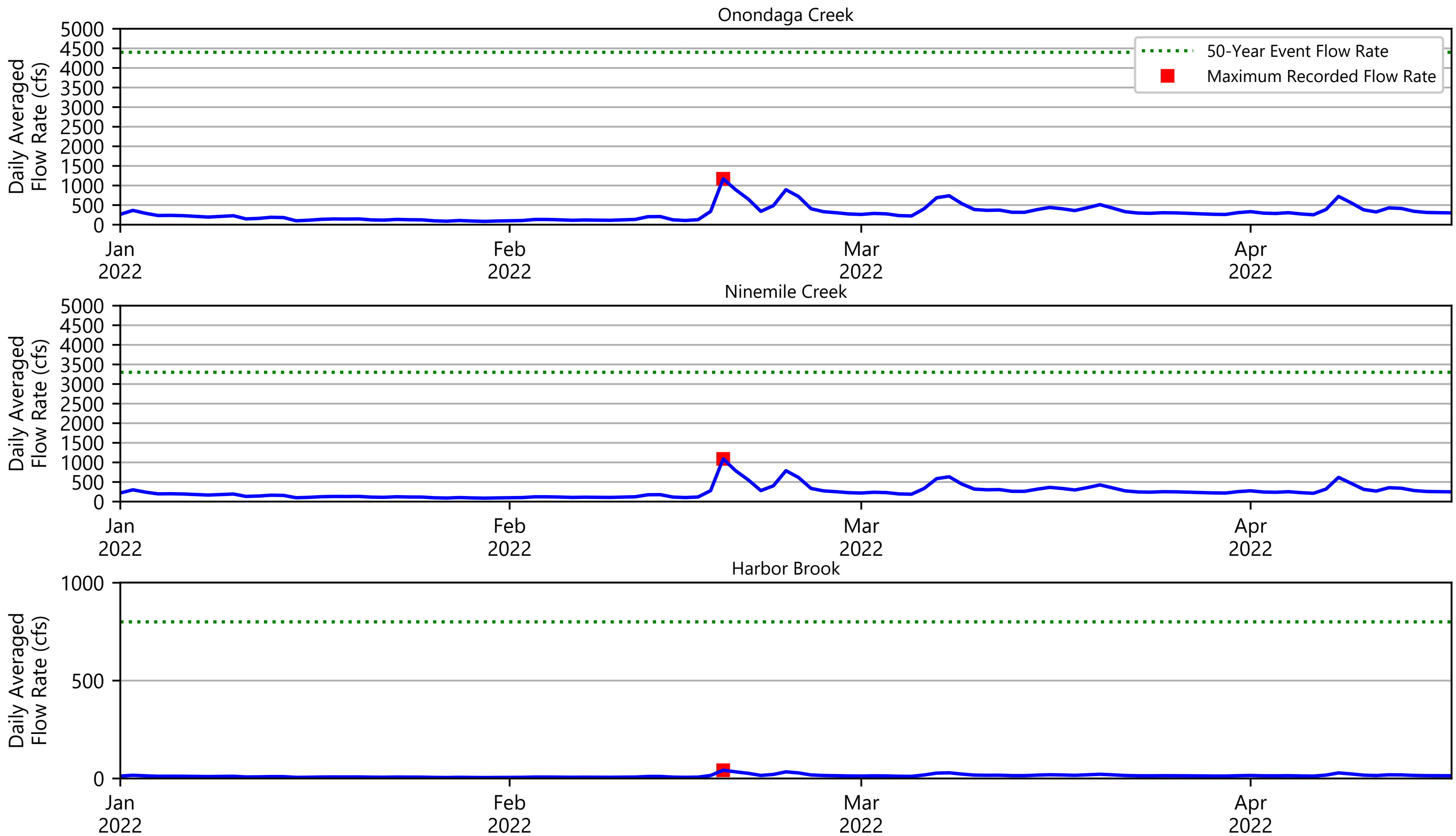
ANCHOR QEA

Figure 2a

Tributary Flow Rate Evaluation - January 2021 - December 2021

Event-based Monitoring Evaluation

Onondaga Lake Monitoring and Maintenance



Notes:
1. Flow data are reported as average daily flow rates from each U.S. Geological Survey (USGS) gage station from January 1, 2022, to April 17, 2022.
2. Data Sources: Onondaga Creek: USGS Gage No. 04240010, Ninemile Creek: Based on regression analysis, Harbor Brook: Based on regression analysis
3. The maximum daily averaged flow rates for the monitoring period are highlighted in red.
4. The Ninemile Creek USGS gage was discontinued in October 2019, and the Harbor Brook in October 2020. See the monitoring report for more information.

Publish Date: 05/13/2022 09:26 AM | User: AH
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Prepared By: A. Hilton
Reviewed By: M. Henderson

ANCHOR QEA

Figure 2b
Tributary Flow Rate Evaluation - January 2022 - April 2022
Event-based Monitoring Evaluation
Onondaga Lake Monitoring and Maintenance

APPENDIX 6B - SHORELINE PHOTOS

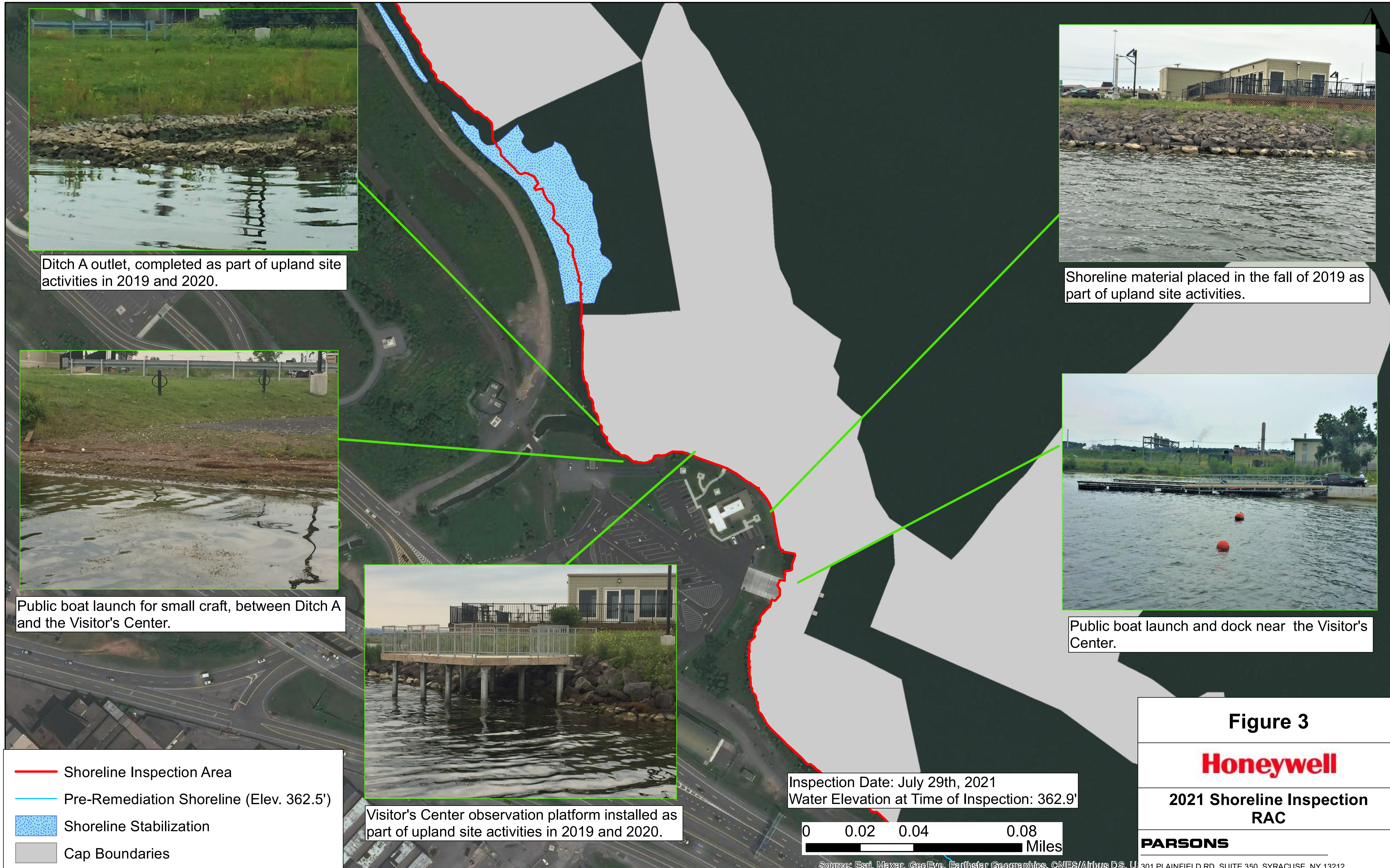
Plotted By: Domanski, Joshua

Plot Date: 8/9/2021

File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\Shoreline Inspection\2021\2021 Shoreline Inspection Photos_Fig1.mxd

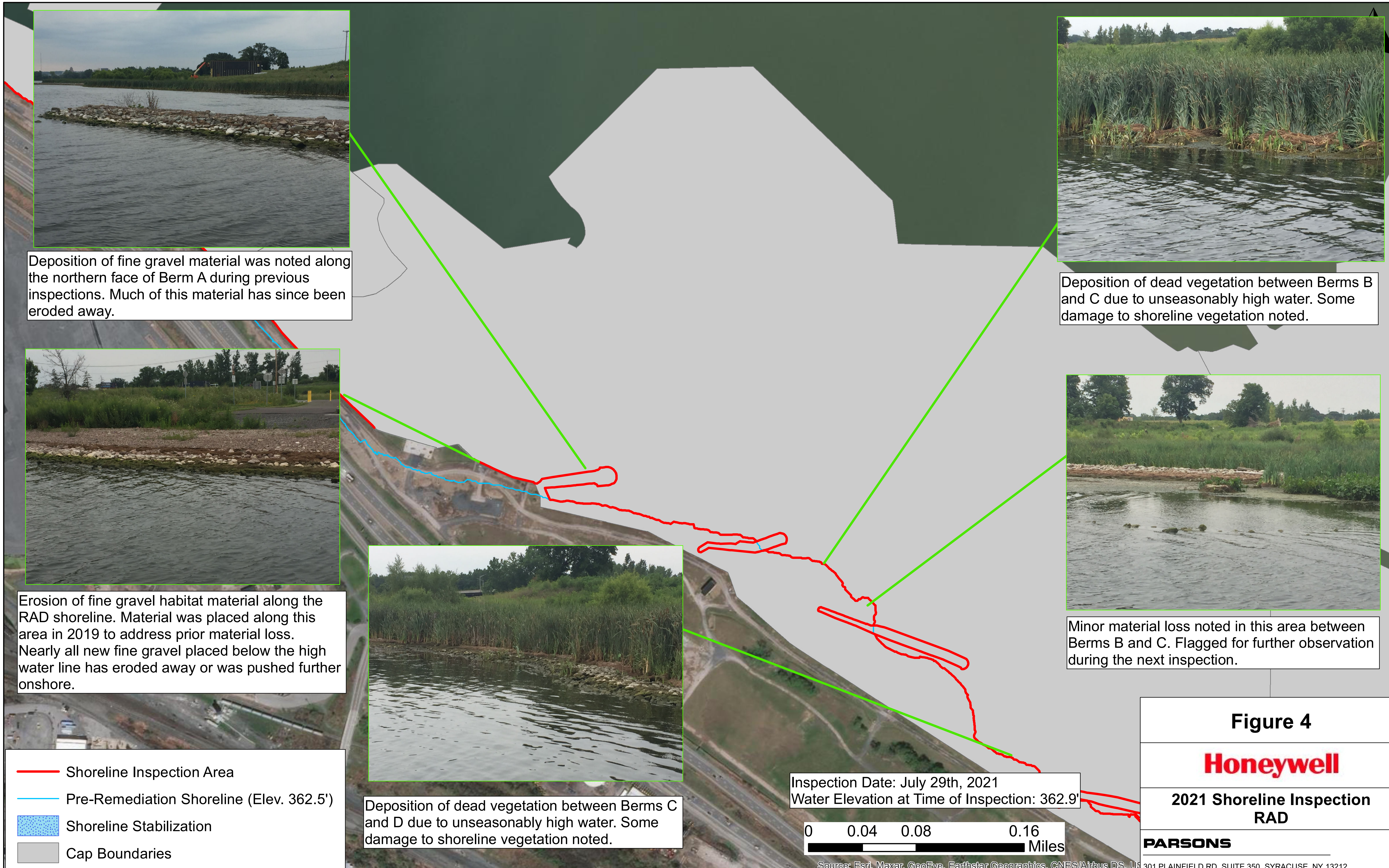
Plot Date: 10/21/2021 Plotted By: Domanski, Joshua

File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\Shoreline Inspection\2021\2021 Shoreline Inspection Photos_Fig2B.mxd



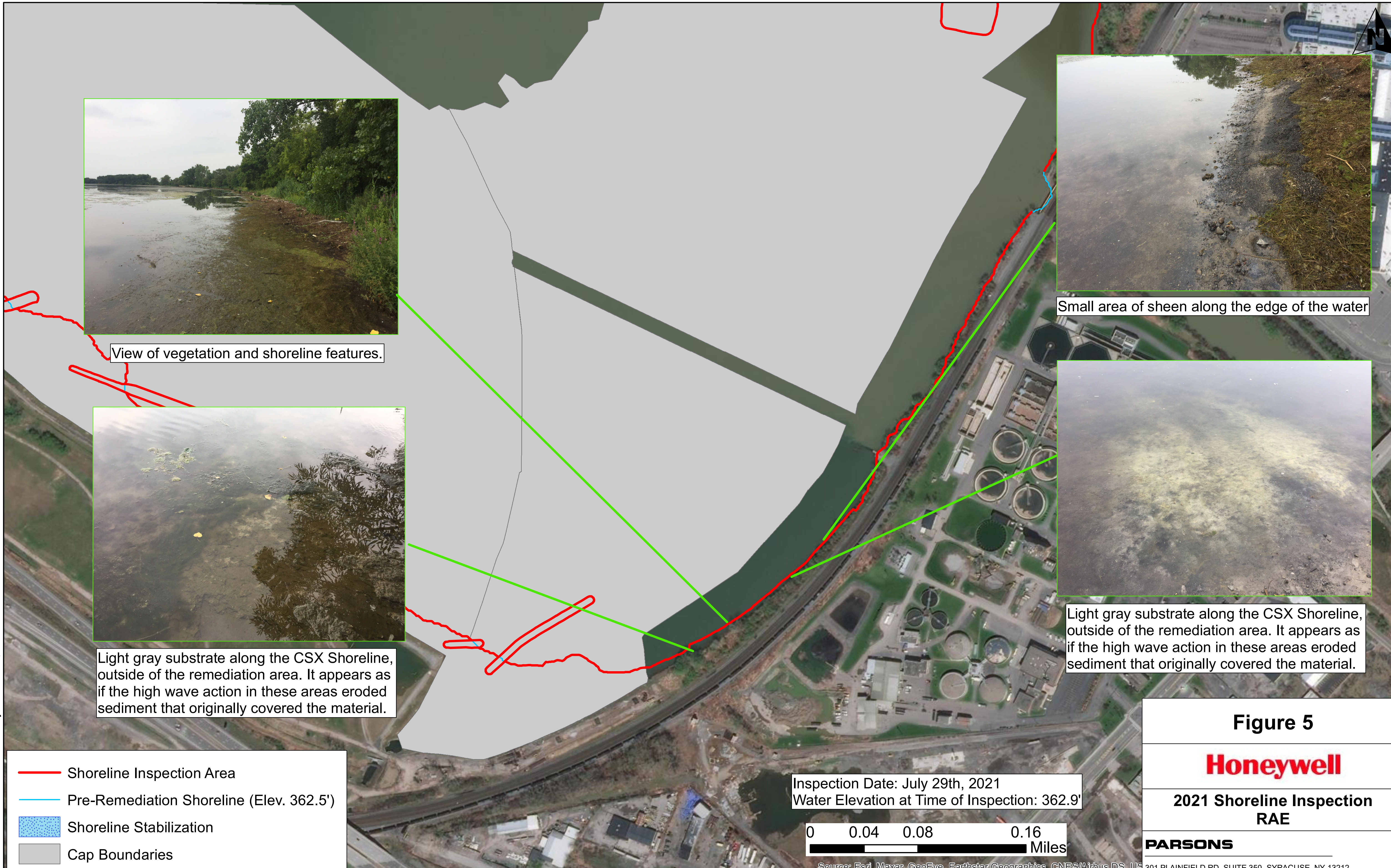
Plot Date: 5/17/2022 Plotted By: Domanski, Joshua

File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\Shoreline Inspection\2021\2021 Shoreline Inspection Photos_Fig3.mxd



Plot Date: 10/22/2021 Plotted By: Domanski, Joshua

File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\Shoreline Inspection\2021\2021 Shoreline Inspection Photos_Fig4B.mxd



Plotted By: Domanski, Joshua

Plot Date: 8/11/2021

File Name: Q:\GIS\Hon_Syracuse\OLMMS\MXDs\Shoreline Inspection\2021\2021 Shoreline Inspection Photos_Fig5.mxd

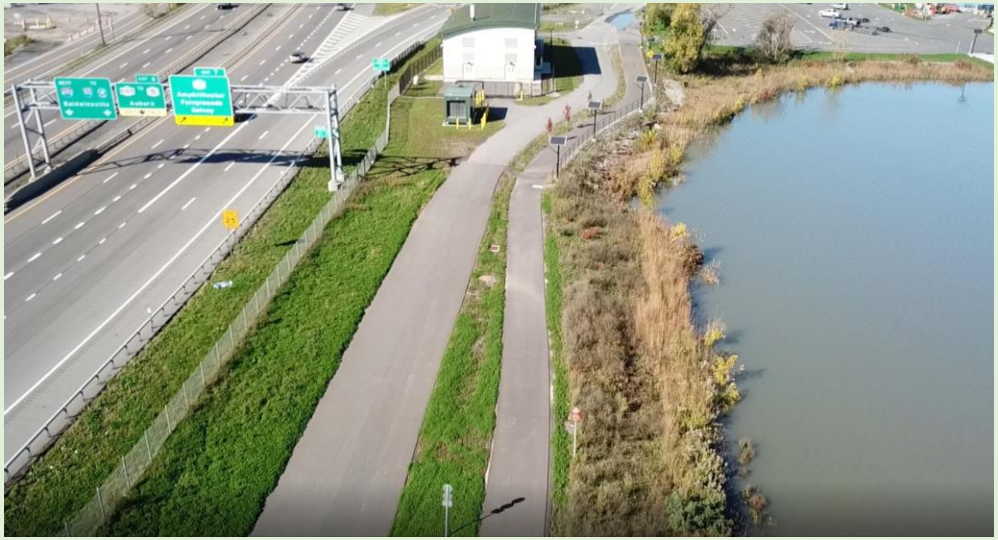
APPENDIX 6C - AERIAL PHOTOS

Remediation Area A

9/24/2021
Lake Elevation 366.77 ft NAVD88

Remediation Area C

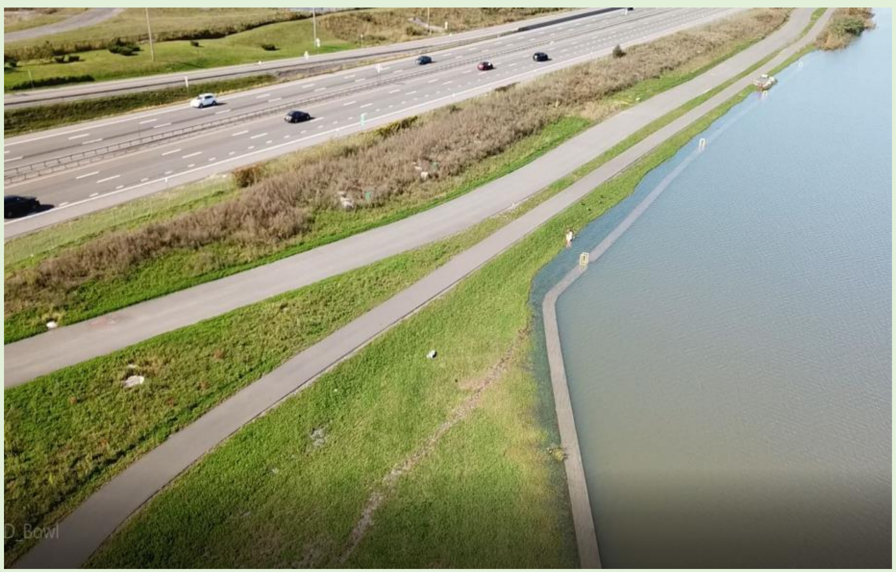
10/1/2021
Lake Elevation 366.77 ft NAVD88



Remediation Area C

10/1/2021
Lake Elevation 366.77 ft NAVD88

Remediation Area D Bowl Area



10/1/2021
Lake Elevation 366.77 ft NAVD88

Remediation Area D
Outboard Area

10/1/2021
Lake Elevation 366.77 ft NAVD88

Remediation Area D
Outboard Area

10/1/2021
Lake Elevation 366.77 ft NAVD88

Remediation Area E

10/28/2021
Lake Elevation 366.18 ft
NAVD88

Remediation Area E

10/28/2021
Lake Elevation 366.18 ft NAVD88

Wastebeds 1-8

9/24/2021
Lake Elevation 366.77 ft NAVD88

Wastebeds 1-8

9/24/2021
Lake Elevation 366.77 ft NAVD88

APPENDIX 6D - VIDEO PROBE RESULTS

INSPIRE ENVIRONMENTAL

513 Broadway, Suite 314, Newport, RI 02840 | 401-849-9236 | www.INSPIREenvironmental.com

7 March 2022

Mr. Edward Glaza
Parsons
301 Plainfield Road, Ste 350
Syracuse, NY 13212

RE: Onondaga Lake Videoprobe Survey and Results

Dear Mr. Glaza,

INSPIRE Environmental is pleased to submit the results from the July 2021 Onondaga Lake Videoprobe survey along with a discussion of the field and analytical methods used to achieve the results. The methodology used to measure strata and total in-situ thicknesses of cap material was identical to that used during the 2019 survey of Onondaga Lake cap thicknesses.

A total of 16 discrete sampling stations were occupied and at each station a minimum of two replicate videoprobe profiles were conducted. A total of 35 probes were analyzed for cap thickness. For 14 of the 35 videoprobe profiles, the videoprobe hit refusal – the point at which the videoprobe could no longer be advanced into the sediment column due to the bearing strength of the sediment. There were 4 stations at which the videoprobe met refusal during all replicate drives of the videoprobe (Stations E62, E63, E64, E65). At these stations, the reported cap thickness should be considered a minimum estimate of in-situ thickness. At these four stations, at least one drive that encountered refusal documented a cap thickness of > 24 inches. Refusal, when encountered, was always within the cap strata and always within a stratum that was dominantly composed of sand. Although in 2019 the videoprobe could reliably penetrate through the gravel and sand layers, the sands within the 2021 stations were compact or consolidated enough to sometimes stop the advancement of the probe.

With respect to the cap material identified and described during the 2021 survey, layers were labeled similarly to those encountered in the 2019 survey as a matter of continuity, however layers were labeled sequentially (e.g., Layer 1, Layer 2 etc.) rather than as "Gravel Layer" or "Sand Layer". One key difference between the two surveys is that during the 2021 survey, the uppermost cap layer identified was a mixture of sands and fine gravels, whereas in the 2019 survey the uppermost layer was predominantly gravel with minor interstitial sand. For the purpose of identification, layers were identified based on changes in particle size and interstitial porosity. Each layer is defined by a normally graded sequence where finer grained particles (i.e., fine sands) overlie coarser particles (coarse sands and fine gravels). The history of cap application and placement was not known prior to the survey or analysis. Although multiple layers of cap material can be observed in individual videoprobe profiles, those layers may be from multiple applications of cap material in a single placement event or multiple placement events. There were no distinct stratigraphic markers between cap layers that would suggest natural deposition during a hiatus in cap application.

Technical Notes Describing Videoprobe Operation, Deployment and Analytical Methods Used for the Lake Onondaga Videoprobe Survey

Videoprobe Field Collection

The videoprobe is a sampling device that collects a continuous, in-situ record of the sediment column in standard video format (640 line NTSC). Depending upon substrate properties, the videoprobe can capture video from the top 5 ft of the sediment column. Essentially, the videoprobe is similar to a frame mounted vibracore but instead of a core barrel it has a probe rod outfitted with an underwater video camera. The base structure is a tripod frame system with two of the frame rails also functioning as guides for the probe apparatus to slide down upon. The other frame rail is telescoping and its length may be lengthened as necessary to gimble the landing pad so that changes in seafloor slope can be accommodated up to 1:3 slope.

The optical components of the videoprobe system consist of a video camera and internal LED lighting system. This system is mounted in downward orientation that looks through a conical acrylic lens and driving tip. The conical lens is affixed to the end of 6 ft stainless steel penetration rod. Lighting is provided by a ring LED lights surrounding the video camera lens. The probe and optical components are driven into the sediment by 300 pounds of head weight and a hydraulically actuated vibrator mounted on the drive head. Hydraulics to the vibratory unit are controlled from the vessel deck through an umbilical connection. The vibrahead operates at variable frequency up to 60 hz and vibration rate and advancement rate is controlled by the user of the hydraulic unit while monitoring the real-time video feed.

A second video camera is mounted on the head of the probe unit and as the head unit descends it records the displacement, the distance to which the probe has travelled into the sediment column, relative to a tape measure mounted on the fixed, non-moving portion of the videoprobe frame. Both cameras have feeds to the surface and the videos are viewed and recorded in real time aboard the survey vessel in PiP (picture in picture) format. Both feeds are synchronized to GPS time at the start of the survey day and time, date and station names are input to the video overlay that is recorded on each video stream. This allows for the synchronous review of both video feeds for subsequent analysis. Both video feeds are recorded in AVI format on a digital video recorder (Outland Technology UWS-410).

During data collection activities, once all videoprobe components are checked and camera feeds synchronized, the videoprobe unit is lifted over the vessel transom and then lowered to the seafloor. As the videoprobe unit descends, the operator starts recording the two video feeds and verifies that all video overlays are displaying the correct information with respect to dates, times and station names. Once the videoprobe unit contacts the seafloor the probe tip (the acrylic conical lens tip) descends into the seafloor until either penetration stops or the full length of the probe is achieved. If penetration ceases prior to the full length deployed or the feature of interest is encountered (e.g., native sediment), a hydraulic vibrator is actuated from the surface to further penetrate the seafloor. Penetration with vibration continues until either there is refusal, the feature of interest is recorded, or the full length of the probe has been pushed into the sediment column.

During the survey of the Lake Onondaga cap, all collections were conducted aboard a client-provided barge outfitted with a small crane. During sampling, the vessel was piloted to the desired sampling station and the vessel spuds were deployed to keep the vessel in a fixed location. Once the vessel was maneuvered to the sampling location and spudded on location, the videoprobe was deployed. Coordinates of videoprobe acquisition were recorded at the start of the videoprobe deployment. At stations where multiple videoprobe profiles were collected, the videoprobe was repositioned using the crane while the vessel remained stationary on the spuds. This ensured that the replicate profiles were within 3-6 ft of the initial deployment. Occasionally, the topography of the lake bottom was sloped such that the videoprobe could not stand upright on its base. At these stations, the videoprobe base was adjusted on its gimble so that the videoprobe remained upright and entered the sediment column vertically or near-vertically.

Once the probe deployment was complete, the entire unit was extracted from the seafloor and either brought to the surface or towed to the next station.

Videoprobe Analytical Methods

Data collected from the videoprobe survey consisted of:

1. Water depth
2. Field notes
3. Video footage of the sediment column
4. Video footage of the survey tape indicating the depth to which the videoprobe was in the sediment column.

Cap thickness determinations are shown in Table 1. Full analytical results with annotations and comments are included as Attachment 1.

As described in the collection methods, the video footage of both the sediment column and survey tape were synchronized at the start of each survey day. At the conclusion of the survey, the two video files were combined into a single video file displaying both the sediment column from the videoprobe as well as the depth of penetration into the sediment column. This approach allowed for the synchronous playback of both the sediment column video and the penetration depth video, thereby enabling the viewer to ascertain the depth within the sediment column where features of interest were observed.

The purpose of the videoprobe survey was to determine cap thickness within the sediment column at the Onondaga Lake capping site. In addition, to the extent possible, the thickness of individual cap strata was determined (gravel layer and sand layer). During the analysis and review of videoprobe footage the following data was recorded and tabulated:

- The time and depth where the sediment column was encountered,
- The time and depth when the gravel/sand contact was observed,
- The time and depth the sand/native contact was observed,
- The times and depth where other features of interest were observed.

As the video footage of probe penetration depth was synchronous with the sediment column footage, the depth to which cap strata were observed, the depth at which native sediment was observed was easily ascertained. It is important to note that during the videoprobe footage review, the penetration depth indicator on the videoprobe did not start at the same depth reading for each profile. The measuring tape that is used to determine the distance which the videoprobe lens has penetrated into the sediment column is fixed to the videoprobe frame. If the lake floor had some irregular topography or large objects on the lake floor that the base rested on, there was a small distance in which the probe tip had to descend prior to encountering the surface of the sediment column. All measurements of strata and cap thickness were determined relative to the surface of the sediment column and not the absolute scale recorded. It is estimated that the absolute vertical accuracy of the depth measurements is 0.1 ft.

Identification of the Sediment Cap Gravels and Sands Layer
During the 2019 survey, the diagnostic criteria for the identification of gravel within the videoprobe profiles was particle size in combination with identifiable interstitial pore fluids. For the purposes of delineating the gravel layer within the cap, only those gravels in a distinct layer without significant admixed sand or other sediment that forms a coherent sediment matrix around the gravel particles were denoted as the distinct gravel layer. As the gravels passed the videoprobe lens, the gravel particles were typically in point contact with the 1.375" conical lens and the entire gravel fragment could not be seen. However, the pore fluids in conjunction with the gravel granular point contact indicated that the layer was composed primarily of gravel without quantities of finer grained sediment (sands and finer) in sufficient abundance to form a surrounding matrix. In addition, the gravel layer offered stiff resistance to the videoprobe and penetration rate was another line of evidence to determine the presence of the gravel layer. During the 2021survey, the vast majority of the material encountered was a mixture of sand and varying proportions of fine to medium gravels. These were observed in normally graded sequences, presumably hydraulically fractionated during placement as the cap material settled to the lake floor. Only in the uppermost layer was there any interstitial fluid observed in the gravel sub-fraction.

Identification of the Sediment Cap Sand Layers
The diagnostic criteria for the identification of the cap sand layer in the Lake Onondaga videoprobe profiles were particle size and granularity. In addition, the capping sands offered resistance to the penetration of the videoprobe. The ease of penetration or the need for vibratory assist to advance the videoprobe was another line of evidence used to delimit the thickness of the sand layer. Frequently, there were gravel-sized particles within the sand layer, however, these were volumetrically subordinate to the sands based on the optical profiles. Also, due to the grain size mixture, the sand layer did not have easily discernible free pore fluids which was a key difference between the gravel layer and the sand layer. Frequently, the basal portion of the sand layer exhibited light colored fine-gravel sized fragments. These gravel sized fragments in the sand layer appeared to generally be of smaller particle size than the gravels used for the upper gravel layer although there is some overlap of the particle size ranges. The fragments were near ubiquitous over the cap area and were immediately above sediments interpreted to be pre-cap. Different sand layers were discernable due to changes in particle size and interstitial porosity and are noted separately as Layer 2 and Layer 3; a total sand layer thickness is also provided in Table 1.

Identification of Pre-Cap, Native or Recently Deposited Non-Cap Sediment
The diagnostic criteria for the identification of pre-cap or native sediment were particle size, color/hue and bearing strength. Pre-cap sediments were water-rich, soft, silts and clays that occasionally had small organic fragments in the upper portion of the strata. The pre-cap sediments were always overlain by the distinct sand layer except when the sand layer was not present or identifiable in a profile. In terms of the bearing strength, the pre-cap sediments offered little resistance to the advancement of the videoprobe into the sediment column. The optical contrast between the cap materials and the pre-cap or native sediments was very distinct.

Sincerely,

David Browning
Marine Sampling Systems

Cc: Marisa Guarinello, INSPIRE Environmental

Table 1. Strata Thicknesses from 2021 VideoProbe Survey of Lake Onondaga Sediment Cap

Site ID	Survey ID	Station ID	Layer 1 Gravel Thickness (in)	Layer 2 Sand Thickness (in)	Layer 3 Sand Thickness (in)	Total Sand Thickness (in)	Total Cap Thickness (in)	Refusal Notes
OL	21B1	E20A-1	22.00	11.5	10.5	22	44.00	
OL	21B1	E20A-2	20.75	12.25	11.5	23.75	44.50	
OL	21B1	E20C-1	18.75	4.75	14	18.75	37.50	
OL	21B1	E20C-2	17.50	6.5	2	8.5	26.00	Refusal, minimum in-situ estimate
OL	21B1	E22-1	21.00	10	0	10	31.00	
OL	21B1	E22-2	18.00	8	0	8	26.00	
OL	21B1	E22-3	19.00	12.75	0	12.75	31.75	
OL	21B1	E22D-1	16.50	10	0	10	26.50	Refusal, minimum in-situ estimate
OL	21B1	E22D-2	13.75	4.75	10.5	15.25	29.00	
OL	21B1	E22E-1	10.00	7.5	6.5	14	24.00	
OL	21B1	E22E-2	12.25	17.75	8.25	26	38.25	
OL	21B1	E22G-1	16.00	7.25	6.25	13.5	29.50	
OL	21B1	E22G-2	15.00	7	8.25	15.25	30.25	
OL	21B1	E22I-1	21.00	8	11.25	19.25	40.25	
OL	21B1	E22I-2	14.75	5	0	5	19.75	Refusal, minimum in-situ estimate
OL	21B1	E25-1	0.00	11.5	31.5	43	43.00	
OL	21B1	E25-2	0.00	11	20.5	31.5	31.50	
OL	21B1	E58-1	16.00	3.5	12	15.5	31.50	
OL	21B1	E58-2	16.75	4	11	15	31.75	
OL	21B1	E61-1	15.50	6.75	17	23.75	39.25	
OL	21B1	E61-2	18.00	9	10	19	37.00	
OL	21B1	E62-1	15.00	10.25	-0.25	10	25.00	Refusal, minimum in-situ estimate
OL	21B1	E62-2	13.00	14.5	0	14.5	27.50	Refusal, minimum in-situ estimate
OL	21B1	E62-3	9.75	6.25	7.25	13.5	23.25	Refusal, minimum in-situ estimate
OL	21B1	E63-1	21.75	7.75	2.25	10	31.75	Refusal, minimum in-situ estimate
OL	21B1	E63-2	18.00	9	IND	IND	27.00	Refusal, minimum in-situ estimate
OL	21B1	E64-1	16.00	6	20	26	42.00	Refusal, minimum in-situ estimate

Site ID	Survey ID	Station ID	Layer 1 Gravel Thickness (in)	Layer 2 Sand Thickness (in)	Layer 3 Sand Thickness (in)	Total Sand Thickness (in)	Total Cap Thickness (in)	Refusal Notes
OL	21B1	E64-2	18.00	10	11.5	21.5	39.50	Refusal, minimum in-situ estimate
OL	21B1	E65-1	21.00	4.5	IND	IND	25.50	Refusal, minimum in-situ estimate
OL	21B1	E65-2	17.25	1.5	IND	IND	18.75	Refusal, minimum in-situ estimate
OL	21B1	E66-1	20.25	5.75	6.25	12	32.25	
OL	21B1	E66-2	14.00	6	7.25	13.25	27.25	
OL	21B1	E67-1	18.25	5.25	18	23.25	41.50	
OL	21B1	E67-2	17.25	IND	IND	IND	17.25	Refusal, minimum in-situ estimate
OL	21B1	E67-3	17.50	2.5	IND	IND	20.00	Refusal, minimum in-situ estimate

IND - Indeterminate

Site ID	Survey ID	Station ID	Sample Type	Date Local	On Bottom Time Local	Start Depth (Mudline in)	Layer 1 Time	Layer 1 (Gravels and Sands) Depth (in)	Layer 1 (Gravels and Sands) Thickness (in)	Layer 2 (Sands) Time	Layer 2 (Sands) Depth (in)	Layer 2 (Sands) Thickness (in)	Layer 3 (Sands) Time	Layer 3 (Sands) Depth (in)	Layer 3 (Sands) Thickness (in)	Total Sand Thickness (in)	Total Cap Thickness (in)
OL	21B1	E20A-1	VideoProbe	7/15/21	9:34:30	4.5	9:35:15	26.5	22.00	9:36:17	38	11.5	9:36:23	48.5	10.5	22	44.00
OL	21B1	E20A-2	VideoProbe	7/15/21	9:41:43	4.5	9:42:24	25.25	20.75	9:43:39	37.5	12.25	9:45:35	49	11.5	23.75	44.50
OL	21B1	E20C-1	VideoProbe	7/15/21	8:56:25	7.5	8:56:46	26.25	18.75	8:57:24	31	4.75	9:02:16	45	14	18.75	37.50
OL	21B1	E20C-2	VideoProbe	7/15/21	9:04:57	5	9:05:44	22.5	17.50	9:06:42	29	6.5	IND	31	2	8.5	26.00
OL	21B1	E22-1	VideoProbe	7/15/21	10:50:44	8.75	10:51:32	29.75	21.00	10:51:41	39.75	10	-	0	0	10	31.00
OL	21B1	E22-2	VideoProbe	7/15/21	10:54:11	5	10:55:36	23	18.00	11:00:11	31	8	-	0	0	8	26.00
OL	21B1	E22-3	VideoProbe	7/15/21	11:02:23	10	11:03:17	29	19.00	11:03:51	41.75	12.75	-	0	0	12.75	31.75
OL	21B1	E22D-1	VideoProbe	7/15/21	11:35:27	5	11:37:39	21.5	16.50	11:41:24	31.5	10	-	0	0	10	26.50
OL	21B1	E22D-2	VideoProbe	7/15/21	11:43:35	8.5	11:44:07	22.25	13.75	11:44:26	27	4.75	11:44:51	37.5	10.5	15.25	29.00
OL	21B1	E22E-1	VideoProbe	7/15/21	10:31:11	12	10:31:53	22	10.00	10:32:15	29.5	7.5	10:32:18	36	6.5	14	24.00
OL	21B1	E22E-2	VideoProbe	7/15/21	10:34:29	8.75	9:33:01	21	12.25	9:33:36	38.75	17.75	9:33:48	47	8.25	26	38.25
OL	21B1	E22G-1	VideoProbe	7/15/21	12:40:36	6.75	12:41:06	22.75	16.00	12:41:38	30	7.25	12:41:41	36.25	6.25	13.5	29.50
OL	21B1	E22G-2	VideoProbe	7/15/21	12:43:36	8	12:44:22	23	15.00	12:44:59	30	7	12:45:04	38.25	8.25	15.25	30.25
OL	21B1	E22I-1	VideoProbe	7/15/21	13:04:06	6	13:05:07	27	21.00	13:06:03	35	8	13:07:13	46.25	11.25	19.25	40.25
OL	21B1	E22I-2	VideoProbe	7/15/21	13:11:12	7.25	13:12:08	22	14.75	13:13:40	27	5	-	0	0	5	19.75
OL	21B1	E25-1	VideoProbe	7/14/21	12:26:13	7	-	7	0.00	12:26:21	18.5	11.5	12:28:15	50	31.5	43	43.00
OL	21B1	E25-2	VideoProbe	7/14/21	12:41:13	7	-	7	0.00	12:41:16	18	11	12:42:44	38.5	20.5	31.5	31.50
OL	21B1	E58-1	VideoProbe	7/15/21	10:04:50	5	10:05:34	21	16.00	10:05:44	24.5	3.5	10:07:44	36.5	12	15.5	31.50
OL	21B1	E58-2	VideoProbe	7/15/21	10:09:26	8.25	10:10:13	25	16.75	10:10:21	29	4	10:10:24	40	11	15	31.75
OL	21B1	E61-1	VideoProbe	7/15/21	13:34:37	6.5	13:35:03	22	15.50	13:35:40	28.75	6.75	13:37:22	45.75	17	23.75	39.25
OL	21B1	E61-2	VideoProbe	7/15/21	13:40:39	8	13:41:22	26	18.00	13:41:42	35	9	13:41:51	45	10	19	37.00
OL	21B1	E62-1	VideoProbe	7/14/21	13:03:06	8	13:02:27	23	15.00	13:02:39	33.25	10.25	13:02:38	33	-0.25	10	25.00
OL	21B1	E62-2	VideoProbe	7/14/21	13:09:34	6.5	13:07:52	19.5	13.00	13:08:22	34	14.5	13:08:22	34	0	14.5	27.50
OL	21B1	E62-3	VideoProbe	7/14/21	13:30:54	9.5	13:51:51	19.25	9.75	13:52:29	25.5	6.25	13:52:35	32.75	7.25	13.5	23.25
OL	21B1	E63-1	VideoProbe	7/14/21	14:32:04	8.75	14:33:24	30.5	21.75	14:35:22	38.25	7.75	14:39:05	40.5	2.25	10	31.75
OL	21B1	E63-2	VideoProbe	7/14/21	14:42:42	6	14:43:10	24	18.00	14:45:10	33	9	IND	IND	IND	IND	27.00
OL	21B1	E64-1	VideoProbe	7/14/21	15:02:02	6	15:02:09	22	16.00	15:02:51	28	6	15:50:27	48	20	26	42.00
OL	21B1	E64-2	VideoProbe	7/14/21	15:10:53	6	15:11:11	24	18.00	15:11:37	34	10	15:14:36	45.5	11.5	21.5	39.50
OL	21B1	E65-1	VideoProbe	7/14/21	15:34:16	6	15:36:27	27	21.00	15:38:52	31.5	4.5	IND	IND	IND	IND	25.50
OL	21B1	E65-2	VideoProbe	7/14/21	15:41:48	10.25	15:44:03	27.5	17.25	15:44:08	29	1.5	IND	IND	IND	IND	18.75
OL	21B1	E66-1	VideoProbe	7/14/21	16:02:38	8	16:04:48	28.25	20.25	16:05:08	34	5.75	16:06:17	40.25	6.25	12	32.25
OL	21B1	E66-2	VideoProbe	7/14/21	16:10:22	10	16:10:35	24	14.00	16:10:42	30	6	16:10:43	37.25	7.25	13.25	27.25
OL	21B1	E67-1	VideoProbe	7/14/21	16:31:52	6.75	16:32:40	25	18.25	16:33:29	30.25	5.25	16:36:01	48.25	18	23.25	41.50
OL	21B1	E67-2	VideoProbe	7/14/21	16:38:22	6.75	16:41:09	24	17.25	IND	IND	IND	IND	IND	IND	IND	17.25
OL	21B1	E67-3	VideoProbe	7/14/21	16:43:58	6	16:44:43	23.5	17.50	16:47:42	26	2.5	IND	IND	IND	IND	20.00

Site ID	Survey ID	Station ID	Refusal Notes	Comments
OL	21B1	E20A-1		Freefall to 12.5" (8" total), some fines at surface mixed with gravel. Sand deposits are graded with coarse sand/gravel at the base. Penetration to 64" and pre-cap material. Sedimentary gas release when going through cap.
OL	21B1	E20A-2		Freefall to 17" (12.5" total). Fine grained sediments overlying and mixed with gravel. Sand layers are graded with coarse sand/gravel at base and are highly consolidated.
OL	21B1	E20C-1		Freefall to 9.5" (2" total). Consolidated, sand layers are graded but basal sand layer has some gravels. Basal sand contact denoted by large increase in penetration rate.
OL	21B1	E20C-2	Refusal, minimum in-situ estimate	Could not make it through cap sequence, refusal at 31" of penetration. Very cohesive sand and gravel at point of refusal.
OL	21B1	E22-1		Freefall to 25" (16.75" total). Appears to be two sand layers with each layer being normally graded. Some fine gravels in the base of each sand layer.
OL	21B1	E22-2		Refusal at 31" of penetration, long drive, coarse sand/gravel at point of refusal. Did not penetrate through entire cap sequence. Camera 2 not activated until partially through drive.
OL	21B1	E22-3		Freefall to 23" (13" total). Appears to be two normally graded gravelly sand layers
OL	21B1	E22D-1	Refusal, minimum in-situ estimate	Freefall to 11.5" (6.5 " total). Refusal at 31.5". All cap material to refusal.
OL	21B1	E22D-2		Freefall to 17.5 (9" total). Three normally graded sand layers with upper layer displaying some basal fine gravel in the graded sequence Appears to be some mixing under cap but cap thickness measured as solely sand material. Rapid penetration after cap breakthrough.
OL	21B1	E22E-1		Freefall to 18.5". Gravel over two normally graded sand layers. Spliced video feeds are out of such by two seconds.
OL	21B1	E22E-2		Freefall to 31". Top layer soft silts. Mixed silts and gravels from 31 to 41" and then soft silt. Full drive to 64"
OL	21B1	E22G-1		Freefall to 21" (14.25" total). Two sand layers, top layer coarser. Fast penetration once through cap. Full penetration.
OL	21B1	E22G-2		Freefall to 18" (10" total). Gravel mixed with fines and sand. Two sand layers, upper layer is coarser and normally graded. Full through cap into native and full penetration.
OL	21B1	E22I-1		Freefall to 16" (10" total). Gravel/coarse layer at surface underlain by two normally graded sand deposits. Hard drive. Full penetration through the cap.
OL	21B1	E22I-2	Refusal, minimum in-situ estimate	Freefall to 17.5" (10.25" total). Refusal at 27". Incomplete profile.
OL	21B1	E25-1		Freefall to 19" (12" total). All sand. Profile through cap.
OL	21B1	E25-2		Freefall to 21.5" (14.5" total). Appears to be graded sand layers. Full extension on probe. Lower sand layer cohesive.
OL	21B1	E58-1		Freefall to 15.75" (10.75" total).
OL	21B1	E58-2		Freefall to 20.5" (12.25" total).
OL	21B1	E61-1		Freefall to 24" (17.5" total). Hard drive through graded sand layers, top layer is a loose silty gravelly sand.
OL	21B1	E61-2		Freefall to 19" (10.75" total).
OL	21B1	E62-1	Refusal, minimum in-situ estimate	Freefall to 17" (9" total). Refusal at 19".
OL	21B1	E62-2	Refusal, minimum in-situ estimate	Freefall to 14" (8" total). Refusal at 20" of penetration
OL	21B1	E62-3	Refusal, minimum in-situ estimate	Freefall to 20.25" (10.75" total). Refusal at 36" of penetration (26.5" of cap material minimum)
OL	21B1	E63-1	Refusal, minimum in-situ estimate	Freefall to 19.75" (11" total). Refusal at 40.5".
OL	21B1	E63-2	Refusal, minimum in-situ estimate	Freefall to 19.75". Refusal in sand.
OL	21B1	E64-1	Refusal, minimum in-situ estimate	Freefall to 17". Refusal at 48". Sedimentary gas release at 46". Likely base of cap.
OL	21B1	E64-2	Refusal, minimum in-situ estimate	Freefall to 18.75". Refusal. Top layer is dominantly sand.
OL	21B1	E65-1	Refusal, minimum in-situ estimate	Freefall to 13.5". Refusal in sand layer at 31.5
OL	21B1	E65-2	Refusal, minimum in-situ estimate	Freefall to 16.5". Refusal in sand at 29".
OL	21B1	E66-1		Freefall to 13.5". First attempt aborted. Through cap. First layer is coarser. Graded sands/fine gravels below. Some coarse particles down to 48", possible mixing.
OL	21B1	E66-2		Freefall to 16.75". Through cap.
OL	21B1	E67-1		Freefall to 13.75". Dark particles in lower sand layer and there appears to be some fines in bottom 5" of lower layer of sand. Through cap.
OL	21B1	E67-2	Refusal, minimum in-situ estimate	Freefall to 15". Refusal in top coarse layer at 24" total.
OL	21B1	E67-3	Refusal, minimum in-situ estimate	Freefall to 19.75". Refusal in sand at 26" total.

APPENDIX 6E - GROUNDWATER UPWELLING EVALUATION

Draft Data Report

Onondaga Lake UltraSeep Survey

August 2021

Submitted to:

Parsons

301 Plainfield Rd # 350

Syracuse, NY 13212

Submitted by:

Coastal Monitoring Associates, LLC

4741 Orchard Ave.

San Diego, CA 92107

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LIST OF ACRONYMS

EDD	Electronic Data Deliverable
FS	Full Scale
DGPS	Differential Global Positioning System (using SBAS)
NSHCS	Northern Shore Hydraulic Control System
PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
QA	Quality Assurance
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SOP	Standard Operating Procedure
US	UltraSeep
USGS	United States Geological Survey

UNITS

°C	degrees Celsius
cm	centimeters
cm^2	centimeters squared
cm/day	centimeters per day
cm/year	centimeter per year
days	days
feet	feet
ft	feet
meters	meters
m	meters
MHz	megahertz
minutes	minutes
μS/cm	microsiemens per centimeter
ml	milliliters
ml/min	milliliters per minute
mS/cm	millisiemens per centimeter
psi	pounds per square inch
seconds	seconds
V	volts
%	percent

LIST OF FIGURES

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1 INTRODUCTION

1.1 BACKGROUND

This data report describes the results of the first and second Onondaga Lake UltraSeep survey events. The work was performed by Coastal Monitoring Associates under a sub-contract to Parsons. The 2021 work was completed consistent with the March 2, 2021 Parsons memo titled *Wastebeds 1-8 Interim Remedial Measure Northern Shore Hydraulic Control System 2021 Groundwater Upwelling Velocity Measurement in Adjacent Capped Area of the Lake*. The 2019 work was completed consistent with the July 23, 1999 Parsons memo titled Wastebeds 1-8 Interim Remedial Measure Northern Shore Hydraulic Control System – Groundwater Upwelling Velocity Measurement in Adjacent Capped Area of the Lake. The report also provides a comparison between the two survey events.

1.2 SITE CHARACTERISTICS

The study area was located on the Onondaga Lake site in the vicinity of Syracuse, New York (Figure 1-1). The Onondaga Lake site is undergoing monitoring for remediation of contaminated sediments, and the seepage survey was conducted to support that monitoring.

1.3 OBJECTIVES OF THE PROJECT

The objectives for this work were to (1) collect seepage rate measurements for a period of approximately 12 days at 5 target stations identified by Parsons within the capped area of Remediation Area A (RA-A), (2) evaluate any differences in seepage rates associated with closure of the intermediate valve on the Northern Shore Hydraulic Control System (NSHCS), and (3) compare results from the second measurement event in 2021 to the first measurement event from 2019.

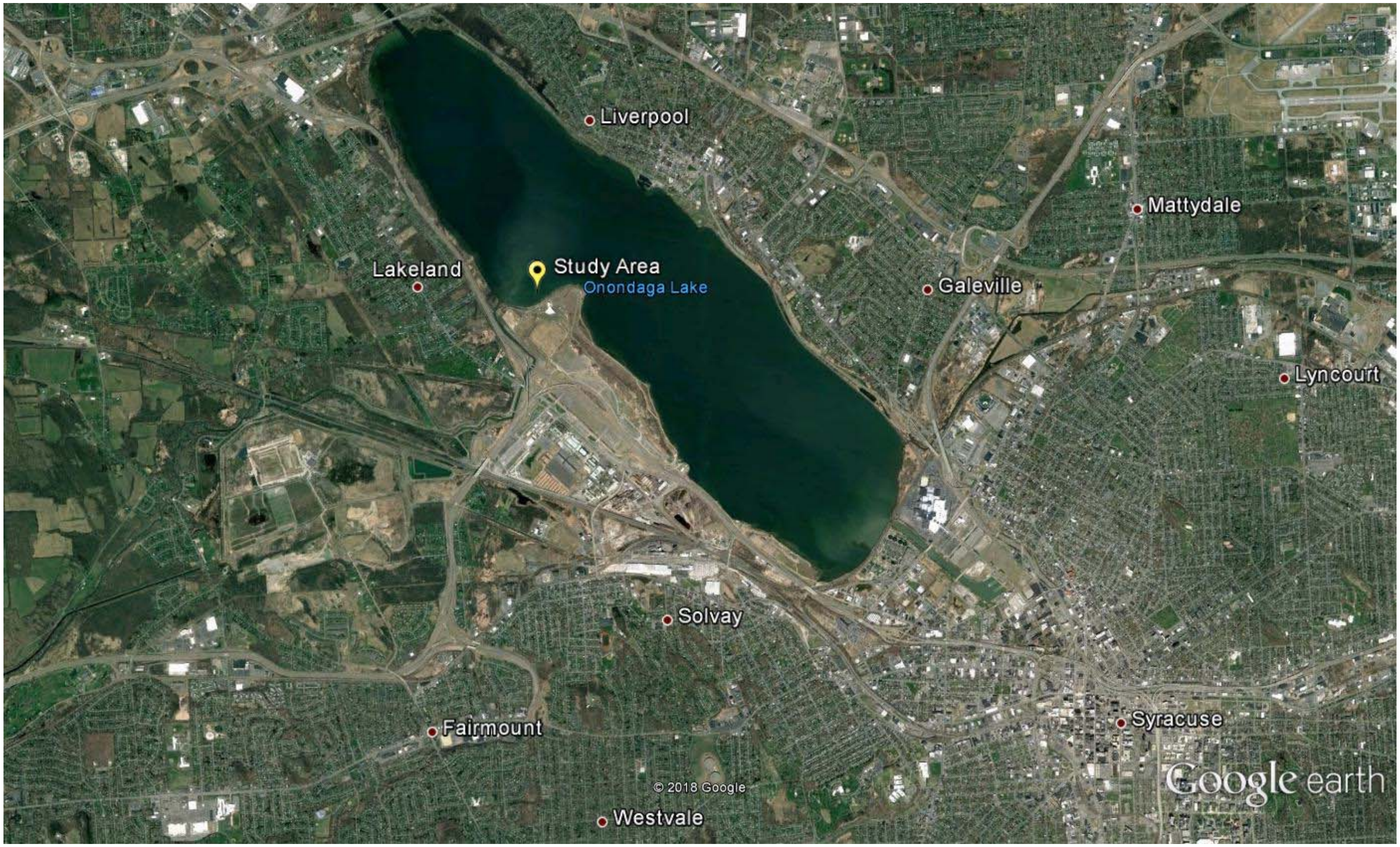

Figure 1-1. General study area vicinity of the Onondaga Lake site near Syracuse, New York for the UltraSeep survey (Image: Google Earth).

2 PROJECT TECHNOLOGY AND METHODOLOGY

2.1 SEEPAGE MEASUREMENTS

2.1.1 TECHNOLOGY DESCRIPTION

The UltraSeep system was used to quantify seepage rates within the target area of Remediation Area A at the Onondaga Lake Site. The UltraSeep technology (Figure 2-1 and Figure 2-2) is based on the time-transient ultrasonic groundwater seepage meter described by Paulsen et al (2001). For this study, the systems were used to measure seepage rates and direction, and the data produced were time series of seepage rates and direction.

The ultrasonic flow sensor uses two piezoelectric transducers to continuously measure the travel times of ultrasonic waves along the flow path of the seepage water through the flow tube. As water enters the flow tube, it passes through the ultrasonic beam path. The ultrasonic signal that travels with the flow has a shorter travel time than the signal traveling against flow. The perturbation of travel time is directly proportional to the velocity of flow in the tube. The UltraSeep meter relies on a stainless steel, open-bottomed chamber measuring 122 cm in diameter to funnel the seepage water to the flow sensor. The flow sensor is connected to the funnel via 12 mm Teflon tubing, allowing free flow of water between the funnel and the outside environment. Data from the flow meter were monitored by an integrated data logger/controller unit. All of the UltraSeep components, along with a 12-V submersible battery housing, are typically mounted within a 72 cm diameter by 58 cm high cylindrical stainless-steel frame. However, for shallow water applications, the components are mounted in two low-profile frames that minimize their stick up into the water column.

2.1.2 SAMPLING DESIGN – 2021 EVENT

The experimental design for the 2021 UltraSeep survey event focused on collecting flow measurements at pre-designated station locations within Remediation Area A adjacent to the shoreline of the lake (Figure 2-3). At each of the stations, UltraSeep meters were deployed for a period of approximately 12 days for the purpose of determining average seepage rates. During the 2021 period, the first 5 days were conducted with the full

NSHCS activated, while the subsequent 7 days where conducted with the intermediate collection valve closed. During the 2021 survey period, 5 stations were monitored (A, C, D, D-Dup and E), but only 3 of the stations were overlapping with the 2019 event including stations A, C and D.

2.1.3 SAMPLING DESIGN – 2019 EVENT

The experimental design for the 2019 UltraSeep survey event focused on collecting flow measurements at pre-designated station locations within Remediation Area A adjacent to the shoreline of the lake (Figure 2-4). At each of the stations, UltraSeep meters were deployed for a period of approximately 5 days for the purpose of determining average seepage rates. During the 2019 survey period, the NSHCS was fully activated during the entire period. During the 2019 survey period, 5 stations were monitored including stations A, A-Dup, B, C and D.

2.1.4 ULTRASEEP SURVEY

The seepage measurements were generally conducted in accordance with the UltraSeep standard operating procedure. Prior to the deployments, the flow meters were calibrated in the lab using a highly accurate, low-flow peristaltic pump. Five flow rates were run through the flow meter, generally ranging from about -5 ml/min to +5 ml/min, where negative flows are in the direction of recharge, and positive flows are in the direction of discharge.

Seepage measurements were performed at 5 pre-determined stations. For the deployments, the sampling station was located using the sub-meter DGPS. UltraSeeps were deployed by wading from the shoreline.

Prior to installation to the bottom, flanges and stabilizing rods were installed on the perimeter of the seepage funnels to minimize settling into the sediment cap material. The field team located the deployment location with the DGPS and made sure there was a clear area for deployment on the bottom. The UltraSeep meter was then lowered into the water and the field team performed an initial purge at the surface to remove any air from the flow meter tubing.

The UltraSeep was then lowered to the bottom and worked into the cap material until the flanges were flush to the cap surface. Once the unit was seated into the bottom, the support rods were driven in to minimize any further settling of the unit, and the seal to the bottom was checked visually. A second purge was then performed to assure that any air that may have been trapped in the funnel or the flow tube had been purged by flushing with a hand-crank pump and checking the aeration reading on the flow meter output. Position data were then logged with the DGPS and the water depth was determined using a staff. The bottom type and any other observable conditions such as vegetation or debris were determined qualitatively by the field team. Flow data were then logged for a period of approximately 12 days for the 2021 event and 5 days for the 2019 event. At the beginning and end of each deployment, the valves to the flow meter were left closed for a period of about 60 minutes to check the zero-flow condition. At the end of the deployment, the meter was recovered by wading.

At each station, the following data were recorded:

- Station identification
- Deployment and retrieval date and time
- Deployment coordinates (by DGPS)
- Depth of water (by staff)
- Bottom type (based on qualitative assessment)
- One-minute average seepage flow data (from UltraSeep)
- One-minute temperature and conductivity inside the seepage funnel (from Hobo Logger)

2.1.5 SEEPAGE DATA ANALYSIS

The primary measurement recorded by the UltraSeep was flow rate. The underlying measurements were 1-second average of the 4 MHz ultrasonic signal, which were in turn recorded internally every minute as a 60-second average. Data processing generally involved the following steps.

- Correction of the time stamp to local time

- Windowing of the zero times (valves closed) and the field measurement times (valves open)
- Cleanup of transients, outliers and missing data
- Low pass filter to remove high frequency noise
- Calibration with laboratory slope and field zero (intercept)
- Conversion from flow to specific discharge
- Averaging to 1-hour resolution
- Calculation of survey-period average and statistics
- Calculation of sequential daily averages and statistics
- Time-match with any auxiliary data (e.g. temperature, conductivity)
- Temporal plot of specific discharge in relation to water level

The flow computer that recorded the data from the UltraSeep was set to Pacific Standard Time. The unit was housed in an underwater housing that was difficult to access, so the time was generally not changed for the local time zone. To account for this, the times of specific events were recorded in the log book (power up, zeros, shutdown, etc.), and the time matching for the local time zone was verified by comparing these local times to the recorded times on the flow computer.

The UltraSeep was zeroed in place at the beginning and end of each deployment by closing the valves on either side of the flow meter for a period of at least 60 minutes. There zeroing periods were removed from the rest of the time series, and the average zero values were used to intercept correct the data on a station-specific basis.

The field data were subsequently reviewed to identify any transients, outliers or missing data that could affect the subsequent analysis methods. Transients that occurred at the beginning of the deployment and were attributed to the installation process or some small amount of subsequent settling of the unit into the bottom. These transients were removed by graphing the data and qualitatively selecting a start time after which any obvious transients from the installation had dissipated. Outliers are generally caused by some other external disturbance of the meter that can occur at any time throughout the deployment. This could be a large wake from a passing vessel, debris or personnel bumping the meter, battery changes or other unknown causes. Outliers were only removed in extreme cases. Missing data can cause problems with the digital low-pass filter. To alleviate this, any small sections of missing data were back-filled by local interpolation.

The resulting clean data set was then low-pass filtered using a 2nd order impulse response function with a smoothing factor α=0.1 corresponding to a time constant of about 10 minutes.

The filtered flow data are then calibrated using the slope from the laboratory calibration and the intercept from the on-station zero measurement averages. The resulting data represent the calibrated volumetric flow measurements generally in units of milliliters per minute (ml/min).

Calibrated flow measurements were then converted to specific discharge based on the seepage funnel geometry. The calculation was done by multiplying the volumetric flow rate by the area covered by the seepage funnel (11675 cm^2) and converting the time units to days for a resulting specific discharge rate in units of centimeters per day (cm/day). The specific discharge rates were then center-point averaged to 1-hour resolution by starting the averaging period based on the starting time of the field data window. In some cases this resulted in the final measurement representing a truncated average that contained less than a full hour of measurements.

The resulting one-hour time series data were then used to calculate survey-period averaged specific discharge rates. The full survey period was chosen because the lake is not generally subject to periodic fluctuations (such as tides), and thus the full survey period represents the best long-term average available from the data set. Along with the average, additional statistics were calculated for this period including the standard deviation, minimum, maximum and range. These measures of variability provided some measure of the amplitude of the fluctuations in response to supplement the estimate of the mean.

To evaluate the variability of the mean on a daily basis, we also evaluated all available 24-hour periods within the data set. This provides a measure of how much variability is associated with the selection of a given daily window within the data set. Statistics were also calculated for the sequential average that was derived from this analysis.

Auxiliary data collected at each station included the temperature and conductivity within the seepage funnel. These data were generally collected at 5-minute intervals for the 2021 event and 1-minute intervals for the 2019 event. The data were subsequently averaged to one-hour while time matching to the specific discharge data.

Following data processing, the specific discharge data were plotted as a time series in relation to the water level at the site. Water level data were obtained from the USGS station 04240495 located in Onondaga Lake at Liverpool, NY.

Figure 2-1. The UltraSeep system used to quantify groundwater seepage at the Onondaga Lake site.

Figure 2-2. UltraSeep installed at the Onondaga Lake site.

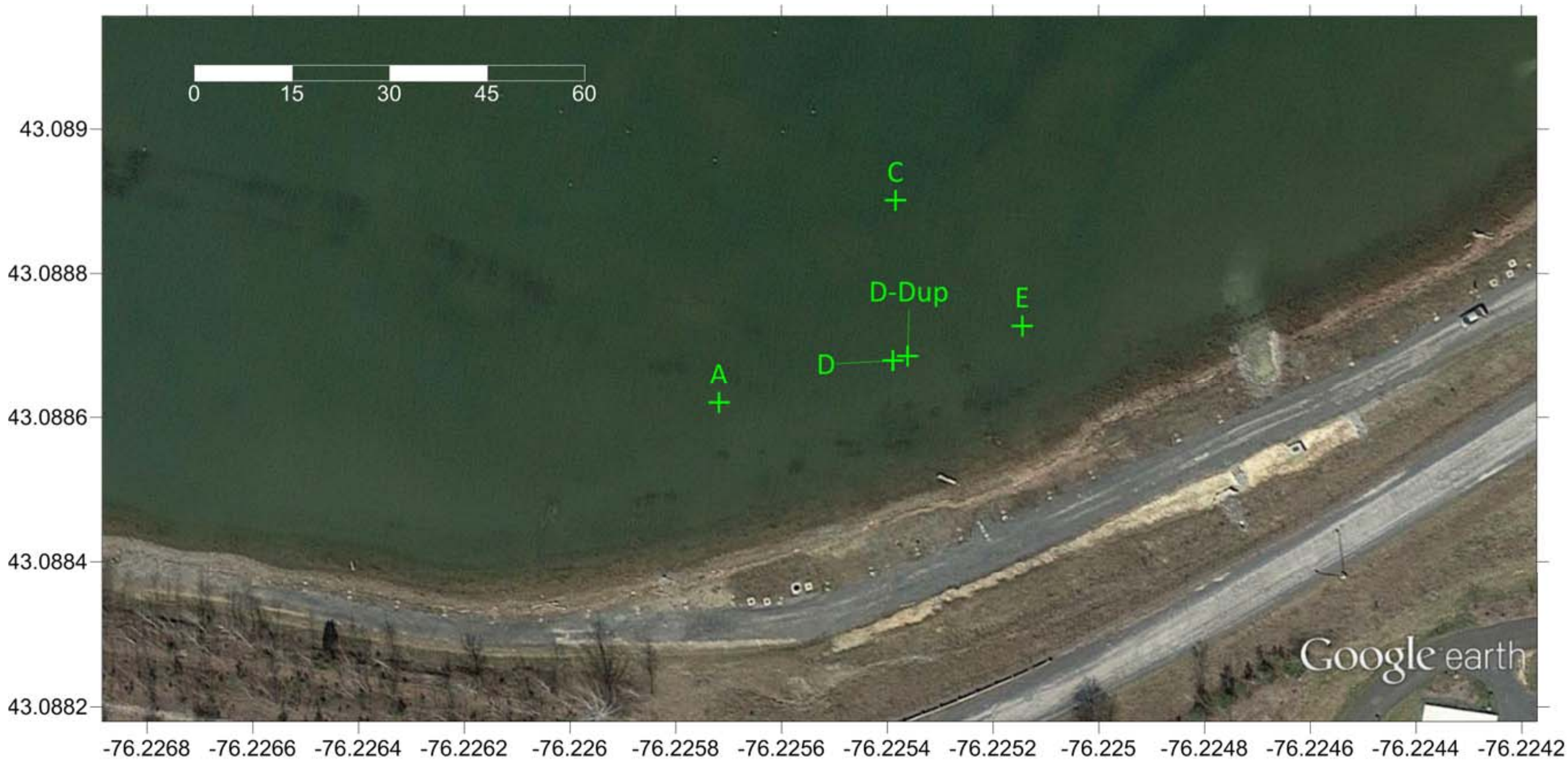

Figure 2-3. Deployment locations for the UltraSeep 2021 survey event at the Onondaga Lake site. Axes are latitude and longitude. Scale is in meters (Image: Google Earth).

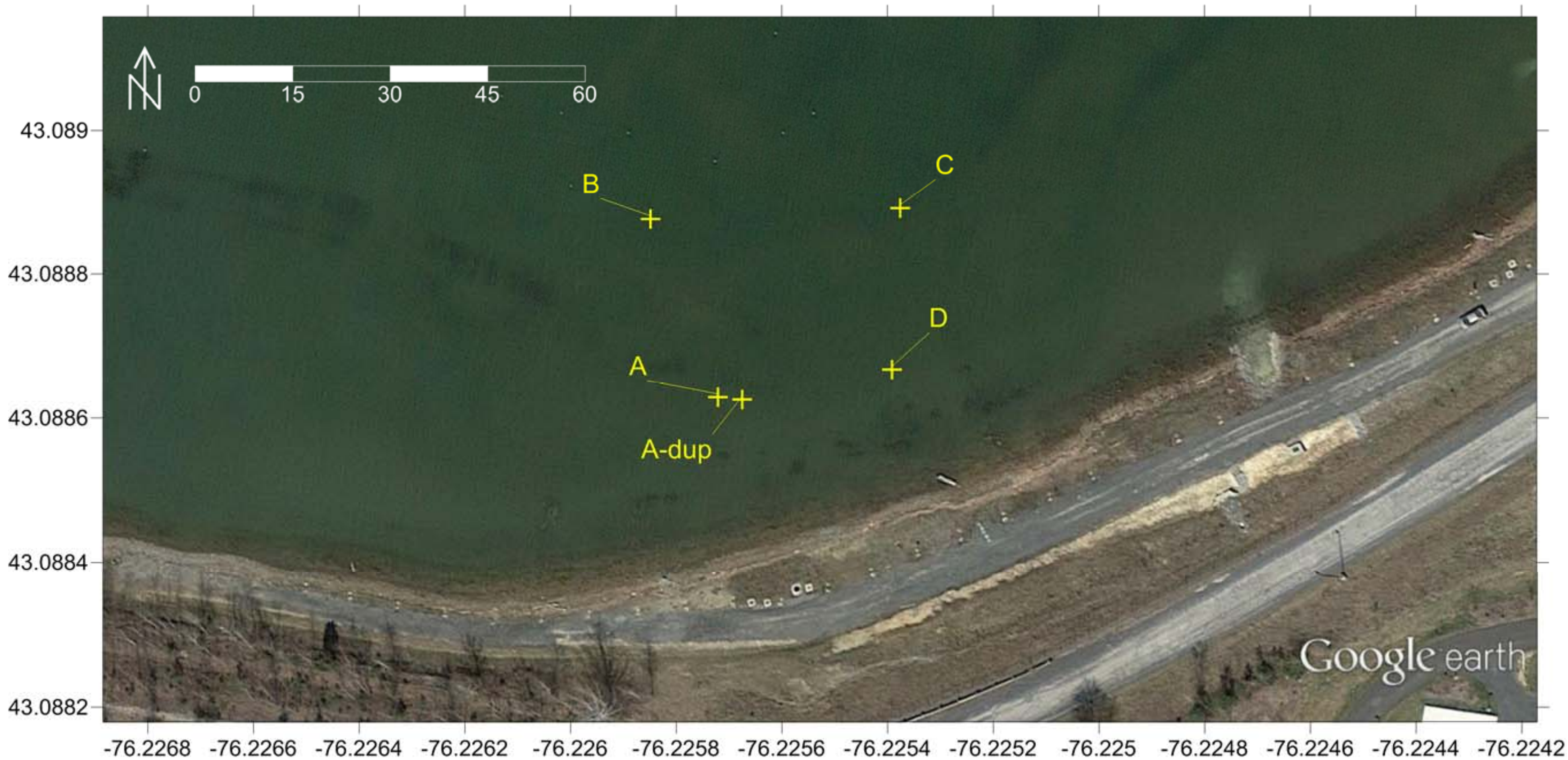

Figure 2-4. Deployment locations for the UltraSeep 2019 survey event at the Onondaga Lake site. Axes are latitude and longitude. Scale is in meters (Image: Google Earth).

3 RESULTS

UltraSeep seepage measurements were successfully collected at all of the target stations during both the 2021 and 2019 events. A summary of the results is presented in Table 3-1. Average specific discharge rates and variability were generally very low at all stations during both events. In general, the two survey periods showed similar magnitudes, ranges, and variability of specific discharge. There was no obvious change in discharge that was clearly associated with the valve closure event during the 2021 monitoring period. Overall, the results indicate that the valve closure did not seem to influence the specific discharge rates at the site at a level that was discernable within the range of natural variability. Results for each of the events are detailed below, along with a comparison of results between the two events.

3.1 2021 RESULTS

Results for the deployments are summarized in Table 3-2 through Table 3-4 and Figure 3-1 through Figure 3-4 below. Hourly seepage rates were averaged over the full deployment period at each station to estimate mean specific discharge and other seepage statistics. Seepage directions are indicated as negative for recharge and positive for discharge. Complete results and plots are provided electronically in Appendix C (Electronic Data Deliverable). A summary is provided below.

3.1.1 DATA QUALITY SUMMARY

The quality assurance (QA) objective of this field investigation was to collect data of known and appropriate quality for the project objectives. The QA processes included the application of: (1) appropriate field techniques; (2) appropriate tools and methods; and (3) measurement objectives for precision, accuracy, representativeness, completeness, and comparability (PARCC). Complete data quality results are presented in Appendix A. Precision for the UltraSeep flow sensors indicated laboratory-measured precision (Relative Standard Deviation) less than 5% across all meters used at the site. Accuracy (Relative Percent Difference) was always within 4%. Completeness was 100% (5 of 5 stations) for the desired 12-day survey period.

3.1.2 STATION SUMMARIES

The 2021 averages presented in this section are for the full period, including the first 5 days with the NSHCS valves on and the subsequent 7 days with the valves off.

Station A

Station A had a slightly positive survey-period average specific discharge of 0.03 cm/day (9.5 cm/year). The time series showed minimal variation (standard deviation 0.04 cm/day) with the exception of small pulses that generally occurred during high wind events, and lower frequency variations that generally corresponded to changes in lake level. Variations in specific discharge at this station showed some correspondence with variations in lake level, with higher discharge rates generally occurring during periods of lower lake level. Variations in lake level were generally on the order of about 10 cm, except during the last two days of the survey period when the lake level increased by about 20 cm. Temperature at Station A showed daily fluctuations of about 3-6 ºC and also showed a generally increasing trend over the survey period. Specific conductivity at Station A showed an increasing trend throughout the survey period.

Station C

Station C had a slightly positive survey-period average specific discharge of 0.08 cm/day (27.8 cm/year). The time series showed minimal variation (standard deviation 0.04 cm/day) with the exception of small pulses that generally occurred during high wind events, and lower frequency variations that generally corresponded to changes in lake level. The survey-period average specific discharge rate at this station was highest among all stations. Variations in specific discharge at this station showed some correspondence with variations in lake level, with higher discharge rates generally occurring during periods of lower lake level. Temperature at Station C showed daily fluctuations of about 3-6 ºC and also showed a generally increasing trend over the survey period. Specific conductivity at Station C showed an increasing trend throughout the survey period.

Station D

Station D had a slightly positive survey-period average specific discharge of 0.03 cm/day (12.3 cm/year). The time series showed minimal variation (standard deviation 0.06 cm/day) with the exception of small pulses that generally occurred during high wind events, and lower frequency variations that generally corresponded to changes in lake level. Variations in specific discharge at this station showed some correspondence with variations in lake level, with higher discharge rates generally occurring during periods of lower lake level. Temperature at Station D showed daily fluctuations of about 3-6 ºC and also showed a generally increasing trend over the survey period. Specific conductivity at Station D showed a very strong increasing trend (compared to other stations) throughout the survey period. Because the discharge rate at this station was in the mid-range among the other stations, the cause of this higher conductivity trend is likely associated with higher pore water concentrations rather than higher discharge rates.

Station D Duplicate

Station D Duplicate was deployed immediately adjacent to Station D. The station had a slightly negative survey-period average specific discharge of -0.02 cm/day (-6.3 cm/year). The time series showed somewhat higher variation compared to other stations (standard deviation 0.10 cm/day) but had a similar pattern of variability to Station D and the other stations with pulses that generally occurred during high wind events, and lower frequency variations that generally corresponded to changes in lake level. This was the only station with a negative average for specific discharge. Variations in specific discharge at this station showed some correspondence with variations in lake level, with higher discharge rates generally occurring during periods of lower lake level. Temperature at Station D-Dup showed daily fluctuations of about 3-6 ºC and also showed a generally increasing trend over the survey period. Specific conductivity at Station D-Dup showed an increasing trend throughout most of the survey period but dropped somewhat during the more negative flow period from 4/30 – 5/3.

Station E

Station E had a slightly positive survey-period average specific discharge of 0.03 cm/day (11.6 cm/year). The time series showed moderate variation relative to other stations (standard deviation 0.07 cm/day) with the same pattern of small pulses that generally occurred during high wind events, and lower frequency variations that generally corresponded to changes in lake level. Variations in specific discharge at this station showed some correspondence with variations in lake level, with higher discharge rates generally occurring during periods of lower lake level. Temperature at Station E showed daily fluctuations of about 3-6 ºC and also showed a generally increasing trend over the survey period. Specific conductivity at Station E showed an increasing trend throughout the survey period.

3.1.3 NSHCS Intermediate Valve Open Versus Closed

During the 2021 event, the first 5 days were conducted with the full NSHCS activated, while the subsequent 7 days where conducted with the intermediate collection valve closed. The valve closure occurred on 4/27/2021 at 15:05. To evaluate any changes in specific discharge that may have occurred as a result of the valve closure, comparative statistics were calculated for the periods before and after this time (Table 3-5 through Table 3-8). The results are also illustrated graphically in Figure 3-4 where the valve closure time is indicated along with the time series for specific discharge at each of the stations.

On a station-by-station basis, two stations (A and E) had higher discharge rates during the valve closed condition, two stations (D and D-Dup) had lower discharge rates, and one station (C) was essentially unchanged. The average specific discharge rate across all stations with the valve open was 0.04 cm/day (13.7 cm/year), while with the valve closed the average was slightly lower at 0.02 cm/day (9.1 cm/year), however this difference was well withing the range of variability across the stations. Graphically (Figure 3-4), there was no obvious change in discharge that was clearly associated with the valve closure event. Overall, the results indicate that the valve closure did not seem to influence the specific discharge rates at the site at a level that was discernable within the range of natural variability.

3.1.4 Seepage Summary

Based on the survey-period averages, specific discharge ranged from a low of -0.02 cm/day (-6.3 cm/year) at Station D-Dup to a high of 0.08 cm/day (27.8 cm/year) at Station C. The average specific discharge rate across all stations was 0.03 cm/day (10.8 cm/year). Average specific discharge rates and variability were generally very low at all stations. Variations in specific discharge rates during the survey period appeared to generally correspond with changes in lake level. Variations in specific conductivity in the seepage funnels generally showed steady increases consistent with low level discharge conditions, with the exception of Station D-Dup which showed a decreasing period of conductivity associated with negative specific discharge rates. Station D also showed an unusually high increase in conductivity which was not explained by the specific discharge rate at that station and is probably related to a localized high conductivity level in the pore water.

3.2 2019 RESULTS

Results for the deployments are summarized in Table 3-9 through Table 3-11 and Figure 3-5 through Figure 3-7 below. Hourly seepage rates were averaged over the full deployment period at each station to estimate mean specific discharge and other seepage statistics. Seepage directions are indicated as negative for recharge and positive for discharge. Complete results and plots are provided electronically in Appendix D (Electronic Data Deliverable). A summary is provided below.

3.2.1 DATA QUALITY SUMMARY

The quality assurance (QA) objective of this field investigation was to collect data of known and appropriate quality for the project objectives. The QA processes included the application of: (1) appropriate field techniques; (2) appropriate tools and methods; and (3) measurement objectives for precision, accuracy, representativeness, completeness, and comparability (PARCC). Complete data quality results are presented in Appendix A. Precision for the UltraSeep flow sensors indicated laboratory-measured precision (Relative Standard Deviation) less than 12% across all meters used at the site. Accuracy (Relative Percent Difference) was always within 3.4%. Completeness was 100% (5 of 5 stations) for the desired 5-day survey period.

3.2.2 STATION SUMMARIES

Station A

Station A had a slightly negative survey-period average specific discharge of -0.03 cm/day (-9.6 cm/year). The time series showed minimal variation (standard deviation 0.04 cm/day) with the exception of small positive pulses that generally occurred in the afternoon timeframe. The survey-period average specific discharge rate at this station was the lowest among all station. Variations in specific discharge at this station did not show any clear correspondence with variations in lake level. The variations in lake level were generally small during the survey period with a range of less than 11 cm. Specific conductivity at Station A showed very little change over time, consistent with the very low specific discharge rate.

Station A Duplicate

Station A Duplicate was deployed immediately adjacent to Station A. The station had a slightly positive survey-period average specific discharge of 0.02 cm/day (7.1 cm/year). The time series showed minimal variation (standard deviation 0.05 cm/day) with the exception of small positive period at the beginning of the deployment, and a slight negative dip that occurred during portions of the period 7/22/19 – 7/23/19. Variations in specific discharge at this station did not show any clear correspondence with variations in lake level. Specific conductivity at Station A Duplicate showed very similar trend to Station A with little change over time, consistent with the very low specific discharge rate. The specific conductivity was offset slightly higher relative to Station A.

Station B

Station B had a slightly positive survey-period average specific discharge of 0.02 cm/day (5.6 cm/year). The time series showed minimal variation (standard deviation 0.02 cm/day) with the exception of a small positive pulse at the beginning of the deployment, and another that occurred during the afternoon of 7/22/19. Variations in specific discharge at this station did not show any clear correspondence with variations in lake level except that the second positive pulse occurred just after a small drop in lake level. The specific conductivity at Station B showed an unusually strong increase relative to the other stations. The increase is consistent with the presence of a positive discharge assuming that the groundwater has a higher specific conductance than the surface water. The cause of the stronger increase in specific conductivity at this station is not known.

Station C

Station C had a slightly positive survey-period average specific discharge of 0.09 cm/day (33.5 cm/year). The time series showed minimal variation (standard deviation 0.03 cm/day) with the exception of a small positive period at the beginning of the deployment, and two others that occurred during the afternoons of 7/22/19 and 7/24/19, respectively. Variations in specific discharge at this station did not show any clear correspondence with variations in lake level except that the second positive pulse occurred just after a small drop in lake level. Specific conductivity at Station A showed very little change over time, consistent with the low specific discharge rate.

Station D

Station D had a slightly negative survey-period average specific discharge of -0.013 cm/day (-3.2 cm/year). The time series showed clear variations (standard deviation 0.40 cm/day) with lowest rates generally occurring in the afternoon periods, and highest rates generally corresponding to night and early morning hours. Variations in specific discharge at this station did not show any clear correspondence with variations in lake level. While the average specific discharge at this station was very low and generally in the same range as the other stations, the higher variability with a diurnal cyclic nature suggests that other processes may be more active in this area that are not influencing the other stations. Specific conductivity at Station D showed a slight decrease over time. This would be consistent with a recharge condition assuming that the specific conductivity of the lake water is lower than the specific conductivity of the groundwater (assuming that some mixture of lake water and groundwater occupied the funnel at the time of installation).

3.2.3 SEEPAGE SUMMARY

Based on the survey-period averages, specific discharge ranged from a low of -0.03 cm/day at Station A to a high of +0.09 cm/day at Station C. The average specific discharge rate across all stations was 0.02 cm/day (6.7 cm/year). Average specific discharge rates and variability were generally very low at all stations with the exception of Station D which exhibited relatively higher cyclic variability on a diurnal time scale. The small variations in lake level during the survey period did not appear to significantly influence the specific discharge rates. The variability observed at Station D appears to be linked to other processes that are not influencing the rest of the stations. Variations in specific conductivity in the seepage funnels were generally small, consistent with the low specific discharge rates, with the exception of Station B. The relatively larger increase in specific conductivity at Station B is consistent with groundwater discharge, but the specific discharge at Station B was not so high relative to other stations that it would directly explain the increase.

3.3 COMPARISON OF 2021 AND 2019 RESULTS

Results presented in this report represent the first and second rounds of specific discharge monitoring using the UltraSeep system at the site. The first round of monitoring was conducted during the summer of 2019 and the second round was conducted during the spring of 2021. The two surveys utilized similar designs but there were some differences. The 2019 survey period was 5 days, while the 2021 survey period was 12 days. During the 2019 survey period, the Northern Shore Hydraulic Control System (NSHCS) was fully activated during the entire period. During the 2021 period, the first 5 days were conducted with the full NSHCS activated, while the subsequent 7 days where conducted with the intermediate collection valve closed. During the 2019 survey period, 5 stations were monitored including stations A, A-Dup, B, C and D. During the 2021 survey period, 5 stations were also monitored, but only 3 of the stations were overlapping including stations A, C and D. In addition, monitoring was conducted at stations D-Dup and E during 2021.

Comparisons between the two survey periods are shown in Figure 3-8 and Table 3-12 based on the full survey period for each event. The full survey period was used for the 2021 event because no obvious changes occurred during the change in pumping conditions. In general, the two survey periods showed similar magnitudes, ranges, and variability of specific discharge (Table 3-12). The overall averages for the two surveys were 0.02 cm/day (6.7 cm/year) and 0.3 cm/day (10.8 cm/year) for 2019 and 2021, respectively. The standard deviation among stations during the 2019 survey was 0.05 cm/day (16.4 cm/year), while during the 2021 survey it was 0.03 cm/day (12.1 cm/year). The patterns across the overlapping stations (A, C and D) showed slightly higher specific discharge rates at Stations A and D during the 2021 event, and comparable rates at Station C (Figure 3-8). Station C had the highest discharge rate during both events. The high variability observed at Station D during the 2019 event was not seen during the 2021 event. Other overlapping stations had similar levels of variability during both events.

Table 3-1. Summary of results for the 2019 and 2021 specific discharge surveys (cm/y).

Station	2019	2021	
	Valve Open	Valve Open	Valve Closed
A	-9.6	7.5	10.7
A-Dup	7.1	NA	NA
B	5.6	NA	NA
C	33.5	28.5	28.8
D	-3.2	16.2	9.5
D-Dup	NA	10.5	-18.3
E	NA	5.8	14.6
Average	6.7	13.7	9.1

Table 3-2. Station information and field notes for the UltraSeep deployments during the 2021 event.

Station Information							Field Notes	
Sampling Location	Deployment Date-Time	Retrieval Date-Time	Water Depth (ft)	Latitude (degrees N NAD83 (2011))	Longitude (degrees W NAD83 (2011))	DGPS Accuracy (cm)	Sediment Type	General Notes
A	4/22/2021 14:47	5/5/2021 12:05	1.0	43.0886208	76.22571790	21	Cap material	Meter US3. 3 rods and 3 flanges for stabilization. Funnel fully seated. Rods inserted 1-2 ft to refusal. Muffler installed. Gas trap valve closed.
C	4/23/2021 10:50	5/5/2021 14:10	2.1	43.0889012	76.22538400	17	Silt over cap material	Meter US1. 3 rods and 3 flanges for stabilization. Funnel fully seated. Rods inserted 1-2 ft to refusal. Muffler installed. Gas trap valve closed.
D	4/22/2021 13:00	5/4/2021 16:45	1.4	43.0886796	76.2253890	17	Silt over cap material	Meter US2. 3 rods and 3 flanges for stabilization. Funnel fully seated. Rods inserted 1-2 ft to refusal. Muffler installed. Gas trap valve closed.
D-Dup	4/22/2021 13:30	5/4/2021 16:40	1.4	43.0886859	76.22536130	17	Silt over cap material	Meter US5. 3 rods and 3 flanges for stabilization. Funnel fully seated. Rods inserted 1-2 ft to refusal. Muffler installed. Gas trap valve closed.
E	4/23/2021 10:15	5/5/2021 14:00	1.4	43.0887269	76.22514420	19	Silt over cap material	Meter US7. 3 rods and 3 flanges for stabilization. Funnel fully seated. Rods inserted 1-2 ft to refusal. Muffler installed. Gas trap valve closed.

Note that deployment and retrieval times are approximate, and water depths reported from staff measurements during deployment.

Table 3-3. Summary of seepage statistics (centimeter per day; cm/d) for the full survey period data from each UltraSeep deployment during the 2021 event.

Station	Period Average Specific Discharge (cm/d)	Minimum Specific Discharge (cm/d)	Maximum Specific Discharge (cm/d)	Range Specific Discharge (cm/d)	Standard Deviation Specific Discharge (cm/d)
A	0.03	-0.12	0.12	0.24	0.04
C	0.08	-0.01	0.42	0.43	0.04
D	0.03	-0.11	0.48	0.59	0.06
D-Dup	-0.02	-0.37	0.37	0.74	0.10
E	0.03	-0.23	0.17	0.40	0.07

Note – Positive values are discharge and negative values are recharge.

Table 3-4. Summary of seepage statistics (centimeter per year; cm/y) for the full survey period data from each UltraSeep deployment during the 2021 event.

Station	Period Average Specific Discharge (cm/y)	Minimum Specific Discharge (cm/y)	Maximum Specific Discharge (cm/y)	Range Specific Discharge (cm/y)	Standard Deviation Specific Discharge (cm/y)
A	9.5	-44.8	43.5	88.3	14.5
C	28.7	-4.2	151.6	155.8	16.3
D	12.3	-39.9	174.0	213.9	22.6
D-Dup	-6.3	-136.5	133.6	270.0	38.1
E	11.6	-82.2	62.5	144.7	24.9

Note – Positive values are discharge and negative values are recharge.

Table 3-5. Summary of seepage statistics (centimeter per day; cm/d) for the intermediate valve open period data from each UltraSeep deployment during the 2021 event.

Station	Period Average Specific Discharge (cm/d)	Minimum Specific Discharge (cm/d)	Maximum Specific Discharge (cm/d)	Range Specific Discharge (cm/d)	Standard Deviation Specific Discharge (cm/d)
A	0.02	-0.12	0.12	0.24	0.05
C	0.08	-0.01	0.42	0.43	0.06
D	0.04	-0.11	0.48	0.59	0.08
D-Dup	0.03	-0.18	0.24	0.41	0.09
E	0.02	-0.23	0.14	0.36	0.08

Note – Positive values are discharge and negative values are recharge.

Table 3-6. Summary of seepage statistics (centimeter per year; cm/y) for the intermediate valve open period data from each UltraSeep deployment during the 2021 event.

Station	Period Average Specific Discharge (cm/y)	Minimum Specific Discharge (cm/y)	Maximum Specific Discharge (cm/y)	Range Specific Discharge (cm/y)	Standard Deviation Specific Discharge (cm/y)
A	7.5	-44.8	43.5	88.3	17.1
C	28.5	-4.2	151.6	155.8	22.5
D	16.2	-39.9	174.0	213.9	28.5
D-Dup	10.5	-64.8	85.8	150.6	31.7
E	5.8	-82.2	50.0	132.2	28.4

Note – Positive values are discharge and negative values are recharge.

Table 3-7. Summary of seepage statistics (centimeter per day; cm/d) for the intermediate valve closed period data from each UltraSeep deployment during the 2021 event.

Station	Period Average Specific Discharge (cm/d)	Minimum Specific Discharge (cm/d)	Maximum Specific Discharge (cm/d)	Range Specific Discharge (cm/d)	Standard Deviation Specific Discharge (cm/d)
A	0.03	-0.09	0.12	0.21	0.03
C	0.08	0.01	0.15	0.13	0.03
D	0.03	-0.09	0.15	0.24	0.05
D-Dup	-0.05	-0.37	0.37	0.74	0.10
E	0.04	-0.19	0.17	0.36	0.06

Note – Positive values are discharge and negative values are recharge.

Table 3-8. Summary of seepage statistics (centimeter per year; cm/y) for the intermediate valve closed period data from each UltraSeep deployment during the 2021 event.

Station	Period Average Specific Discharge (cm/y)	Minimum Specific Discharge (cm/y)	Maximum Specific Discharge (cm/y)	Range Specific Discharge (cm/y)	Standard Deviation Specific Discharge (cm/y)
A	10.7	-34.5	43.2	77.8	12.4
C	28.8	4.5	53.0	48.5	9.5
D	9.5	-33.8	54.1	87.8	16.7
D-Dup	-18.3	-136.5	133.6	270.0	37.8
E	14.6	-67.8	62.5	130.2	22.3

Note – Positive values are discharge and negative values are recharge.

Table 3-9. Station information and field notes for the UltraSeep deployments during the 2019 event.

Station Information							Field Notes	
Sampling Location	**Deployment Date-Time**	**Retrieval Date-Time**	**Water Depth (ft)**	**Latitude (degrees N)**	**Longitude (degrees W)**	**DGPS Accuracy (cm)**	**Sediment Type**	**General Notes**
A	7/21/2019 10:04	7/26/2019 15:30	2.0	43.08863337	76.22572077	54	Soft sandy silt over gravel	Meter US7. 3 rods and 3 flanges for stabilization. Funnel fully seated. Rods inserted 12 inches to refusal. Gas trap installed.
A-dup	7/21/2019 9:22	7/26/2019 15:15	2.0	43.08863018	76.22567494	63	Soft sandy silt over gravel	Meter US5. 3 rods and 3 flanges for stabilization. Funnel fully seated. Rods inserted 12 inches to refusal. Gas trap installed.
B	7/20/2019 12:32	7/25/2019 16:34	4.0	43.08888100	76.22584839	108	Soft sandy silt over gravel	Meter US2. 3 rods and 3 flanges for stabilization. Funnel fully seated. Rods inserted 16 inches to refusal. Gas trap installed.
C	7/20/2019 10:54	7/25/2019 15:46	2.5	43.08889625	76.22537590	62	Soft sandy silt over gravel	Meter US1. 3 rods and 3 flanges for stabilization. Funnel fully seated. Rods inserted 10 inches to refusal. Gas trap installed.
D	7/20/2019 9:55	7/25/2019 14:10	2.0	43.08867212	76.22539143	58	Soft sandy silt over gravel	Meter US3. 3 rods and 3 flanges for stabilization. Funnel fully seated. Rods inserted 12 inches to refusal. Gas trap installed.

Note that deployment and retrieval times are approximate, and water depths reported from staff measurements during deployment.

Table 3-10. Summary of seepage statistics (centimeter per day; cm/d) for the full survey period data from each UltraSeep deployment during the 2019 event.

Station	Period Average Specific Discharge (cm/d)	Minimum Specific Discharge (cm/d)	Maximum Specific Discharge (cm/d)	Range Specific Discharge (cm/d)	Standard Deviation Specific Discharge (cm/d)
A	-0.03	-0.12	0.11	0.23	0.04
A-dup	0.02	-0.13	0.25	0.38	0.05
B	0.02	-0.05	0.16	0.21	0.02
C	0.09	0.05	0.18	0.13	0.03
D	-0.01	-1.18	0.52	1.71	0.40

Note – Positive values are discharge and negative values are recharge.

Table 3-11. Summary of seepage statistics (centimeter per year; cm/y) for the full survey period data from each UltraSeep deployment during the 2019 event.

Station	Period Average Specific Discharge (cm/y)	Minimum Specific Discharge (cm/y)	Maximum Specific Discharge (cm/y)	Range Specific Discharge (cm/y)	Standard Deviation Specific Discharge (cm/y)
A	-9.6	-43.9	40.5	84.4	14.4
A-dup	7.1	-46.1	90.9	137.0	20.0
B	5.6	-18.4	58.7	77.1	8.6
C	33.5	16.7	64.6	47.9	9.8
D	-3.2	-432.2	190.8	623.0	147.0

Note – Positive values are discharge and negative values are recharge.

Table 3-12. Comparative statistics across all stations for the 2019 (Summer) and 2021 (Spring) specific discharge measurement periods.

	2019		2021	
	Specific Discharge (cm/d)	Specific Discharge (cm/y)	Specific Discharge (cm/d)	Specific Discharge (cm/y)
Average	0.02	6.7	0.03	10.8
Minimum	-0.03	-9.6	-0.02	-6.3
Maximum	0.09	33.5	0.08	27.8
Range	0.12	43.1	0.09	34.1
Standard Deviation	0.05	16.4	0.03	12.1

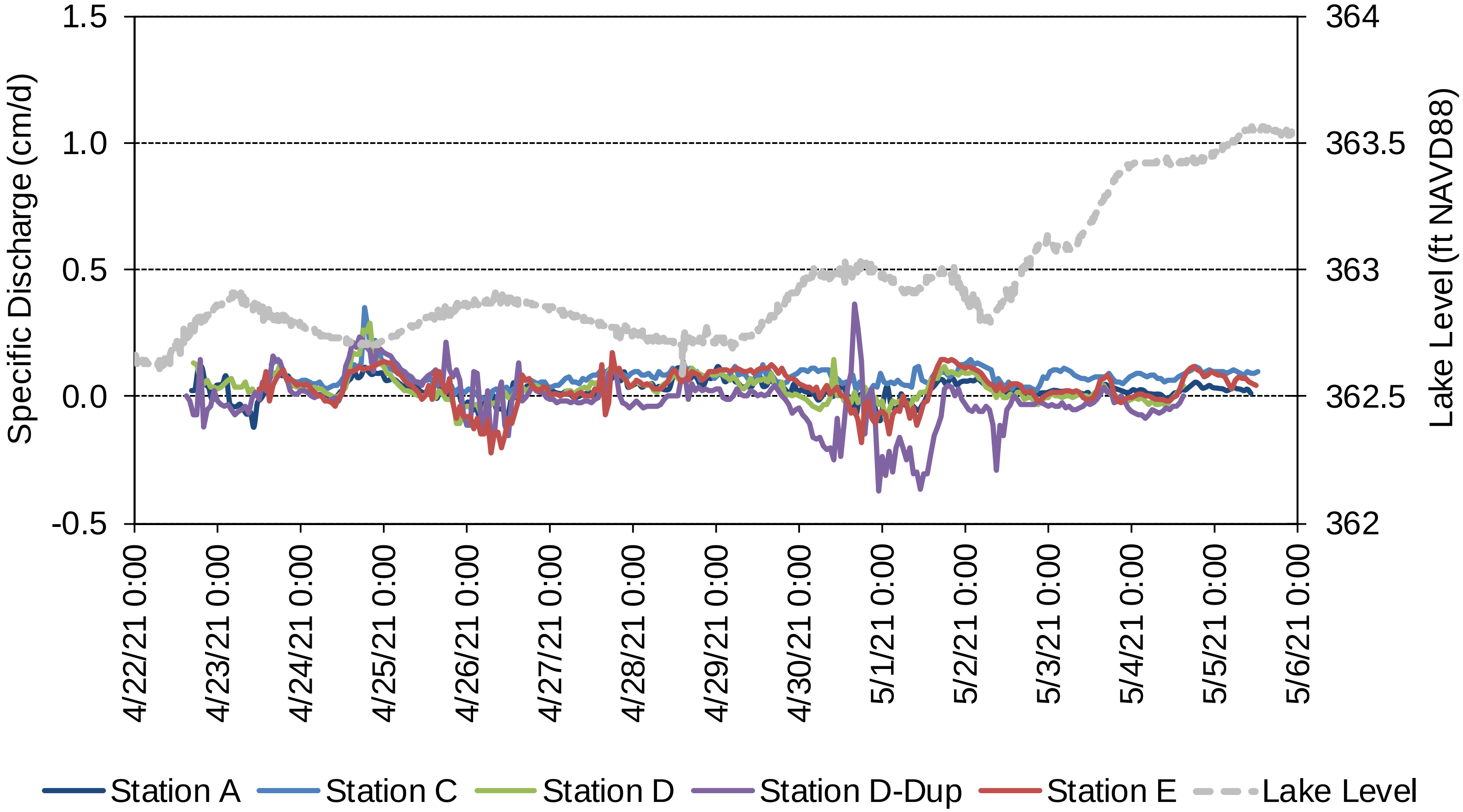

Figure 3-1. Time series for specific discharge (colored lines) and water level (grey dashed line) at the Onondaga Lake site during the 2021 event.

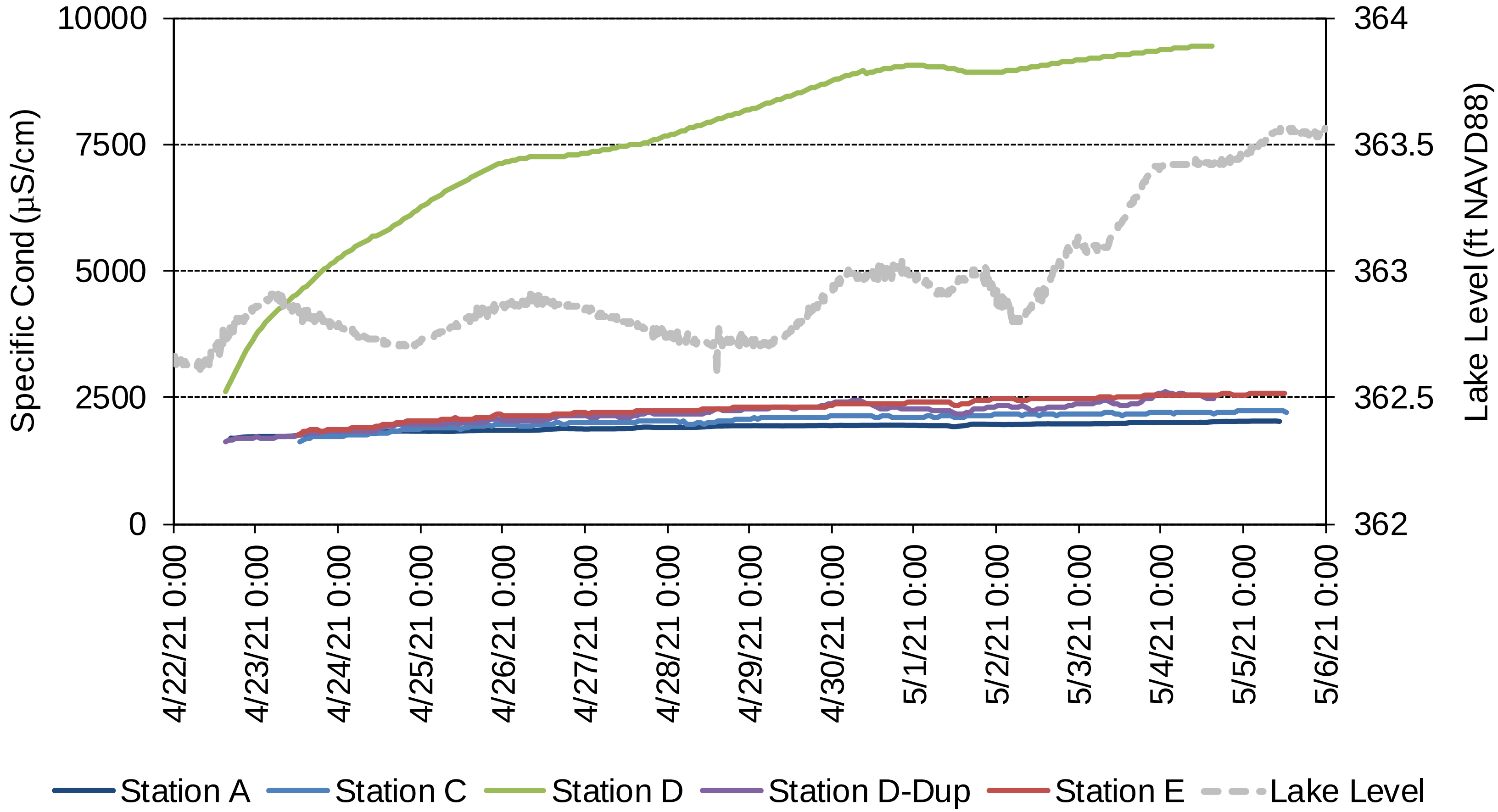

Figure 3-2. Time series for specific conductivity (colored lines) and water level (grey dashed line) at the Onondaga Lake site during the 2021 event.

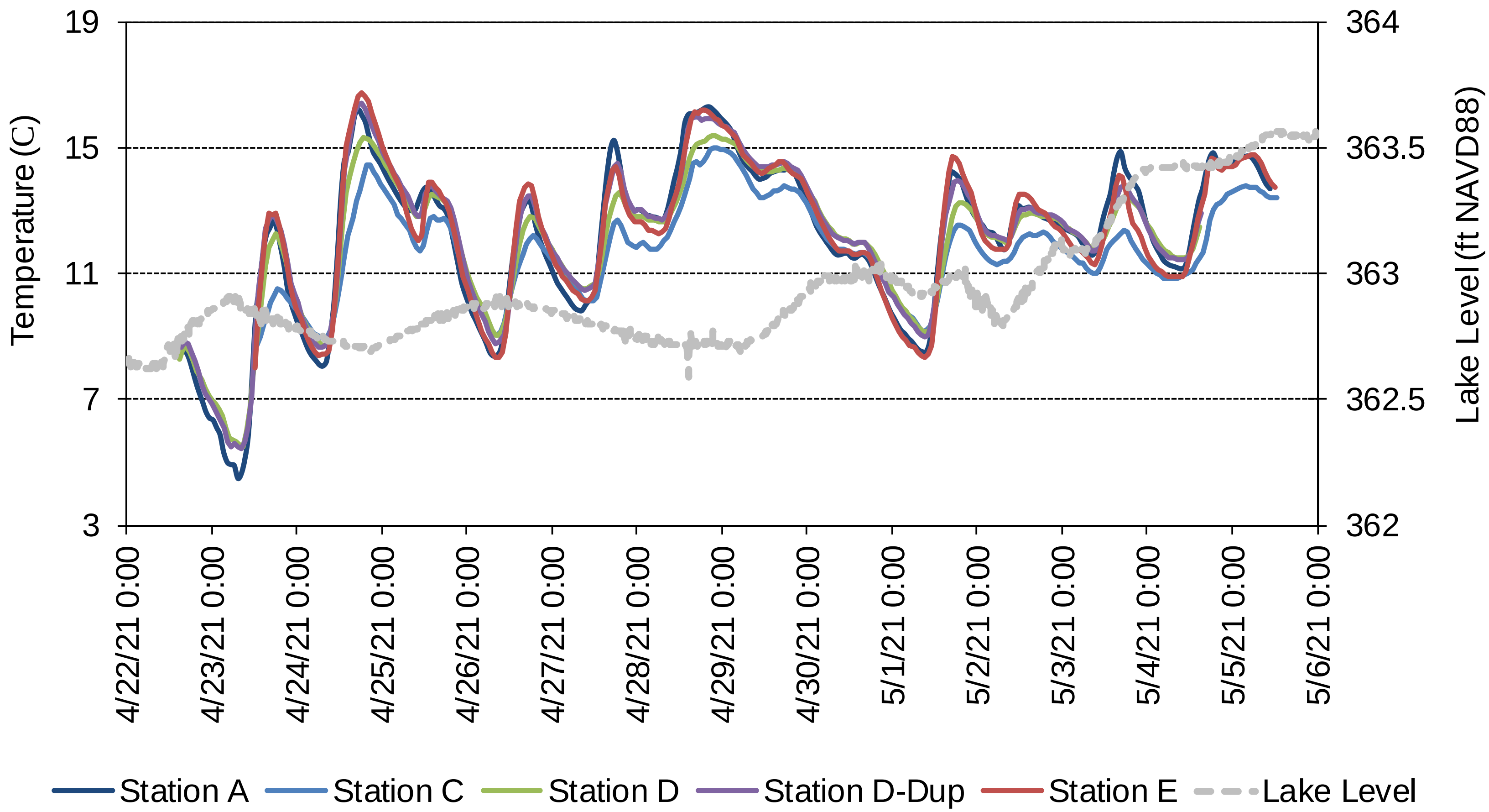

Figure 3-3. Time series for temperature (colored lines) and water level (grey dashed line) at the Onondaga Lake site during the 2021 event.

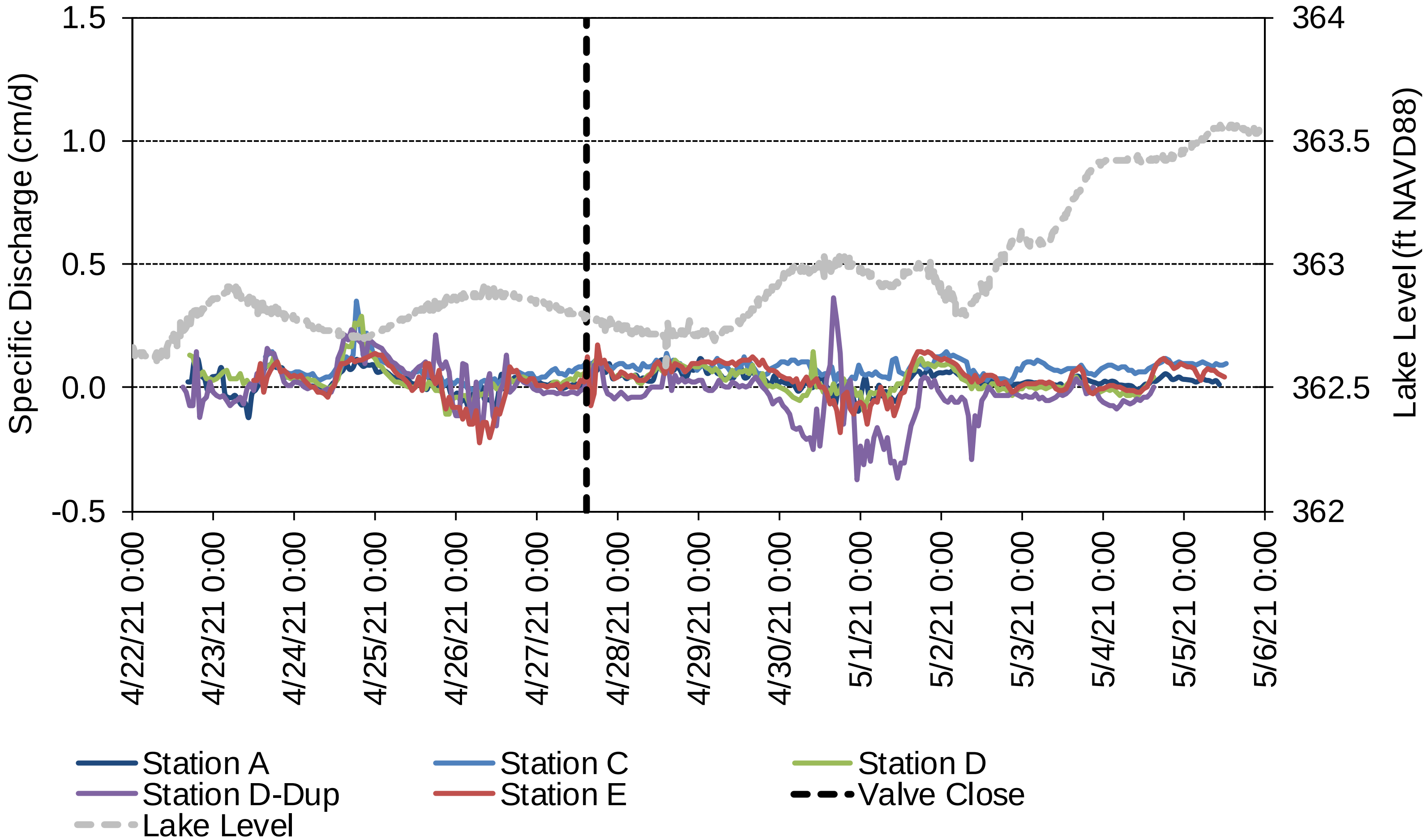

Figure 3-4. Time series for specific discharge (colored lines) and water level (grey dashed line) at the Onondaga Lake site during the 2021 event showing the time of valve closure for the NSHCS (vertical black dashed line).

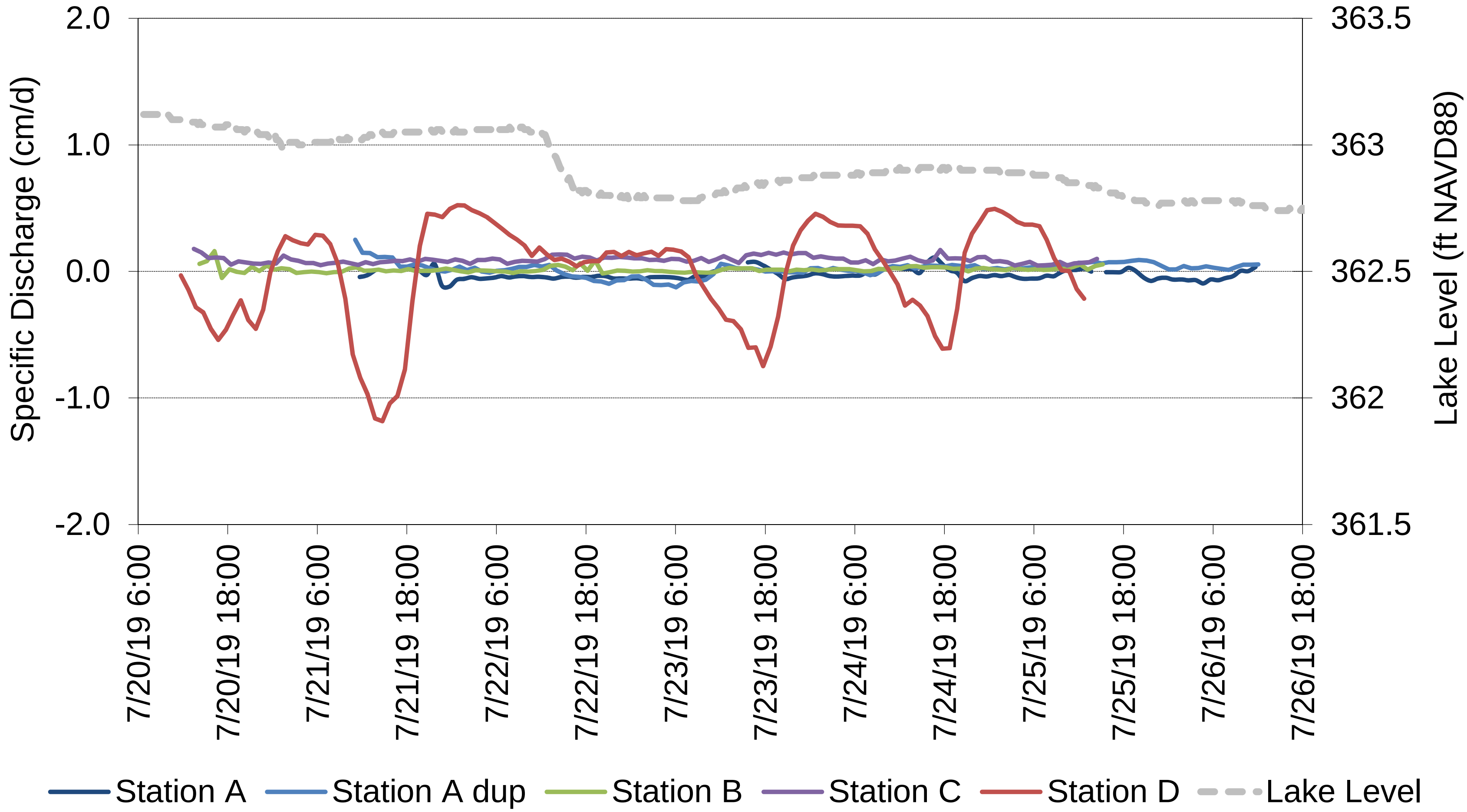

Figure 3-5. Time series for specific discharge (colored lines) and water level (grey dashed line) at the Onondaga Lake site during the 2019 event.

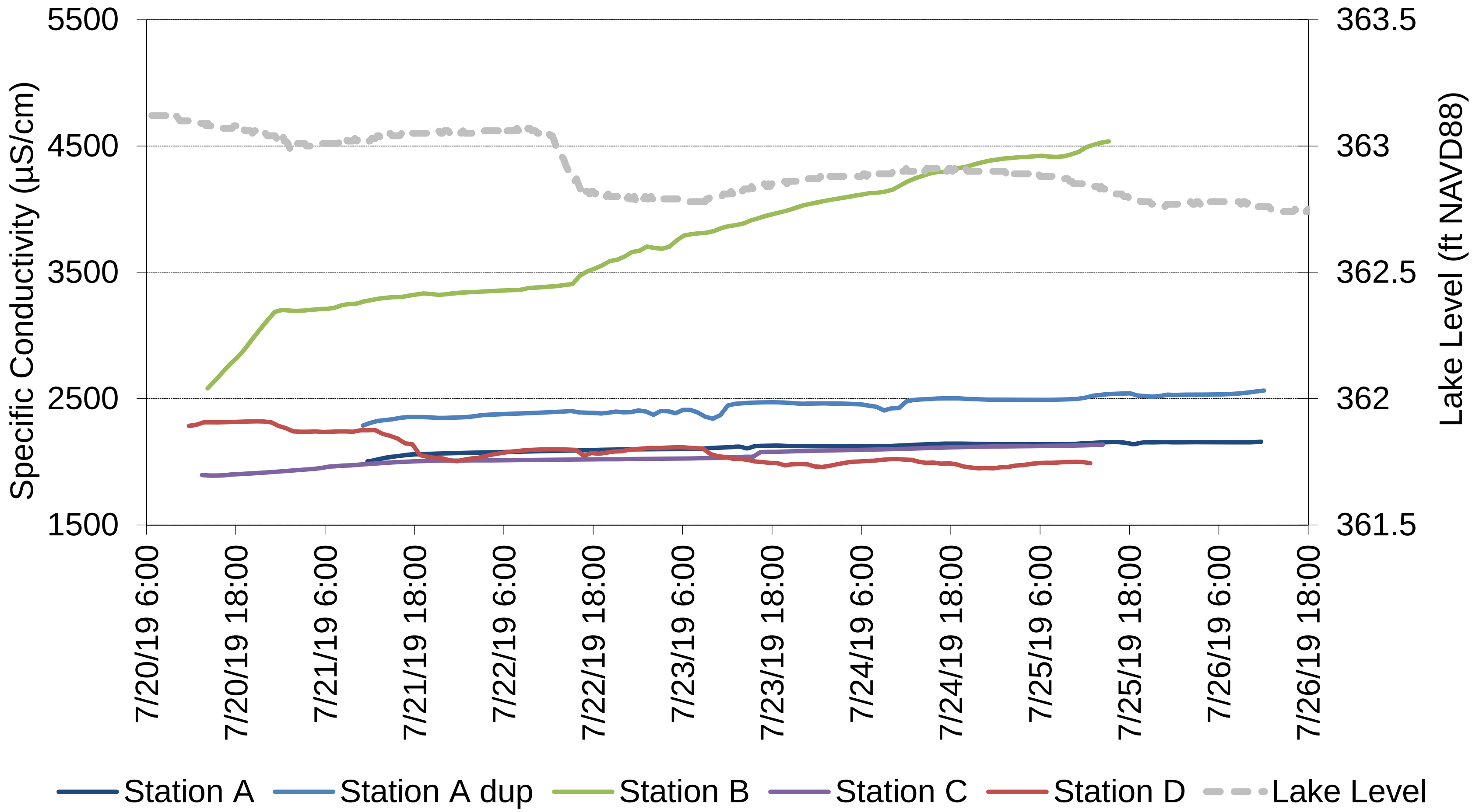

Figure 3-6. Time series for specific conductivity (colored lines) and water level (grey dashed line) at the Onondaga Lake site during the 2019 event.

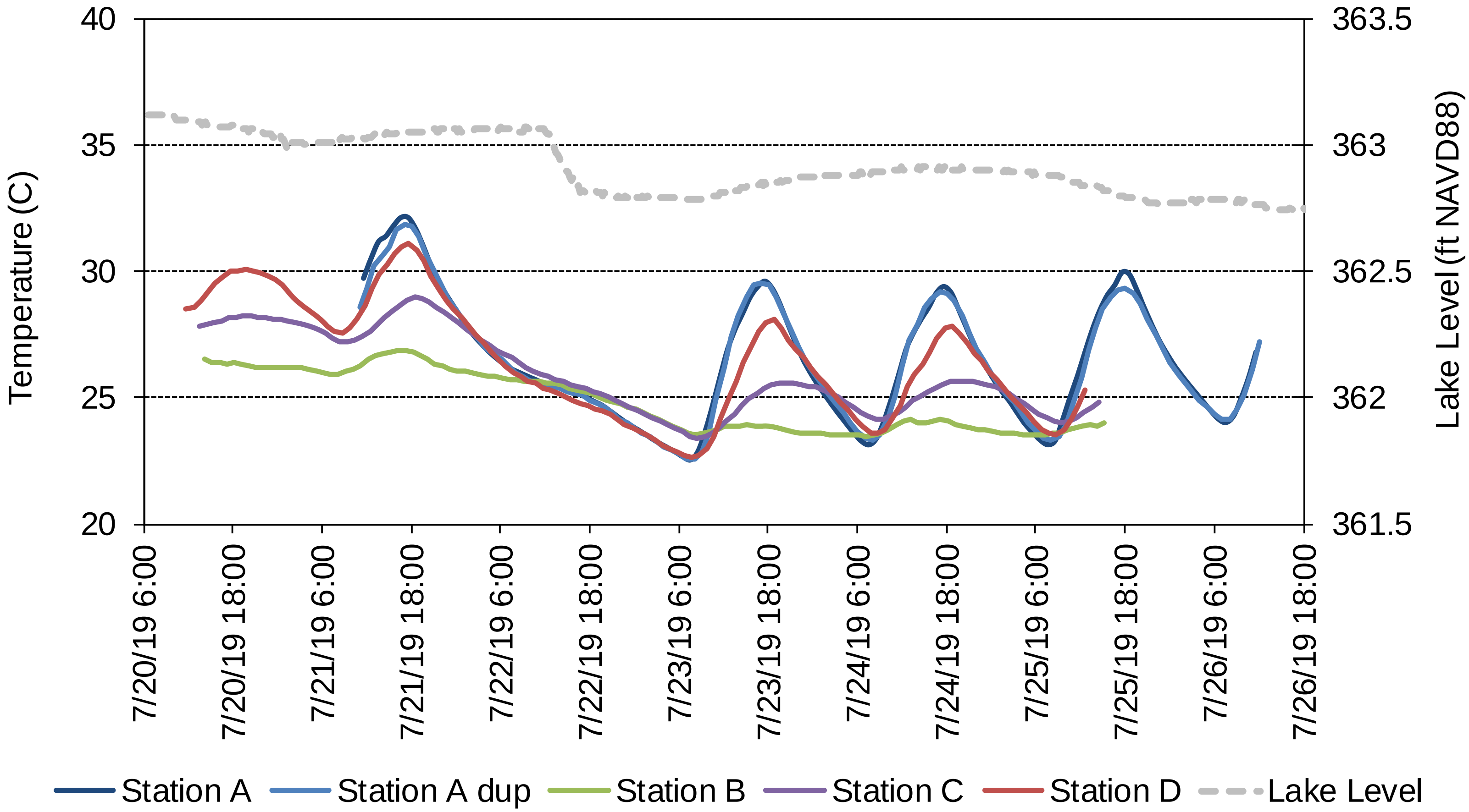

Figure 3-7. Time series for temperature (colored lines) and water level (grey dashed line) at the Onondaga Lake site during the 2019 event.

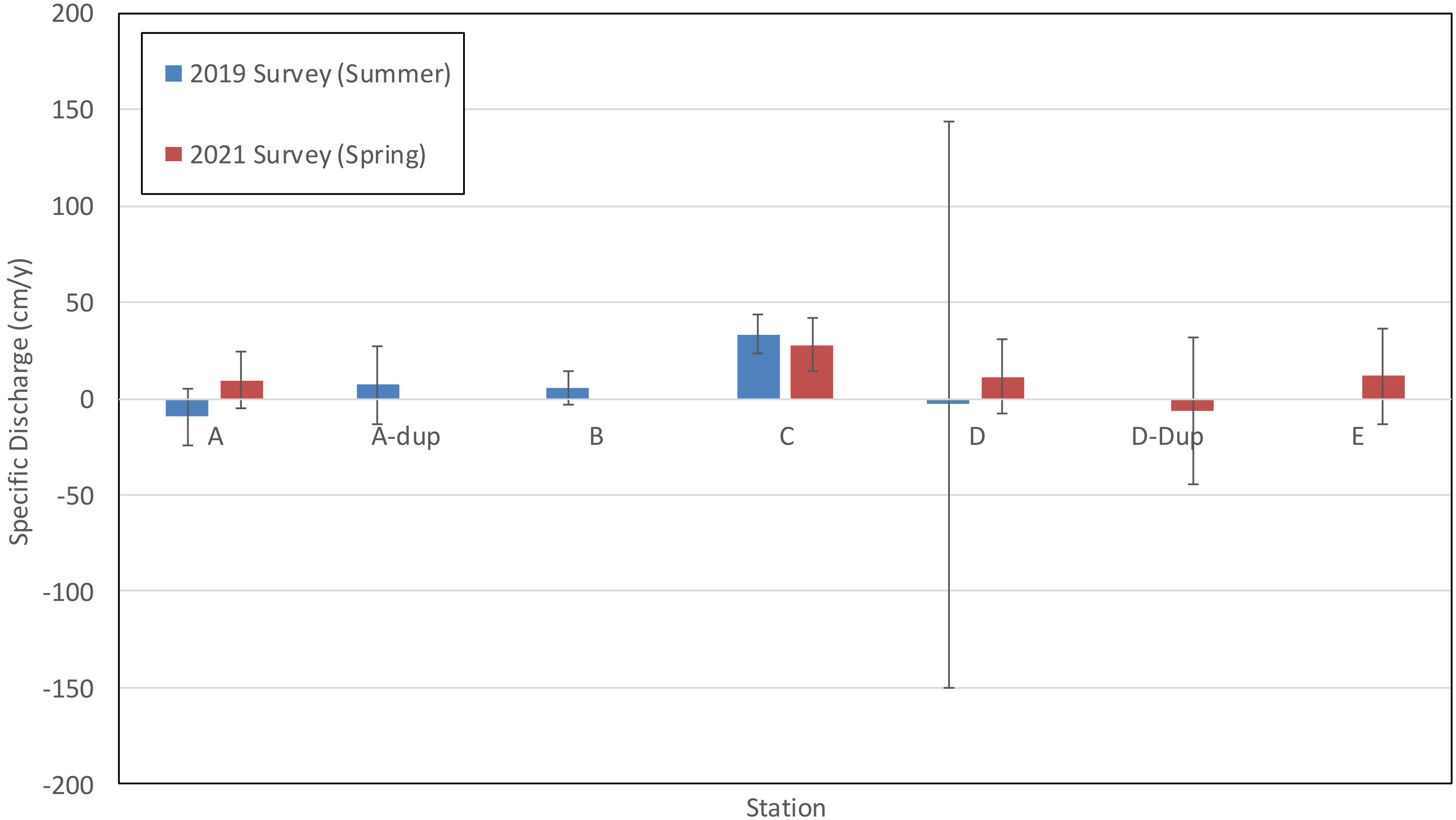

Figure 3-8. Comparison of the 2021 (Spring) and 2019 (Summer) period-average specific discharge rates.

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A. APPENDIX A: DATA QUALITY RESULTS 2021

The quality assurance (QA) objective of this field investigation was to collect data of known and appropriate quality for the project objectives. The QA processes included the application of: (1) appropriate field techniques; (2) appropriate tools and methods; and (3) measurement objectives for precision, accuracy, representativeness, completeness, and comparability (PARCC). Results for the QA objectives for the UltraSeep measurements are summarized below.

ULTRASEEP DATA QUALITY

Precision

Precision for the UltraSeep flow sensors was assessed on the basis of replicate analysis performed under controlled laboratory conditions prior to commencement of the survey. Sensor replicates for the flow meter consisted of approximately 25-30 individual measurements for each standard flow rate. Results for the UltraSeep flow meter laboratory precision were generated for replicate measurements of five separate flow rates using a high precision, calibrated, peristaltic pump. Laboratory RSDs for the UltraSeep flow meters were always less than 5%, ranging from 1.3-4.2% of full scale for US1, 1.6-4.9% for US2, 1.1-3.8% for US3, 1.4-4.6% for US5, and 1.9-4.1% for US7 (Table A-1 through Table A-5). This range of variation is typical for the extremely low flow range required for measuring groundwater seepage.

In the field, it was observed that there were periods of higher variability associated with several wind events that occurred over the survey period. These wind events generated waves that were sufficiently large to influence the seepage meters due to the shallow depths at the deployment stations. However, the wave influence did not impact the data records, and the majority of the wave influence was removed with the low-pass filter that is a standard part of the data processing for the specific discharge data.

Accuracy

For UltraSeep flow, accuracy was established by applying laboratory calibrations. Calibration curves for the flow meters are shown in Figure A-1 through Figure A-5. Based on the calibrations, accuracy (RPD) was always less than 4%, ranging from 0.4-

3.7% of full scale for US1, 0.1-2.9% for US2, 0.1-2.7% for US3, 0.3-3.8% for US5, and 0.4-3.5% for US7 (Table A-1 through Table A-5).

Representativeness

Representativeness is an expression of the degree to which sample data accurately represent the characteristics of a population, parameter variations at a sampling point, or an environmental condition that they are intended to represent. Representativeness was maximized by (1) selecting the appropriate number of samples and sampling locations, and (2) using appropriate and established sample collection, handling, and analysis techniques to provide information that reflects actual site conditions.

Completeness

Completeness assesses the amount of valid data obtained from a measurement system compared to the amount of data required to achieve a particular statistical level of confidence. The percent completeness was calculated as the number of stations yielding acceptable data divided by the total number of stations planned to be collected and multiplied by 100. Results for completeness were assessed for the UltraSeep data based on the number of stations where acceptable data was collected. Completeness for the UltraSeep data was 100% (5 of 5 stations) for the desired 12-day survey period.

Minor impacts to the data records were documented for the following reasons. All meters had short periods where data was not recorded during battery changes and data downloads. These periods were generally less than about 10 minutes and did not result in the loss of any hourly-average data values. At Stations C and D, a start-up transient was observed in the first few hours of the data record. This generally occurs as a result of settling of the seepage meter after installation. Setting has the effect of driving water out of the meter and thus manifests as a higher flow rate that generally dissipates after a few hours. For Station C, the first three hourly averaged values were removed, and for Station D the first two hourly average values were removed.

Comparability

Comparability is a qualitative parameter that expresses the degree of confidence that one data set may be compared to another. This goal was achieved through the use of (1) standardized techniques to collect and analyze samples, and (2) appropriate units to report analytical results. The comparability of the data was maximized by using standard analytical methods when possible, reporting data in consistent units, reporting data in a tabular format, and by validating the results against commonly accepted methodologies and target limits.

Seep Meter:	US1
Date:	4/15/2021
By:	Bart

Condition	**Pump**	**Flow Meter**		**Cal Flow Meter**			**Accuracy and Precision in Specific Discharge Units**		
	Vel (ml/min)	**Vel (ml/min)**	**Stdev (ml/min)**	**Vel (ml/min)**	**RSD (%)**	**RPD (%)**	**Funnel Area (cm^2)**	**Precision as Stdev (cm/d)**	**Accuracy as Differnce From Actual (cm/d)**
High Pos	5.48	3.91	0.23	5.43	4.2%	0.9%	11675	0.028	0.006
Mid Pos	3.12	1.64	0.23	2.93	4.1%	3.4%	11675	0.028	0.023
Low Pos	0.81	-0.28	0.12	0.83	2.1%	0.5%	11675	0.014	0.004
Zero	0.00	-0.89	0.07	0.16	1.3%	2.9%	11675	0.009	0.020
Low Neg	-0.80	-1.58	0.09	-0.60	1.6%	3.7%	11675	0.011	0.025
Mid Neg	-3.03	-3.78	0.08	-3.01	1.4%	0.4%	11675	0.010	0.003
High Neg	-5.19	-5.93	0.11	-5.36	2.0%	3.2%	11675	0.013	0.022

Slope =	1.096
Intercept=	1.14
R2=	1.00
Kc=	9.63%

Full Scale (Neg) =	-5.19
Full Scale (Pos) =	5.48

Average=	0.016	0.015

Table A-1. Flow calibration for the US1 UltraSeep for 2021. Flows reported in milliliters per minute (ml/min) and relative standard deviations and percent differences reported as percent of measured value. Conversion to units of specific discharge (cm/day) also shown.

Seep Meter:	US2
Date:	4/15/2021
By:	Bart

Condition	**Pump**	**Flow Meter**		**Cal Flow Meter**			**Accuracy and Precision in Specific Discharge Units**		
	Vel (ml/min)	**Vel (ml/min)**	**Stdev (ml/min)**	**Vel (ml/min)**	**RSD (%)**	**RPD (%)**	**Funnel Area (cm^2)**	**Precision as Stdev (cm/d)**	**Accuracy as Differnce From Actual (cm/d)**
High Pos	5.48	5.06	0.23	5.48	4.2%	0.1%	11675	0.028	0.001
Mid Pos	3.12	2.66	0.27	2.96	4.9%	2.9%	11675	0.033	0.019
Low Pos	0.81	0.60	0.17	0.80	3.2%	0.1%	11675	0.022	0.001
Zero	0.00	-0.03	0.09	0.13	1.6%	2.4%	11675	0.011	0.016
Low Neg	-0.80	-0.82	0.13	-0.70	2.4%	1.8%	11675	0.016	0.012
Mid Neg	-3.03	-3.01	0.12	-3.00	2.2%	0.6%	11675	0.015	0.004
High Neg	-5.19	-5.19	0.13	-5.29	2.4%	2.0%	11675	0.016	0.013

Slope =	1.052
Intercept=	0.17
R2=	1.00
Kc=	5.21%

Full Scale (Neg) =	-5.19
Full Scale (Pos) =	5.48

Average=	0.020	0.010

Table A-2. Flow calibration for the US2 UltraSeep for 2021. Flows reported in milliliters per minute (ml/min) and relative standard deviations and percent differences reported as percent of measured value. Conversion to units of specific discharge (cm/day) also shown.

Seep Meter:	US3
Date:	4/15/2021
By:	Bart

Condition	Pump	Flow Meter		Cal Flow Meter			Accuracy and Precision in Specific Discharge Units		
	Vel (ml/min)	Vel (ml/min)	Stdev (ml/min)	Vel (ml/min)	RSD (%)	RPD (%)	Funnel Area (cm^2)	Precision as Stdev (cm/d)	Accuracy as Differnce From Actual (cm/d)
High Pos	5.48	4.70	0.18	5.47	3.2%	0.1%	11675	0.022	0.000
Mid Pos	3.12	2.37	0.21	2.97	3.8%	2.7%	11675	0.026	0.018
Low Pos	0.81	0.32	0.12	0.79	2.2%	0.4%	11675	0.015	0.002
Zero	0.00	-0.32	0.06	0.10	1.1%	1.8%	11675	0.007	0.012
Low Neg	-0.80	-1.03	0.09	-0.66	1.7%	2.6%	11675	0.011	0.017
Mid Neg	-3.03	-3.17	0.09	-2.96	1.6%	1.4%	11675	0.011	0.009
High Neg	-5.19	-5.39	0.11	-5.33	2.0%	2.7%	11675	0.014	0.018

Slope =	1.070
Intercept=	0.44
R2=	1.00
Kc=	7.03%

Full Scale (Neg) =	-5.19
Full Scale (Pos) =	5.48

Average=	0.015	0.011

Table A-3. Flow calibration for the US3 UltraSeep for 2021. Flows reported in milliliters per minute (ml/min) and relative standard deviations and percent differences reported as percent of measured value. Conversion to units of specific discharge (cm/day) also shown.

Seep Meter:	US5
Date:	4/15/2021
By:	Bart

Condition	Pump	Flow Meter		Cal Flow Meter			Accuracy and Precision in Specific Discharge Units		
	Vel (ml/min)	Vel (ml/min)	Stdev (ml/min)	Vel (ml/min)	RSD (%)	RPD (%)	Funnel Area (cm^2)	Precision as Stdev (cm/d)	Accuracy as Differnce From Actual (cm/d)
High Pos	5.48	4.45	0.25	5.46	4.6%	0.3%	11675	0.031	0.002
Mid Pos	3.12	2.10	0.19	2.91	3.4%	3.8%	11675	0.023	0.026
Low Pos	0.81	0.14	0.14	0.79	2.5%	0.3%	11675	0.017	0.002
Zero	0.00	-0.43	0.09	0.17	1.7%	3.2%	11675	0.012	0.021
Low Neg	-0.80	-1.14	0.08	-0.59	1.4%	3.7%	11675	0.010	0.025
Mid Neg	-3.03	-3.36	0.09	-3.00	1.6%	0.7%	11675	0.011	0.004
High Neg	-5.19	-5.54	0.10	-5.36	1.8%	3.1%	11675	0.012	0.021

Slope =	1.082
Intercept=	0.64
R2=	1.00
Kc=	8.24%

Full Scale (Neg) =	-5.19
Full Scale (Pos) =	5.48

Average=	0.016	0.015

Table A-4. Flow calibration for the US5 UltraSeep for 2021. Flows reported in milliliters per minute (ml/min) and relative standard deviations and percent differences reported as percent of measured value. Conversion to units of specific discharge (cm/day) also shown.

Seep Meter:	US7
Date:	4/15/2021
By:	Bart

Condition	**Pump**	**Flow Meter**		**Cal Flow Meter**			**Accuracy and Precision in Specific Discharge Units**		
	Vel (ml/min)	**Vel (ml/min)**	**Stdev (ml/min)**	**Vel (ml/min)**	**RSD (%)**	**RPD (%)**	**Funnel Area (cm^2)**	**Precision as Stdev (cm/d)**	**Accuracy as Differnce From Actual (cm/d)**
High Pos	5.48	4.79	0.22	5.45	4.1%	0.5%	11675	0.027	0.003
Mid Pos	3.12	2.58	0.16	2.99	2.9%	2.4%	11675	0.020	0.016
Low Pos	0.81	0.60	0.14	0.78	2.5%	0.5%	11675	0.017	0.004
Zero	0.00	0.08	0.12	0.19	2.1%	3.5%	11675	0.015	0.023
Low Neg	-0.80	-0.70	0.13	-0.68	2.3%	2.2%	11675	0.016	0.015
Mid Neg	-3.03	-2.83	0.11	-3.05	1.9%	0.4%	11675	0.013	0.003
High Neg	-5.19	-4.83	0.11	-5.29	2.0%	1.8%	11675	0.013	0.012

Slope =	1.117
Intercept=	0.10
R2=	1.00
Kc=	11.71%

Full Scale (Neg) =	-5.19
Full Scale (Pos) =	5.48

Average=	0.017	0.011

Table A-5. Flow calibration for the US7 UltraSeep for 2021. Flows reported in milliliters per minute (ml/min) and relative standard deviations and percent differences reported as percent of measured value. Conversion to units of specific discharge (cm/day) also shown.

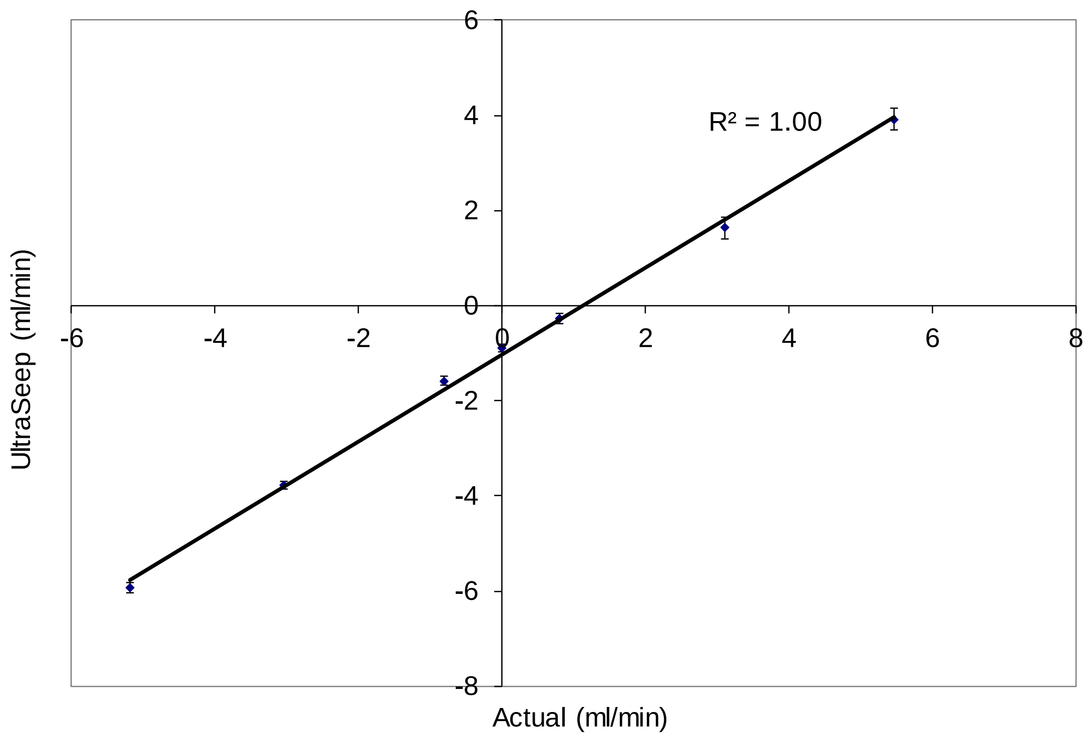

Figure A-1. Flow meter calibration for the UltraSeep US1 for 2021.

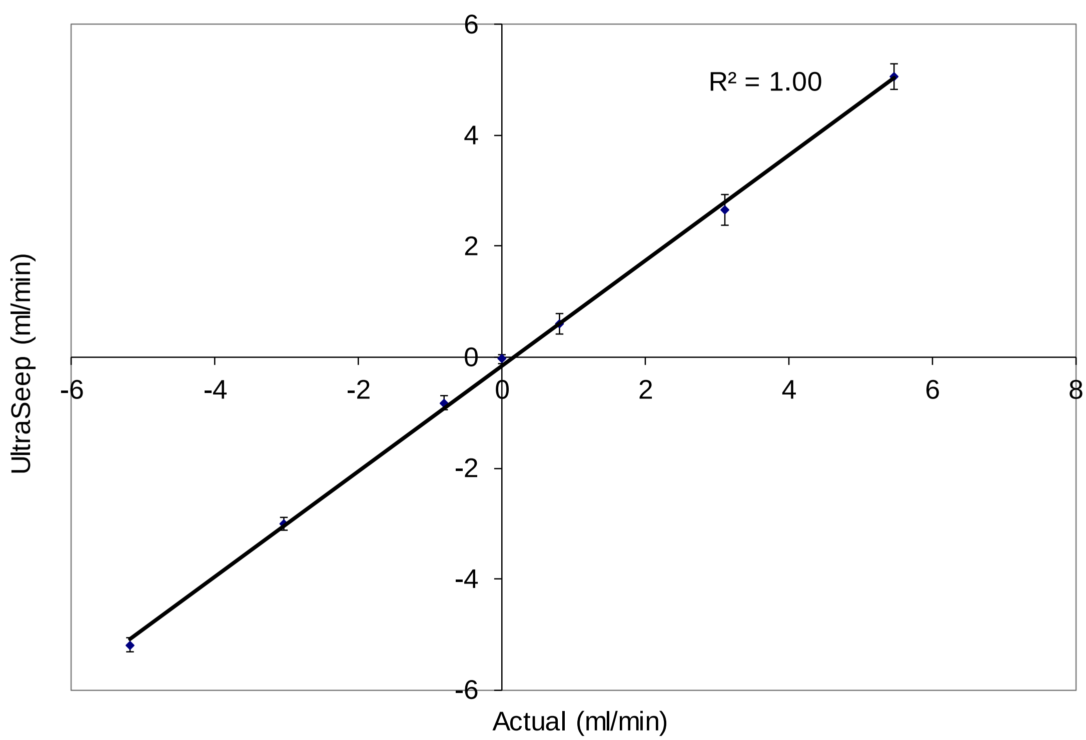

Figure A-2. Flow meter calibration for the UltraSeep US2 for 2021.

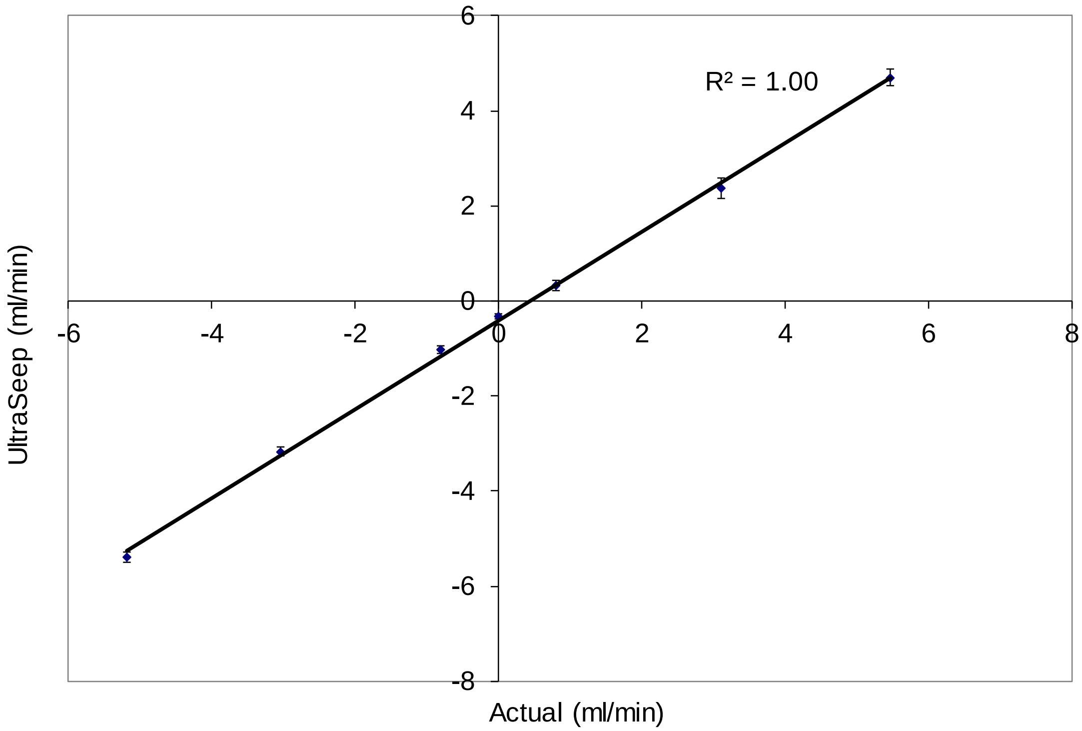

Figure A-3. Flow meter calibration for the UltraSeep US3 for 2021.

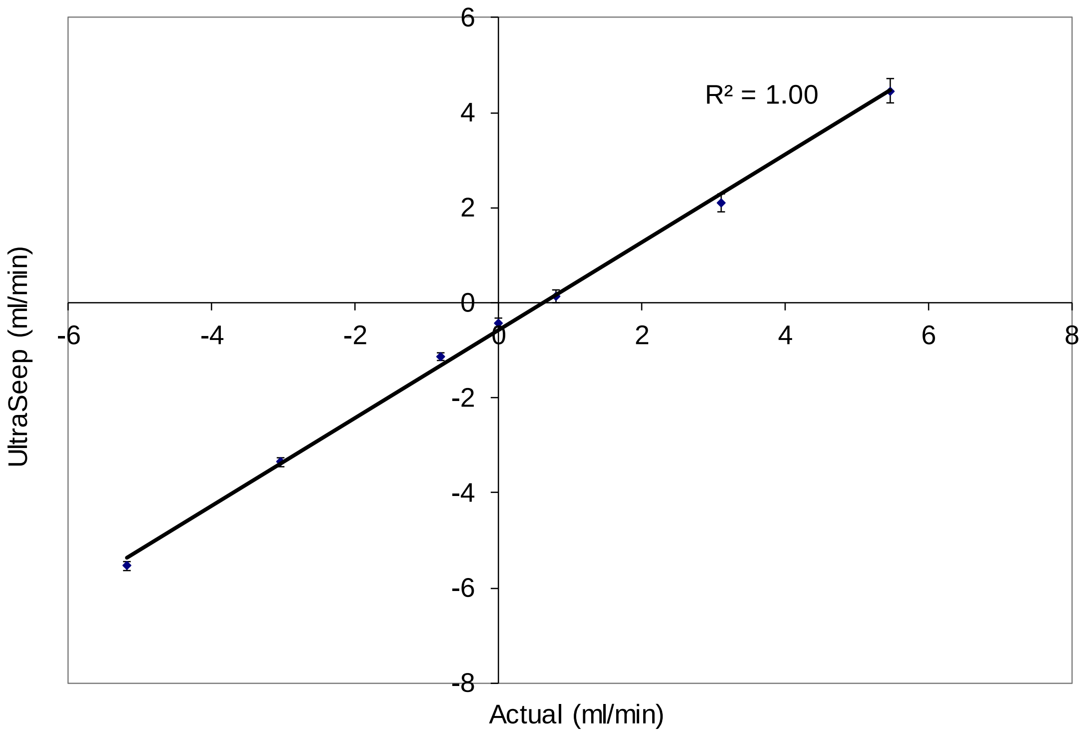

Figure A-4. Flow meter calibration for the UltraSeep US5 for 2021.

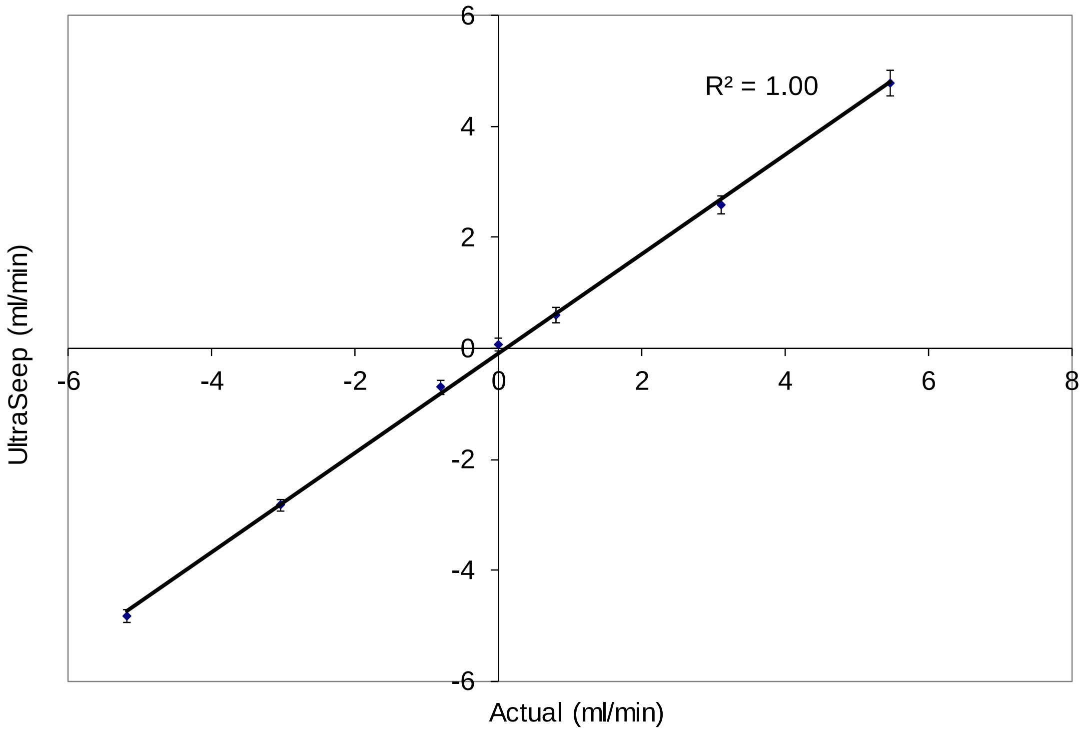

Figure A-5. Flow meter calibration for the UltraSeep US7 for 2021.

B. APPENDIX B: DATA QUALITY RESULTS 2019

The quality assurance (QA) objective of this field investigation was to collect data of known and appropriate quality for the project objectives. The QA processes included the application of: (1) appropriate field techniques; (2) appropriate tools and methods; and (3) measurement objectives for precision, accuracy, representativeness, completeness, and comparability (PARCC). Results for the QA objectives for the UltraSeep measurements are summarized below.

ULTRASEEP DATA QUALITY

Precision

Precision for the UltraSeep flow sensors was assessed on the basis of replicate analysis performed under controlled laboratory conditions prior to commencement of the survey. Sensor replicates for the flow meter consisted of approximately 12-16 individual measurements for each standard flow rate. Results for the UltraSeep flow meter laboratory precision were generated for replicate measurements of five separate flow rates using a high precision, calibrated, peristaltic pump. Laboratory RSDs for the UltraSeep flow meters were always less than 12%, ranging from 1.0-3.1% of full scale for US1, 3.5-6.0% for US2, 2.8-6.2% for US3, 1.8-7.4% for US5, and 7.1-11.7% for US7 (Table A-1 through Table A-5). This range of variation is typical for the extremely low flow range required for measuring groundwater seepage.

Accuracy

For UltraSeep flow, accuracy was established by applying laboratory calibrations. Calibration curves for the flow meters are shown in Figure A-1 through Figure A-5. Based on the calibrations, accuracy (RPD) was always less than 3.4%, ranging from 0.4-4.8% of full scale for US1, 0.6-3.3% for US2, 0.2-3.5% for US3, 0.3-2.7% for US5, and 0.6-3.1% for US7 (Table A-1 through Table A-5).

Representativeness

Representativeness is an expression of the degree to which sample data accurately represent the characteristics of a population, parameter variations at a sampling point, or an environmental condition that they are intended to represent. Representativeness was maximized by (1) selecting the appropriate number of samples and sampling locations, and (2) using appropriate and established sample collection, handling, and analysis techniques to provide information that reflects actual site conditions.

Completeness

Completeness assesses the amount of valid data obtained from a measurement system compared to the amount of data required to achieve a particular statistical level of confidence. The percent completeness was calculated as the number of stations yielding acceptable data divided by the total number of stations planned to be collected and multiplied by 100. Results for completeness were assessed for the UltraSeep data based on the number of stations where acceptable data was collected. Completeness for the UltraSeep data was 100% (5 of 5 stations) for the desired 5-day survey period.

At Station A, the post-zero and several short segments of data within the 5-day period were not used due to the detection of a low signal. A low signal detection generally indicates some entrance of non-water material into the flow meter. This could have been pieces of vegetation, gas bubbles or other unknown material. However, these missing data did not significantly impact the overall data quality for the station. The missing post-zero did not allow for any drift correction at the station, however multiple surveys including this one indicate that this zero drift is generally very small. Similarly, at Station C, the post-zero was not used due to the detection of a low signal. Overall, a 100% completeness rate is generally considered to be highly successful for field programs of this nature.

Comparability

Comparability is a qualitative parameter that expresses the degree of confidence that one data set may be compared to another. This goal was achieved through the use of (1) standardized techniques to collect and analyze samples, and (2) appropriate units to report analytical results. The comparability of the data was maximized by using standard analytical methods when possible, reporting data in consistent units, reporting data in a tabular format, and by validating the results against commonly accepted methodologies and target limits.

Seep Meter:	US1
Date:	7/11/2019
By:	Bart

Condition	**Pump**	**Flow Meter**		**Cal Flow Meter**			**Accuracy and Precision in Specific Discharge Units**		
	Vel (ml/min)	**Vel (ml/min)**	**Stdev (ml/min)**	**Vel (ml/min)**	**RSD (%)**	**RPD (%)**	**Funnel Area (cm^2)**	**Precision as Stdev (cm/d)**	**Accuracy as Differnce From Actual (cm/d)**
High Pos	4.77	4.71	0.15	4.82	3.1%	1.1%	11675	0.018	0.006
Mid Pos	2.78	2.72	0.06	2.80	1.2%	0.4%	11675	0.007	0.002
Low Pos	0.69	0.62	0.05	0.65	1.0%	0.8%	11675	0.006	0.005
Zero	0.00	-0.13	0.07	-0.11	1.4%	2.4%	11675	0.008	0.014
Low Neg	-0.69	-0.79	0.05	-0.79	1.1%	2.1%	11675	0.007	0.012
Mid Neg	-2.78	-2.52	0.08	-2.55	1.7%	4.8%	11675	0.010	0.028
High Neg	-4.77	-4.74	0.07	-4.82	1.5%	1.0%	11675	0.009	0.006

Slope =	1.021
Intercept=	0.02
R2=	1.00
Kc=	2.07%

Full Scale (Neg) =	-4.77
Full Scale (Pos) =	4.77

Average=	0.009	0.011

Table B-1. Flow calibration for the US1 UltraSeep for 2019. Flows reported in milliliters per minute (ml/min) and relative standard deviations and percent differences reported as percent of measured value. Conversion to units of specific discharge (cm/day) also shown.

Seep Meter:	US2
Date:	7/11/2019
By:	Bart

Condition	**Pump**	**Flow Meter**		**Cal Flow Meter**			**Accuracy and Precision in Specific Discharge Units**		
	Vel (ml/min)	**Vel (ml/min)**	**Stdev (ml/min)**	**Vel (ml/min)**	**RSD (%)**	**RPD (%)**	**Funnel Area (cm^2)**	**Precision as Stdev (cm/d)**	**Accuracy as Differnce From Actual (cm/d)**
High Pos	4.77	4.16	0.28	4.74	6.0%	0.6%	11675	0.035	0.003
Mid Pos	2.78	2.10	0.18	2.65	3.9%	2.8%	11675	0.023	0.017
Low Pos	0.69	0.22	0.17	0.74	3.5%	0.9%	11675	0.020	0.005
Zero	0.00	-0.39	0.29	0.12	6.0%	2.5%	11675	0.035	0.015
Low Neg	-0.69	-1.15	0.17	-0.66	3.7%	0.7%	11675	0.022	0.004
Mid Neg	-2.78	-3.11	0.18	-2.66	3.8%	2.6%	11675	0.023	0.015
High Neg	-4.77	-5.35	0.18	-4.93	3.9%	3.3%	11675	0.023	0.020

Slope =	1.018
Intercept=	0.51
R2=	1.00
Kc=	1.79%

Full Scale (Neg) =	-4.77
Full Scale (Pos) =	4.77

Average=	0.026	0.011

Table B-2. Flow calibration for the US2 UltraSeep for 2019. Flows reported in milliliters per minute (ml/min) and relative standard deviations and percent differences reported as percent of measured value. Conversion to units of specific discharge (cm/day) also shown.

Seep Meter:	US3
Date:	7/11/2019
By:	Bart

Condition	**Pump**	**Flow Meter**		**Cal Flow Meter**			**Accuracy and Precision in Specific Discharge Units**		
	Vel (ml/min)	**Vel (ml/min)**	**Stdev (ml/min)**	**Vel (ml/min)**	**RSD (%)**	**RPD (%)**	**Funnel Area (cm^2)**	**Precision as Stdev (cm/d)**	**Accuracy as Differnce From Actual (cm/d)**
High Pos	4.77	4.53	0.22	4.60	4.7%	3.5%	11675	0.027	0.021
Mid Pos	2.78	2.87	0.30	2.82	6.2%	0.9%	11675	0.036	0.005
Low Pos	0.69	0.95	0.13	0.74	2.8%	1.1%	11675	0.017	0.006
Zero	0.00	0.34	0.19	0.08	4.0%	1.7%	11675	0.024	0.010
Low Neg	-0.69	-0.26	0.23	-0.57	4.8%	2.6%	11675	0.028	0.016
Mid Neg	-2.78	-2.30	0.24	-2.77	5.1%	0.2%	11675	0.030	0.001
High Neg	-4.77	-4.29	0.17	-4.92	3.6%	3.0%	11675	0.021	0.018

Slope =	1.079
Intercept=	-0.28
R2=	1.00
Kc=	7.95%

Full Scale (Neg) =	-4.77
Full Scale (Pos) =	4.77

Average=	0.026	0.011

Table B-3. Flow calibration for the US3 UltraSeep for 2019. Flows reported in milliliters per minute (ml/min) and relative standard deviations and percent differences reported as percent of measured value. Conversion to units of specific discharge (cm/day) also shown.

Seep Meter:	US5
Date:	7/11/2019
By:	Bart

Condition	Pump	Flow Meter		Cal Flow Meter			Accuracy and Precision in Specific Discharge Units		
	Vel (ml/min)	Vel (ml/min)	Stdev (ml/min)	Vel (ml/min)	RSD (%)	RPD (%)	Funnel Area (cm^2)	Precision as Stdev (cm/d)	Accuracy as Differnce From Actual (cm/d)
High Pos	4.77	4.73	0.35	4.85	7.4%	1.6%	11675	0.043	0.009
Mid Pos	2.78	2.55	0.09	2.71	1.8%	1.4%	11675	0.011	0.008
Low Pos	0.69	0.52	0.12	0.72	2.5%	0.5%	11675	0.015	0.003
Zero	0.00	-0.25	0.15	-0.04	3.1%	0.9%	11675	0.018	0.005
Low Neg	-0.69	-1.02	0.15	-0.80	3.2%	2.2%	11675	0.019	0.013
Mid Neg	-2.78	-2.90	0.10	-2.65	2.0%	2.7%	11675	0.012	0.016
High Neg	-4.77	-5.08	0.12	-4.78	2.6%	0.3%	11675	0.015	0.002

Slope =	0.982
Intercept=	0.20
R2=	1.00
Kc=	-1.77%

Full Scale (Neg) =	-4.77
Full Scale (Pos) =	4.77

Average=	0.019	0.008

Table B-4. Flow calibration for the US5 UltraSeep for 2019. Flows reported in milliliters per minute (ml/min) and relative standard deviations and percent differences reported as percent of measured value. Conversion to units of specific discharge (cm/day) also shown.

Seep Meter:	US7
Date:	7/11/2019
By:	Bart

Condition	**Pump**	**Flow Meter**		**Cal Flow Meter**			**Accuracy and Precision in Specific Discharge Units**		
	Vel (ml/min)	**Vel (ml/min)**	**Stdev (ml/min)**	**Vel (ml/min)**	**RSD (%)**	**RPD (%)**	**Funnel Area (cm^2)**	**Precision as Stdev (cm/d)**	**Accuracy as Differnce From Actual (cm/d)**
High Pos	4.77	3.23	0.35	4.91	7.4%	3.0%	11675	0.044	0.018
Mid Pos	2.78	0.99	0.34	2.63	7.1%	3.1%	11675	0.042	0.018
Low Pos	0.69	-0.88	0.36	0.73	7.6%	0.9%	11675	0.045	0.005
Zero	0.00	-1.57	0.39	0.03	8.1%	0.6%	11675	0.048	0.003
Low Neg	-0.69	-2.46	0.49	-0.88	10.3%	3.9%	11675	0.060	0.023
Mid Neg	-2.78	-4.29	0.47	-2.75	9.8%	0.6%	11675	0.058	0.004
High Neg	-4.77	-6.18	0.56	-4.68	11.7%	1.9%	11675	0.069	0.011

Slope =	1.020
Intercept=	1.63
R2=	1.00
Kc=	1.97%

Full Scale (Neg) =	-4.77
Full Scale (Pos) =	4.77

Average=	0.052	0.012

Table B-5. Flow calibration for the US7 UltraSeep for 2019. Flows reported in milliliters per minute (ml/min) and relative standard deviations and percent differences reported as percent of measured value. Conversion to units of specific discharge (cm/day) also shown.

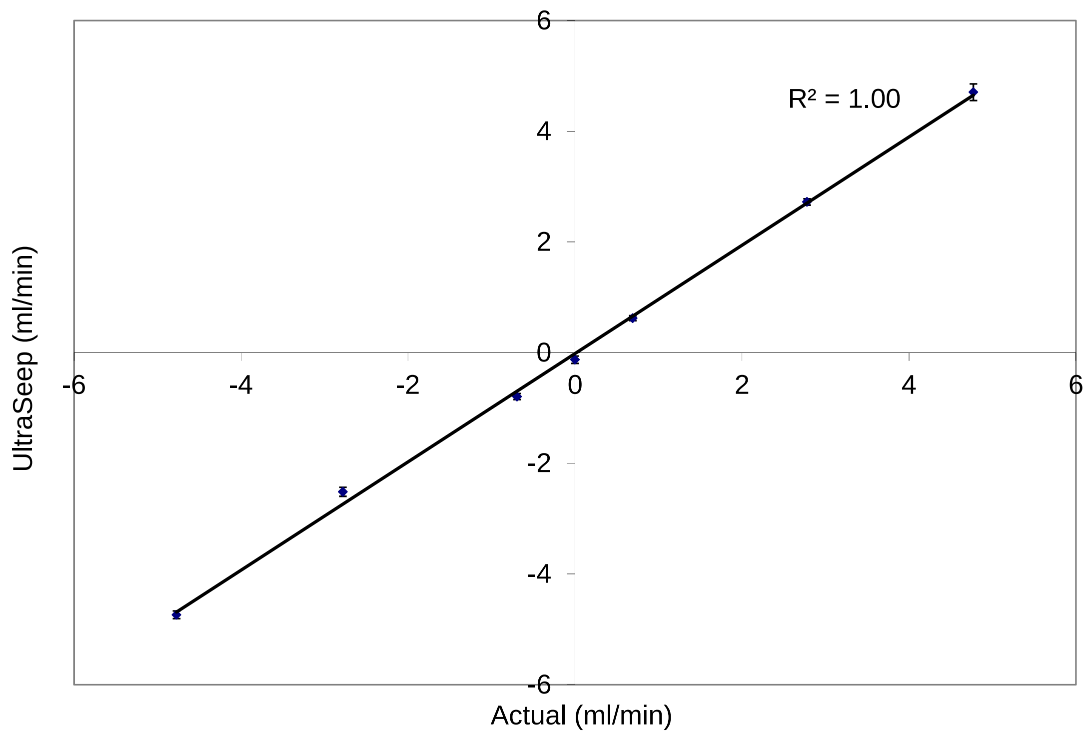

Figure B-1. Flow meter calibration for the UltraSeep US1 for 2019.

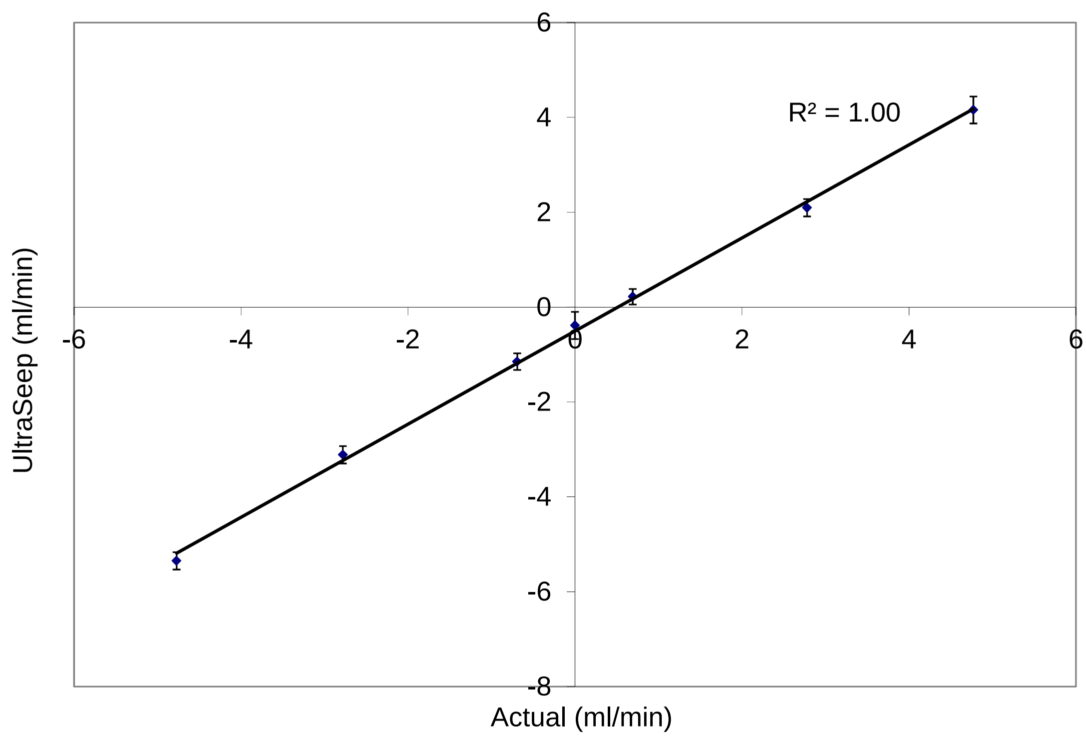

Figure B-2. Flow meter calibration for the UltraSeep US2 for 2019.

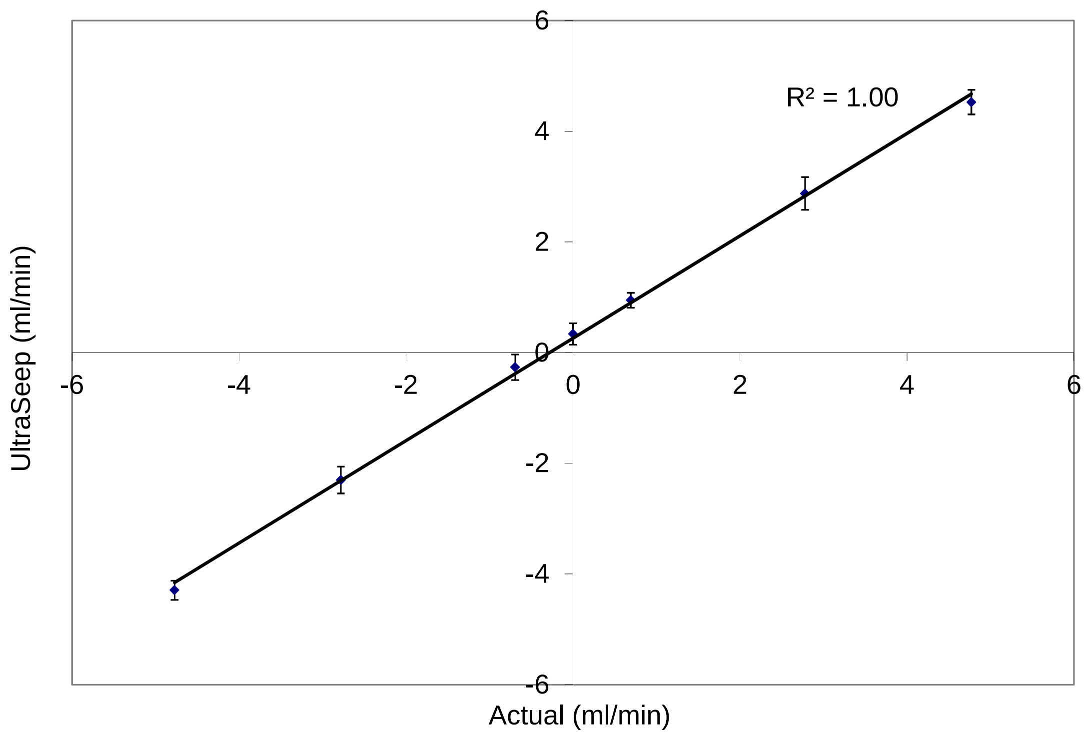

Figure B-3. Flow meter calibration for the UltraSeep US3 for 2019.

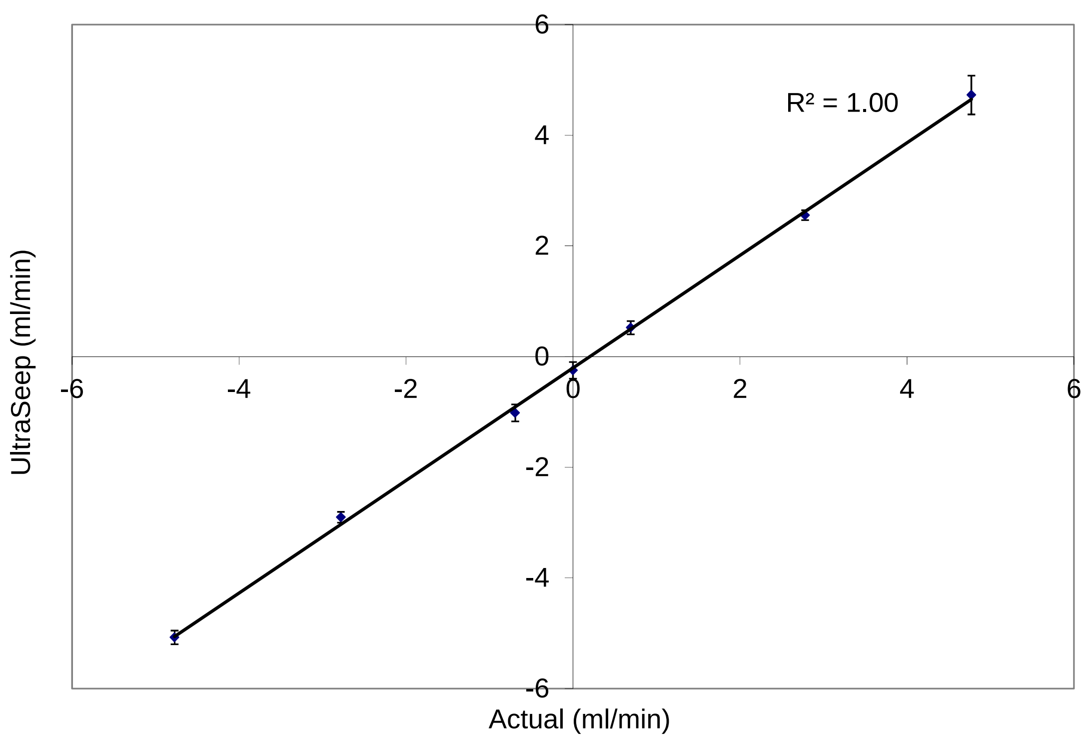

Figure B-4. Flow meter calibration for the UltraSeep US5 for 2019.

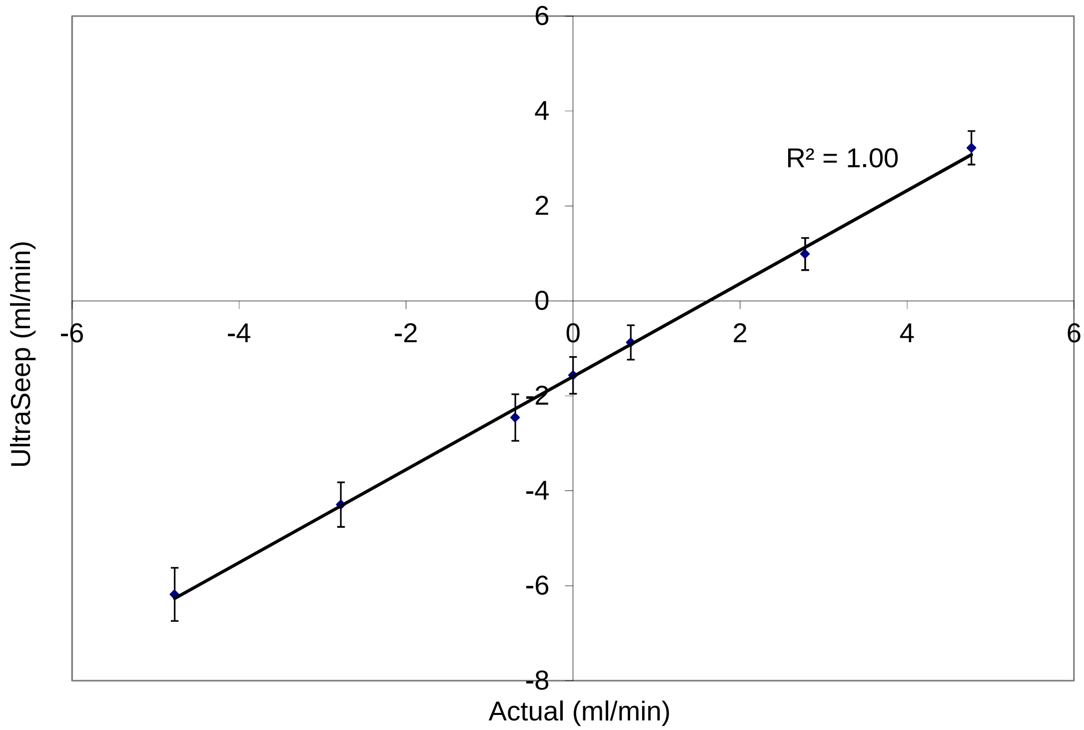

Figure B-5. Flow meter calibration for the UltraSeep US7 for 2019.

C. APPENDIX C: SEE 2021 ELECTRONIC DATA DELIVERABLE

D. APPENDIX D: SEE 2019 ELECTRONIC DATA DELIVERABLE

APPENDIX 7A - SURFACE WATER MONITORING DATA USABILITY SUMMARY REPORT

APPENDIX 7A:

DATA USABILITY SUMMARY REPORT

ONONDAGA LAKE SURFACE WATER MONITORING
ONONDAGA COUNTY, NEW YORK

Prepared For:

Honeywell

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Prepared By:

PARSONS

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Syracuse, New York 13212

JULY 2022

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LIST OF ATTACHMENTS

SECTION 7A1 DATA USABILITY SUMMARY

Surface water samples were collected as part of the Onondaga Lake Surface Water Compliance sampling on August 3, 2021 through January 5, 2022. Analytical results from these samples were validated and reviewed by Parsons for usability with respect to the following requirements:

- Work Plan;
- Onondaga Lake QAPP; and
- USEPA Region II Standard Operating Procedures (SOPs) for organic and inorganic data review.

The analytical laboratories for this project were Eurofins – Lancaster and Eurofins – Frontier. The laboratories are certified to conduct project analyses through the New York State Department of Health (NYSDOH) and the National Environmental Laboratory Accreditation Program (NELAP).

7A1.1 Laboratory Data Packages

The laboratory data package turnaround time, defined as the time from sample receipt by the laboratory to receipt of the analytical data packages by Parsons, was 11-38 days for the samples.

The laboratory data packages received from Eurofins were paginated, complete, and overall were of good quality. Comments on specific quality control (QC) and other requirements are discussed in detail in the attached data validation reports which are summarized in Section 2.

7A1.2 Sampling and Chain-of-Custody

The samples were collected, properly preserved, shipped under a chain-of-custody (COC) record, and received at Eurofins within one to five days of sampling. All samples were received intact and in good condition at Eurofins.

7A1.3 Laboratory Analytical Methods

The surface water samples were collected and analyzed for polychlorinated biphenyl (PCB) congeners, total and dissolved mercury, methyl mercury, and total suspended solids (TSS). Summaries of issues concerning these laboratory analyses are presented in Subsections 1.3.1 through 1.3.3. The data qualifications resulting from the data validation review and statements on the laboratory analytical precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) are discussed for each analytical method in Section 2 of this Data Usability Summary Report (DUSR). A Level IV data validation (i.e., full data validation) was conducted by Parsons on 10% of the project samples with the remaining 90% of the project samples undergoing a Level III data validation which provides data defensibility. The laboratory data were reviewed and may be qualified with the following validation flags:

"U" - not detected at the value given,
"UJ" - estimated and not detected at the value given,
"J" - estimated at the value given,
"J+" - estimated biased high at the value given,
"J-" - estimated biased low at the value given,
"N" - presumptive evidence at the value given, and
"R" - unusable value.

The validated laboratory data were tabulated and are presented in Attachment A.

7A1.3.1 PCB Organic Analysis

Surface water samples collected from the site were analyzed for PCB congeners using the USEPA 1668A analytical method. Certain reported results for these samples were qualified as estimated based upon instrument calibrations and field duplicate precision; and qualified as not detected based upon blank contamination. The reported PCB analytical results were considered 100% complete (i.e., usable) for the data presented by Eurofins. PARCCS requirements were met.

7A1.3.2 Mercury and Methyl Mercury Analysis

Surface water samples collected from the site were analyzed for total and dissolved mercury using the USEPA 1631E analytical method; and methyl mercury using the USEPA 1630 analytical method. Certain reported results for these samples were qualified as estimated based upon field duplicate precision; and qualified as not detected based upon blank contamination. Certain reported dissolved mercury results were qualified as unusable “R” based upon laboratory contamination during sample filtration. The mercury and methyl mercury results were considered 97.6% complete (i.e., usable) for the data presented by Eurofins. PARCCS requirements were met.

7A1.3.3 General Chemistry Analysis

Surface water samples collected from the site were analyzed for TSS using the SM2540D analytical method. Certain reported results for these samples were qualified as estimated based upon laboratory duplicate precision and field duplicate precision. The TSS results were considered 100% complete (i.e., usable) for the data presented by Eurofins. PARCCS requirements were met.

SECTION 7A2 DATA VALIDATION REPORT

7A2.1 Surface Water Samples

Data review has been completed for data packages generated by Eurofins containing surface water samples collected from the site. These samples were contained within sample delivery groups (SDGs) 410-49963-1, 410-52316-1, 410-55112-1, 410-55129-1, 410-56680-1, 410-63322-1, 410-64096-1, 410-64112-1, 410-67305-1, 410-68896-1, 1I00066, and 1K00153. All of these samples were properly preserved, shipped under a COC record, and received intact by the analytical laboratory. The validated laboratory data were tabulated and are presented in Attachment A.

Data validation was performed for all samples in accordance with the project work plan, QAPP, and the USEPA Region II SOPs for organic and inorganic data review. This data validation and usability report is presented by analysis type.

7A2.1.1 PCB Congeners

The following items were reviewed for compliancy in the PCB analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Laboratory control sample (LCS) recoveries
- Laboratory method blank and field/equipment blank contamination
- Initial calibrations
- Verification calibrations
- Chromatogram quality
- Sample result verification and identification
- Field duplicate precision
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of MS/MSD precision and accuracy, LCS recoveries, blank contamination, verification calibrations, and field duplicate precision as discussed below.

<u>MS/MSD Precision and Accuracy</u>

All MS/MSD precision (relative percent difference; RPD) and accuracy (percent recovery; %R) measurements were considered acceptable and within QC limits for designated spiked project samples with the exception of the high MS/MSD accuracy results for DCB (183%R/180%R; QC limit 50-150%R) during the spiked analyses of sample OL-3731-08-R2. Validation qualification was not required for the affected parent sample.

<u>LCS Recoveries</u>

All LCS recoveries were considered acceptable and within QC limits with the exception of the high LCS recovery for DCB (182%R; QC limit 50-150%R) associated with samples collected on 11/17/21 except OL-3731-11-R2, -12-R2, -13-R2, and -14-R2. Validation qualification was not required for the affected samples.

Blank Contamination

The QC field blanks and laboratory method blank associated with samples collected on 8/3/21, 9/14/21, and 12/15/21 contained PCB-4 below the reporting limit at concentrations of 6.6, 6.8, and 8.99 pg/L, respectively; the QC equipment blank and laboratory method blank associated with samples collected on 9/23/21 contained many PCB congeners; the QC equipment blank associated with samples collected on 11/12/21 contained PCB-8, PCB-11, PCB-16, PCB-17, PCB-18/30, PCB-21/33, PCB-22, PCB-31, and PCB-32 below the reporting limit at concentrations of 19, 170, 7.8, 8.5, 13, 12, 7.1, 14, and 5.6 pg/L, respectively; the QC field blank associated with samples collected on 11/17/21 contained PCB-37, PCB-64, and PCB-66 below the reporting limit at concentrations of 6.7, 13, and 18 pg/L; the laboratory method blank associated with samples OL-3731-11-R2, -12-R2, -13-R2, and -14-R2 contained PCB-56, PCB-64, and PCB-66 below the reporting limit at concentrations of 11.6, 11.5, and 22.4 pg/L, respectively; the laboratory method blank associated with samples OL-3722-05, -06, -07, -10, -11, and -12 contained PCB-5, PCB-26/29, and PCB-154 below the reporting limit at concentrations of 33, 36.8, and 68.2 pg/L, respectively; the laboratory method blank associated with samples OL-3722-01, -02, -03, -04, -08, and -09 contained PCB-56, PCB-64, and PCB-66 below the reporting limit at concentrations of 11.6, 11.5, and 22.4 pg/L, respectively; the QC equipment blank associated with samples collected on 12/15/21 contained PCB-15 below the reporting limit at a concentration of 8.0 pg/L; and the laboratory method blank associated with samples collected on 1/5/22 contained PCB-208 below the reporting limit at a concentration of 31.2 pg/L. Therefore, results for these compounds less than validation action concentrations were considered not detected and qualified “U” for the affected samples.

Verification Calibrations

All verification calibrations were analyzed at the appropriate frequency with congener recoveries within the 70-130%R QC limit with the exception of PCB-136 (131%R) in the continuing calibration associated with samples OL-3731-01-R2, -02-R2, -03-R2, -04-R2, and -05-R2; PCB-136 (141%R), PCB-150 (135%R), PCB-145 (131%R), PCB-135/151 (131%R), and PCB-154 (132%R) in the continuing calibration associated with sample OL-3731-10-R2; and PCB-98/102 (50%R), PCB-145 (66%R), PCB-86/87/97/109/119/125 (61%R), PCB-110/115 (47%R), PCB-183/185 (56%R), and PCB-197/200 (50%R) in the continuing calibration associated with samples collected on 12/15/21. Therefore, results for these congeners were considered estimated with positive results qualified “J” and nondetected results qualified “UJ” for the affected samples.

Field Duplicate Precision

All field duplicate precision results were considered acceptable with the exception of the precision for PCB-31 (36%RPD) associated with sample OL-3730-12-R1 and its field duplicate sample OL-3730-13-R1. Therefore, the results for this compound were considered estimated and qualified “J” for the affected parent sample and field duplicate.

Usability

All PCB results for the surface water samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The PCB data for presented by Eurofins were 100% complete with all data considered usable and valid. The validated data are tabulated and presented in Attachment A.

7A2.1.2 Total and Dissolved Mercury and Methyl Mercury

The following items were reviewed for compliancy in the mercury and methyl mercury analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Initial and continuing calibration blank, laboratory preparation blank, and field blank contamination
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- Field duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of blank contamination and field duplicate precision as discussed below.

Blank Contamination

The initial calibration blanks associated with samples collected on 9/14/21 contained total mercury and methyl mercury below the reporting limit at concentrations ranging 0.04-0.09 and 0.034-0.035 ng/L; the continuing calibration blanks associated with samples collected on 9/14/21 contained total mercury and methyl mercury at concentrations ranging 0.03-0.24 and 0.27-0.54 ng/L; the laboratory preparation blank associated with samples OL-3730-04-R1 through -14-R1 contained methyl mercury below the reporting limit at a concentration of 0.032 ng/L; the QC field blank associated with samples collected on 9/14/21 contained total mercury, dissolved mercury, and methyl mercury at concentrations of 0.74, 0.23, and 0.068 ng/L, respectively; the laboratory filter blank associated with samples collected on 9/14/21 contained dissolved mercury below the reporting limit at a concentration of 0.24 ng/L; the initial calibration blank associated with samples collected on 11/17/21 contained total mercury and methyl mercury below the reporting limit at concentrations of 0.09 and 0.013 ng/L, respectively; and the continuing calibration blanks associated with samples collected on 11/17/21 contained total mercury at concentrations ranging 0.03-0.11 ng/L. Therefore, results for these analytes less than validation action concentrations were considered not detected and qualified “U” for the affected samples.

It was noted from the laboratory case narrative that “contamination was found during the filtration that affected dissolved mercury results for samples OL-3730-09-R1 and -10-R1. Dissolved mercury results for those select samples were compromised and should not be utilized.” Therefore, the dissolved mercury results were considered unusable and qualified “R” for the affected samples.

Field Duplicate Precision

All field duplicate precision results were considered acceptable with the exception of the results for total mercury (48%RPD), dissolved mercury (34%RPD), and methyl mercury (45%RPD) associated with sample OL-3730-12 and its field duplicate OL-3730-13; and the methyl mercury results (0.077 ng/L and nondetect) associated with sample OL-3731-08-R2 and its field duplicate OL-3731-09-R2. Therefore, results for these analytes were considered estimated with positive results qualified “J” and nondetected results qualified “UJ” for the affected parent sample and field duplicate.

Usability

All mercury and methyl mercury results for the surface water samples were considered usable following data validation with the exception of certain dissolved mercury results due to laboratory contamination during filtration.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The mercury and methyl mercury data for the surface water samples presented by Eurofins were 97.6% complete (i.e., usable). The validated laboratory data are tabulated and presented in Attachment A.

7A2.1.3 TSS

The following items were reviewed for compliancy in the TSS analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Laboratory blank and field blank contamination
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- Field duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of blank contamination, laboratory duplicate precision, and field duplicate precision as discussed below.

Blank Contamination

The QC field blank associated with samples collected on 11/17/21 contained TSS below the reporting limit at a concentration of 1.2 mg/L. Validation qualification was not required for the affected samples.

Laboratory Duplicate Precision

All laboratory duplicate precision results were considered acceptable and the 0-20%RPD QC limit with the exception of the TSS precision associated with samples OL-3721-06 (26%RPD) and OL-3723-04 (112%RPD). Therefore, the TSS result were considered estimated and qualified “J” for the affected samples.

Field Duplicate Precision

All field duplicate precision results were considered acceptable with the exception of the TSS precision associated with the field duplicate pair OL-3730-12-R1/-13-R1 (53%RPD), OL-3722-10/-11 (84%RPD), and OL-3723-04/-05 (94%RPD). Therefore, TSS results were considered estimated and qualified “J” for the affected parent sample and field duplicate.

Usability

All TSS results for the surface water samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The TSS data for the surface water samples presented by Eurofins were 100% complete (i.e., usable). The validated laboratory data are tabulated and presented in Attachment A.

ATTACHMENT A – VALIDATED LABORATORY DATA

									UHB-OFFSITE-01 Duplicate of OL-3720-04				
		Location ID			ONCK-HIA	LEYCK-PARK	ONCK-SPENCER	UHB-OFFSITE-01	UHB-OFFSITE-01	HB-BASELINE-NEW	NMC-RTE48	QC	SC-BASELINE-NEW
		Field Sample ID			OL-3720-01	OL-3720-02	OL-3720-03	OL-3720-04	OL-3720-05	OL-3720-06	OL-3720-07	OL-3720-08	OL-3721-01
		Start Depth (ft)			1.5	1.5	1.15	1	1	1	2		0.5
		End Depth (ft)			1.5	1.5	1.15	1	1	1	2		0.5
		Sampled			8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	9/14/2021
		SDG			410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-55112-1
		Lab Sample ID			410-49963-1	410-49963-2	410-49963-3	410-49963-4	410-49963-5	410-49963-6	410-49963-7	410-49963-8	410-55112-1
		Medium			Water	Water	Water	Water	Water	Water	Water	Water	Water
		Sample Type			REG	REG	REG	REG	FD	REG	REG	FB	REG
		Matrix			SW	SW	SW	SW	SW	SW	SW	WQ	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	33146-45-1	10-DiCB	pg/L	T	38 U	130	38 U	37 U	38 U	38 U	38 U	38 U	39 U
E1668A	74472-36-9	112-PeCB	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	41411-61-4	142-HXCB	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	68194-15-0	143-HxCB	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	41411-62-5	160-HXCB	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	74472-43-8	161-Hxcb	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	39635-34-2	162-HXCB	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	74472-45-0	164-HxCB	pg/L	T	75 U	27 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	74472-46-1	165-HxCB	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	33025-41-1	2,3',4,4'-Tetrachlorobiphenyl	pg/L	T	75 U	90	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	52663-76-0	203-OCCB	pg/L	T	110 U	53 J	110 U	110 U	110 U	110 U	110 U	110 U	120 U
E1668A	52663-58-8	64-TeCB	pg/L	T	15 J	960	75 U	21 J	22 J	15 J	24 J	76 U	78 U
E1668A	41464-42-0	72-TeCB	pg/L	T	75 U	48 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	2051-24-3	DCB Decachlorobiphenyl	pg/L	T	940 U	940 U	940 U	940 U	940 U	940 U	940 U	950 U	970 U
E1668A	2051-60-7	PCB-1	pg/L	T	190 U	140 J	190 U	190 U	190 U	190 U	190 U	190 U	190 U
E1668A	60145-21-3	PCB-103	pg/L	T	75 U	20 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	56558-16-8	PCB-104	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	32598-14-4	PCB-105	pg/L	T	75 U	170	75 U	75 U	75 U	76 U	18 J	76 U	78 U
E1668A	70424-69-0	PCB-106/118	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	70424-68-9	PCB-107	pg/L	T	75 U	46 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB108+124	PCB-108/124	pg/L	T	150 U	150 U	150 U	150 U	150 U	150 U	150 U	150 U	160 U
E1668A	2050-67-1	PCB-11	pg/L	T	280 U	160 J	280 U	280 U	280 U	280 U	280 U	290 U	290 U
E1668A	PCB110+115	PCB-110+115	pg/L	T	150 U	1000	150 U	150 U	150 U	150 U	71 J	150 U	160 U
E1668A	39635-32-0	PCB-111	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	74472-37-0	PCB-114	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	31508-00-6	PCB-118	pg/L	T	17 J	430	75 U	15 J	21 J	14 J	45 J	76 U	13 J
E1668A	PCB12+13	PCB-12/13	pg/L	T	75 U	480	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	68194-12-7	PCB-120	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	56558-18-0	PCB-121	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	76842-07-4	PCB-122	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	65510-44-3	PCB-123	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	57465-28-8	PCB-126	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	39635-33-1	PCB-127	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB128+166	PCB-128/166	pg/L	T	150 U	56 J	150 U	150 U	150 U	150 U	150 U	150 U	160 U
E1668A	PCB129+138+163	PCB129+138+163	pg/L	T	230 U	400	230 U	220 U	54 J	230 U	72 J	230 U	230 U
E1668A	52663-66-8	PCB-130	pg/L	T	75 U	25 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	61798-70-7	PCB-131	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	38380-05-1	PCB-132	pg/L	T	75 U	130	75 U	75 U	75 U	76 U	18 J	76 U	78 U
E1668A	35694-04-3	PCB-133	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	52704-70-8	PCB-134	pg/L	T	75 U	22 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB135+151	PCB135+151	pg/L	T	150 U	180	150 U	150 U	150 U	150 U	150 U	150 U	160 U
E1668A	38411-22-2	PCB-136	pg/L	T	75 U	63 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	35694-06-5	PCB-137	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB139+140	PCB-139/140	pg/L	T	150 U	150 U	150 U	150 U	150 U	150 U	150 U	150 U	160 U
E1668A	34883-41-5	PCB-14	pg/L	T	38 U	38 U	38 U	37 U	38 U	38 U	38 U	38 U	39 U
E1668A	52712-04-6	PCB-141	pg/L	T	75 U	61 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	68194-14-9	PCB-144	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	74472-40-5	PCB-145	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	51908-16-8	PCB-146	pg/L	T	75 U	60 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB147+149	PCB-147/149	pg/L	T	150 U	320	150 U	46 J	39 J	33 J	44 J	150 U	160 U
E1668A	74472-41-6	PCB-148	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U

									Duplicate of OL-3720-04				
				Location ID	ONCK-HIA	LEYCK-PARK	ONCK-SPENCER	UHB-OFFSITE-01	UHB-OFFSITE-01	HB-BASELINE-NEW	NMC-RTE48	QC	SC-BASELINE-NEW
				Field Sample ID	OL-3720-01	OL-3720-02	OL-3720-03	OL-3720-04	OL-3720-05	OL-3720-06	OL-3720-07	OL-3720-08	OL-3721-01
				Start Depth (ft)	1.5	1.5	1.15	1	1	1	2		0.5
				End Depth (ft)	1.5	1.5	1.15	1	1	1	2		0.5
				Sampled	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	9/14/2021
				SDG	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-55112-1
				Lab Sample ID	410-49963-1	410-49963-2	410-49963-3	410-49963-4	410-49963-5	410-49963-6	410-49963-7	410-49963-8	410-55112-1
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	FD	REG	REG	FB	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	WQ	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	2050-68-2	PCB-15	pg/L	T	38 U	2000	38 U	18 J	19 J	19 J	38 U	38 U	39 U
E1668A	68194-08-1	PCB-150	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	68194-09-2	PCB-152	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB153+168	PCB-153/168	pg/L	T	150 U	300	150 U	41 J	41 J	31 J	54 J	150 U	32 J
E1668A	60145-22-4	PCB-154	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U
E1668A	33979-03-2	PCB-155	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB156+157	PCB-156/157	pg/L	T	150 U	36 J	150 U	150 U	150 U	150 U	150 U	150 U	160 U
E1668A	74472-42-7	PCB-158	pg/L	T	75 U	32 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	39635-35-3	PCB-159	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	38444-78-9	PCB-16	pg/L	T	11 J	720	6.2 J	28 J	30 J	29 J	5.9 J	38 U	39 U
E1668A	52663-72-6	PCB-167	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	32774-16-6	PCB-169	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	37680-66-3	PCB-17	pg/L	T	23 J	2900	8.7 J	33 J	41	35 J	9.5 J	38 U	39 U
E1668A	35065-30-6	PCB-170	pg/L	T	75 U	110	75 U	75 U	75 U	76 U	19 J	76 U	78 U
E1668A	PCB171+173	PCB-171/173	pg/L	T	150 U	150 U	150 U	150 U	150 U	150 U	150 U	150 U	160 U
E1668A	52663-74-8	PCB-172	pg/L	T	75 U	20 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	38411-25-5	PCB-174	pg/L	T	75 U	110	75 U	75 U	19 J	76 U	75 U	76 U	78 U
E1668A	40186-70-7	PCB-175	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	52663-65-7	PCB-176	pg/L	T	75 U	18 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	52663-70-4	PCB-177	pg/L	T	75 U	65 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	52663-67-9	PCB-178	pg/L	T	75 U	37 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	52663-64-6	PCB-179	pg/L	T	75 U	57 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB18+30	PCB-18+30	pg/L	T	33 J	2800	13 J	56 J	57 J	61 J	17 J	76 U	78 U
E1668A	PCB180+193	PCB-180/193	pg/L	T	150 U	240	150 U	40 J	38 J	32 J	41 J	150 U	160 U
E1668A	74472-47-2	PCB-181	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	60145-23-5	PCB-182	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB183+185	PCB-183+185	pg/L	T	150 U	79 J	150 U	150 U	150 U	150 U	150 U	150 U	160 U
E1668A	74472-48-3	PCB-184	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	74472-49-4	PCB-186	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	52663-68-0	PCB-187	pg/L	T	75 U	160	75 U	29 J	24 J	76 U	28 J	76 U	78 U
E1668A	74487-85-7	PCB-188	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U
E1668A	39635-31-9	PCB-189	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	38444-73-4	PCB-19	pg/L	T	11 J	1500	38 U	12 J	10 J	11 J	38 U	38 U	39 U
E1668A	41411-64-7	PCB-190	pg/L	T	75 U	23 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	74472-50-7	PCB-191	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	74472-51-8	PCB-192	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	35694-08-7	PCB-194	pg/L	T	110 U	64 J	110 U	110 U	110 U	110 U	110 U	110 U	120 U
E1668A	52663-78-2	PCB-195	pg/L	T	110 U	29 J	110 U	110 U	110 U	110 U	110 U	110 U	120 U
E1668A	42740-50-1	PCB-196/203	pg/L	T	110 U	37 J	110 U	110 U	110 U	110 U	110 U	110 U	120 U
E1668A	PCB197+200	PCB-197+200	pg/L	T	230 U	230 U	230 U	220 U	230 U	230 U	230 U	230 U	230 U
E1668A	PCB198+199	PCB-198/199	pg/L	T	230 U	78 J	230 U	220 U	230 U	230 U	230 U	230 U	230 U
E1668A	2051-61-8	PCB-2	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U
E1668A	PCB20+28	PCB20+28	pg/L	T	40 J	2800	16 J	92	94	73 J	37 J	76 U	78 U
E1668A	40186-71-8	PCB-201	pg/L	T	380 U	380 U	380 U	370 U	380 U	380 U	380 U	380 U	390 U
E1668A	2136-99-4	PCB-202	pg/L	T	110 U	110 U	110 U	110 U	110 U	110 U	110 U	110 U	120 U
E1668A	74472-52-9	PCB-204	pg/L	T	110 U	110 U	110 U	110 U	110 U	110 U	110 U	110 U	120 U
E1668A	74472-53-0	PCB-205	pg/L	T	110 U	110 U	110 U	110 U	110 U	110 U	110 U	110 U	120 U
E1668A	40186-72-9	PCB-206	pg/L	T	110 U	26 J	110 U	110 U	110 U	110 U	110 U	110 U	120 U
E1668A	52663-79-3	PCB-207	pg/L	T	110 U	110 U	110 U	110 U	110 U	110 U	110 U	110 U	120 U
E1668A	52663-77-1	PCB-208	pg/L	T	110 U	110 U	110 U	110 U	110 U	110 U	110 U	110 U	120 U
E1668A	PCB21+33	PCB-21/33	pg/L	T	75 U	68 J	75 U	37 J	75 U	23 J	13 J	76 U	78 U

				Location ID	ONCK-HIA	LEYCK-PARK	ONCK-SPENCER	UHB-OFFSITE-01	Duplicate of OL-3720-04 UHB-OFFSITE-01	HB-BASELINE-NEW	NMC-RTE48	QC	SC-BASELINE-NEW
				Field Sample ID	OL-3720-01	OL-3720-02	OL-3720-03	OL-3720-04	OL-3720-05	OL-3720-06	OL-3720-07	OL-3720-08	OL-3721-01
				Start Depth (ft)	1.5	1.5	1.15	1	1	1	2		0.5
				End Depth (ft)	1.5	1.5	1.15	1	1	1	2		0.5
				Sampled	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	9/14/2021
				SDG	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-55112-1
				Lab Sample ID	410-49963-1	410-49963-2	410-49963-3	410-49963-4	410-49963-5	410-49963-6	410-49963-7	410-49963-8	410-55112-1
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	FD	REG	REG	FB	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	WQ	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	38444-85-8	PCB-22	pg/L	T	10 J	480	7.3 J	31 J	47 J	22 J	12 J	38 U	39 U
E1668A	55720-44-0	PCB-23	pg/L	T	38 U	38 U	38 U	37 U	38 U	38 U	38 U	38 U	39 U
E1668A	55702-45-9	PCB-24	pg/L	T	38 U	38 U	38 U	37 U	38 U	38 U	38 U	38 U	39 U
E1668A	55712-37-3	PCB-25	pg/L	T	12 J	1700	38 U	8.7 J	9.2 J	7.9 J	38 U	38 U	39 U
E1668A	PCB26+29	PCB26+29	pg/L	T	75 U	2800	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	38444-76-7	PCB-27	pg/L	T	12 J	1100	38 U	6 J	6.1 J	7.6 J	38 U	38 U	39 U
E1668A	2051-62-9	PCB-3	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U
E1668A	16606-02-3	PCB-31	pg/L	T	44	3700	18 J	78	77	59	34 J	38 U	39 U
E1668A	38444-77-8	PCB-32	pg/L	T	18 J	2300	5.8 J	27 J	28 J	26 J	38 U	38 U	39 U
E1668A	37680-68-5	PCB-34	pg/L	T	38 U	46	38 U	37 U	38 U	38 U	38 U	38 U	39 U
E1668A	37680-69-6	PCB-35	pg/L	T	38 U	38 U	38 U	37 U	38 U	38 U	38 U	38 U	39 U
E1668A	38444-87-0	PCB-36	pg/L	T	38 U	61	38 U	37 U	38 U	38 U	38 U	38 U	39 U
E1668A	38444-90-5	PCB-37	pg/L	T	38 U	260	38 U	18 J	18 J	18 J	10 J	38 U	39 U
E1668A	53555-66-1	PCB-38	pg/L	T	38 U	38 U	38 U	37 U	38 U	38 U	38 U	38 U	39 U
E1668A	38444-88-1	PCB-39	pg/L	T	38 U	38 U	38 U	37 U	38 U	38 U	38 U	38 U	39 U
E1668A	13029-08-8	PCB-4	pg/L	T	44	5000	38 U	72 J	68	56	38 U	6.6 J	39 U
E1668A	PCB40+71	PCB40+71	pg/L	T	150 U	1500	150 U	23 J	26 J	19 J	150 U	150 U	160 U
E1668A	52663-59-9	PCB-41	pg/L	T	75 U	27 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	36559-22-5	PCB-42	pg/L	T	75 U	1100	75 U	75 U	16 J	76 U	75 U	76 U	78 U
E1668A	70362-46-8	PCB-43	pg/L	T	75 U	130	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB44+47+65	PCB-44/47/65	pg/L	T	42 J	3100	230 U	47 J	49 J	41 J	43 J	230 U	230 U
E1668A	70362-45-7	PCB-45	pg/L	T	75 U	300	75 U	11 J	11 J	76 U	75 U	76 U	78 U
E1668A	41464-47-5	PCB-46	pg/L	T	75 U	410	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	70362-47-9	PCB-48	pg/L	T	75 U	160	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB49+69	PCB49+69	pg/L	T	34 J	2600	150 U	27 J	27 J	25 J	26 J	150 U	160 U
E1668A	16605-91-7	PCB-5	pg/L	T	38 U	38 U	38 U	37 U	38 U	38 U	38 U	38 U	39 U
E1668A	PCB50+53	PCB-50/53	pg/L	T	280 U	1200	280 U	280 U	280 U	280 U	280 U	290 U	290 U
E1668A	68194-04-7	PCB-51	pg/L	T	75 U	510	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	35693-99-3	PCB-52	pg/L	T	56 J	3500	75 U	54 J	52 J	50 J	52 J	76 U	78 U
E1668A	15968-05-5	PCB-54	pg/L	T	75 U	35 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	74338-24-2	PCB-55	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	41464-43-1	PCB-56	pg/L	T	75 U	350	75 U	13 J	12 J	76 U	16 J	76 U	78 U
E1668A	70424-67-8	PCB-57	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	41464-49-7	PCB-58	pg/L	T	75 U	14 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB59+62+75	PCB-59/62/75	pg/L	T	230 U	230	230 U	220 U	230 U	230 U	230 U	230 U	230 U
E1668A	25569-80-6	PCB-6	pg/L	T	38 U	480	38 U	32 J	18 J	38 U	38 U	38 U	39 U
E1668A	PCB61+046	PCB-61/70/74/76	pg/L	T	300 U	1200	300 U	300 U	300 U	300 U	66 J	300 U	310 U
E1668A	74472-34-7	PCB-63	pg/L	T	75 U	110	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	32598-10-0	PCB-66	pg/L	T	19 J	1000	10 J	25 J	26 J	21 J	46 J	76 U	78 U
E1668A	73575-53-8	PCB-67	pg/L	T	75 U	36 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	73575-52-7	PCB-68	pg/L	T	75 U	33 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	33284-50-3	PCB-7	pg/L	T	38 U	30 J	38 U	37 U	38 U	38 U	38 U	38 U	39 U
E1668A	74338-23-1	PCB-73	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	32598-13-3	PCB-77	pg/L	T	75 U	110	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	70362-49-1	PCB-78	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	41464-48-6	PCB-79	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	34883-43-7	PCB-8	pg/L	T	16 J	400	16 J	66 J	51	29 J	38 U	38 U	39 U
E1668A	33284-52-5	PCB-80	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	70362-50-4	PCB-81	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	52663-62-4	PCB-82	pg/L	T	75 U	110	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	60145-20-2	PCB-83	pg/L	T	75 U	68 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U

									Duplicate of OL-3720-04				
			Location ID		ONCK-HIA	LEYCK-PARK	ONCK-SPENCER	UHB-OFFSITE-01	UHB-OFFSITE-01	HB-BASELINE-NEW	NMC-RTE48	QC	SC-BASELINE-NEW
			Field Sample ID		OL-3720-01	OL-3720-02	OL-3720-03	OL-3720-04	OL-3720-05	OL-3720-06	OL-3720-07	OL-3720-08	OL-3721-01
			Start Depth (ft)		1.5	1.5	1.15	1	1	1	2		0.5
			End Depth (ft)		1.5	1.5	1.15	1	1	1	2		0.5
			Sampled		8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	8/3/2021	9/14/2021
			SDG		410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-49963-1	410-55112-1
			Lab Sample ID		410-49963-1	410-49963-2	410-49963-3	410-49963-4	410-49963-5	410-49963-6	410-49963-7	410-49963-8	410-55112-1
			Medium		Water	Water	Water	Water	Water	Water	Water	Water	Water
			Sample Type		REG	REG	REG	REG	FD	REG	REG	FB	REG
			Matrix		SW	SW	SW	SW	SW	SW	SW	WQ	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	52663-60-2	PCB-84	pg/L	T	75 U	350	75 U	13 J	15 J	12 J	16 J	76 U	78 U
E1668A	PCB85+116+117	PCB85+116+117	pg/L	T	230 U	180 J	230 U	220 U	230 U	230 U	230 U	230 U	230 U
E1668A	PCB86+77091925	PCB86+77091925	pg/L	T	450 U	460	450 U	450 U	450 U	450 U	450 U	460 U	470 U
E1668A	55215-17-3	PCB-88	pg/L	T	75 U	75 U	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	73575-57-2	PCB-89	pg/L	T	75 U	26 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	34883-39-1	PCB-9	pg/L	T	38 U	45 J	38 U	37 U	38 U	38 U	38 U	38 U	39 U
E1668A	PCB90+101+113	PCB90+101+113	pg/L	T	230 U	630	230 U	220 U	230 U	230 U	59 J	230 U	230 U
E1668A	68194-05-8	PCB-91	pg/L	T	75 U	240	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	52663-61-3	PCB-92	pg/L	T	75 U	210	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB93+100	PCB-93+100	pg/L	T	150 U	30 J	150 U	150 U	150 U	150 U	150 U	150 U	160 U
E1668A	73575-55-0	PCB-94	pg/L	T	75 U	27 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	38379-99-6	PCB-95	pg/L	T	26 J	680	75 U	37 J	35 J	33 J	41 J	76 U	16 J
E1668A	73575-54-9	PCB-96	pg/L	T	75 U	31 J	75 U	75 U	75 U	76 U	75 U	76 U	78 U
E1668A	PCB98+102	PCB-98+102	pg/L	T	190 U	76 J	190 U	190 U	190 U	190 U	190 U	190 U	190 U
E1668A	38380-01-7	PCB-99	pg/L	T	75 U	400	75 U	75 U	75 U	76 U	25 J	76 U	78 U
SM2540D	TSS	Total Suspended Solids	mg/L	T	6.4	3.4	7	1.9 J	2.2 J	2.6 J	25	3 U	5.6

Method	Parameter Code	Parameter Name	Units	Fraction	ONCK-HIA	BB-BASELINE	LEYCK-PARK	ONCK-SPENCER	UHB-OFFSITE-01	QC	T5A-SW-15-NEW	T5A-BASELINE-NEW	HB-BASELINE-NEW
				Field Sample ID	OL-3721-02	OL-3721-03	OL-3721-04	OL-3721-05	OL-3721-06	OL-3721-07	OL-3721-08	OL-3721-09	OL-3721-10
				Start Depth (ft)	1	0.75	1.5	1.5	1.25		0.25	0.3	0.9
				End Depth (ft)	1	0.75	1.5	1.5	1.25		0.25	0.3	0.9
				Sampled	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
				SDG	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1
				Lab Sample ID	410-55112-2	410-55112-3	410-55112-4	410-55112-5	410-55112-6	410-55112-7	410-55112-8	410-55112-9	410-55112-10
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	FB	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	WQ	SW	SW	SW
E1668A	33146-45-1	10-DiCB	pg/L	T	39 U	30 J	130	39 U	39 U	41 U	41	39 U	39 U
E1668A	74472-36-9	112-PeCB	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	41411-61-4	142-HXCB	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	68194-15-0	143-HxCB	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	41411-62-5	160-HXCB	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	74472-43-8	161-Hxcb	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	39635-34-2	162-HXCB	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	74472-45-0	164-HxCB	pg/L	T	78 U	78 U	31 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	74472-46-1	165-HxCB	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	33025-41-1	2,3',4,4'-Tetrachlorobiphenyl	pg/L	T	78 U	78 U	99	78 U	77 U	82 U	140	43 J	77 U
E1668A	52663-76-0	203-OCCB	pg/L	T	120 U	120 U	48 J	120 U	120 U	120 U	75 J	440	120 U
E1668A	52663-58-8	64-TeCB	pg/L	T	78 U	14 J	1000	78 U	25 J	82 U	190	140	29 J
E1668A	41464-42-0	72-TeCB	pg/L	T	78 U	78 U	51 J	78 U	77 U	82 U	25 J	78 U	77 U
E1668A	2051-24-3	DCB Decachlorobiphenyl	pg/L	T	980 U	980 U	980 U	980 U	960 U	1000 U	970 U	970 U	970 U
E1668A	2051-60-7	PCB-1	pg/L	T	200 U	200 U	660	200 U	190 U	200 U	190 U	190 U	190 U
E1668A	60145-21-3	PCB-103	pg/L	T	78 U	78 U	22 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	56558-16-8	PCB-104	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	32598-14-4	PCB-105	pg/L	T	78 U	78 U	190	78 U	77 U	82 U	130	77 J	13 J
E1668A	70424-69-0	PCB-106/118	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	70424-68-9	PCB-107	pg/L	T	78 U	78 U	50 J	78 U	77 U	82 U	16 J	78 U	77 U
E1668A	PCB108+124	PCB-108/124	pg/L	T	160 U	160 U	160 U	160 U	150 U	160 U	150 U	160 U	150 U
E1668A	2050-67-1	PCB-11	pg/L	T	290 U	290 U	190 J	290 U	290 U	310 U	290 U	290 U	290 U
E1668A	PCB110+115	PCB-110+115	pg/L	T	160 U	67 J	1100	160 U	150 U	160 U	300	270	59 J
E1668A	39635-32-0	PCB-111	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	74472-37-0	PCB-114	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	31508-00-6	PCB-118	pg/L	T	13 J	29 J	450	17 J	21 J	82 U	190	120	28 J
E1668A	PCB12+13	PCB-12/13	pg/L	T	78 U	78 U	730	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	68194-12-7	PCB-120	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	56558-18-0	PCB-121	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	76842-07-4	PCB-122	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	65510-44-3	PCB-123	pg/L	T	78 U	78 U	14 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	57465-28-8	PCB-126	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	39635-33-1	PCB-127	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	PCB128+166	PCB-128/166	pg/L	T	160 U	160 U	68 J	160 U	150 U	160 U	150 U	160 U	150 U
E1668A	PCB129+138+163	PCB129+138+163	pg/L	T	230 U	120 J	460	230 U	230 U	240 U	220 J	150 J	70 J
E1668A	52663-66-8	PCB-130	pg/L	T	78 U	78 U	33 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	61798-70-7	PCB-131	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	38380-05-1	PCB-132	pg/L	T	78 U	39 J	170	78 U	17 J	82 U	68 J	53 J	23 J
E1668A	35694-04-3	PCB-133	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	52704-70-8	PCB-134	pg/L	T	78 U	78 U	29 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	PCB135+151	PCB135+151	pg/L	T	160 U	69 J	190	160 U	150 U	160 U	58 J	160 U	150 U
E1668A	38411-22-2	PCB-136	pg/L	T	78 U	22 J	68 J	78 U	77 U	82 U	23 J	16 J	77 U
E1668A	35694-06-5	PCB-137	pg/L	T	78 U	78 U	23 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	PCB139+140	PCB-139/140	pg/L	T	160 U	160 U	160 U	160 U	150 U	160 U	150 U	160 U	150 U
E1668A	34883-41-5	PCB-14	pg/L	T	39 U	39 U	39 U	39 U	39 U	41 U	39 U	39 U	39 U
E1668A	52712-04-6	PCB-141	pg/L	T	78 U	26 J	82	78 U	77 U	82 U	39 J	25 J	77 U
E1668A	68194-14-9	PCB-144	pg/L	T	78 U	78 U	18 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	74472-40-5	PCB-145	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	51908-16-8	PCB-146	pg/L	T	78 U	29 J	76 J	78 U	77 U	82 U	28 J	20 J	77 U
E1668A	PCB147+149	PCB-147/149	pg/L	T	160 U	120 J	390	160 U	46 J	160 U	150	95 J	57 J
E1668A	74472-41-6	PCB-148	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U

Method	Parameter Code	Parameter Name	Units	Fraction	ONCK-HIA	BB-BASELINE	LEYCK-PARK	ONCK-SPENCER	UHB-OFFSITE-01	QC	T5A-SW-15-NEW	T5A-BASELINE-NEW	HB-BASELINE-NEW
				Location ID	ONCK-HIA	BB-BASELINE	LEYCK-PARK	ONCK-SPENCER	UHB-OFFSITE-01	QC	T5A-SW-15-NEW	T5A-BASELINE-NEW	HB-BASELINE-NEW
				Field Sample ID	OL-3721-02	OL-3721-03	OL-3721-04	OL-3721-05	OL-3721-06	OL-3721-07	OL-3721-08	OL-3721-09	OL-3721-10
				Start Depth (ft)	1	0.75	1.5	1.5	1.25		0.25	0.3	0.9
				End Depth (ft)	1	0.75	1.5	1.5	1.25		0.25	0.3	0.9
				Sampled	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
				SDG	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1
				Lab Sample ID	410-55112-2	410-55112-3	410-55112-4	410-55112-5	410-55112-6	410-55112-7	410-55112-8	410-55112-9	410-55112-10
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	FB	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	WQ	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	2050-68-2	PCB-15	pg/L	T	39 U	39 U	2200	39 U	20 J	41 U	22 J	28 J	23 J
E1668A	68194-08-1	PCB-150	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	68194-09-2	PCB-152	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	PCB153+168	PCB-153/168	pg/L	T	160 U	130 J	350	160 U	38 J	160 U	150	100 J	53 J
E1668A	60145-22-4	PCB-154	pg/L	T	200 U	200 U	200 U	200 U	190 U	200 U	190 U	190 U	190 U
E1668A	33979-03-2	PCB-155	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	PCB156+157	PCB-156/157	pg/L	T	160 U	160 U	40 J	160 U	150 U	160 U	150 U	160 U	150 U
E1668A	74472-42-7	PCB-158	pg/L	T	78 U	78 U	37 J	78 U	77 U	82 U	19 J	78 U	77 U
E1668A	39635-35-3	PCB-159	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	38444-78-9	PCB-16	pg/L	T	39 U	39 U	790	39 U	29 J	41 U	36 J	35 J	33 J
E1668A	52663-72-6	PCB-167	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	32774-16-6	PCB-169	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	37680-66-3	PCB-17	pg/L	T	6.1 J	9.3 J	3300	39 U	31 J	41 U	80	41	34 J
E1668A	35065-30-6	PCB-170	pg/L	T	78 U	46 J	120	78 U	77 U	82 U	68 J	35 J	22 J
E1668A	PCB171+173	PCB-171/173	pg/L	T	160 U	160 U	160 U	160 U	150 U	160 U	150 U	160 U	150 U
E1668A	52663-74-8	PCB-172	pg/L	T	78 U	78 U	24 J	78 U	77 U	82 U	77 U	20 J	77 U
E1668A	38411-25-5	PCB-174	pg/L	T	78 U	57 J	130	78 U	17 J	82 U	67 J	65 J	24 J
E1668A	40186-70-7	PCB-175	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	52663-65-7	PCB-176	pg/L	T	78 U	78 U	17 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	52663-70-4	PCB-177	pg/L	T	78 U	30 J	71 J	78 U	77 U	82 U	36 J	27 J	77 U
E1668A	52663-67-9	PCB-178	pg/L	T	78 U	78 U	28 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	52663-64-6	PCB-179	pg/L	T	78 U	24 J	56 J	78 U	77 U	82 U	24 J	21 J	77 U
E1668A	PCB18+30	PCB-18+30	pg/L	T	13 J	29 J	3200	78 U	59 J	82 U	110	84	61 J
E1668A	PCB180+193	PCB-180/193	pg/L	T	160 U	110 J	280	160 U	35 J	160 U	170	300	51 J
E1668A	74472-47-2	PCB-181	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	60145-23-5	PCB-182	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	PCB183+185	PCB-183+185	pg/L	T	160 U	160 U	95 J	160 U	150 U	160 U	51 J	74 J	150 U
E1668A	74472-48-3	PCB-184	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	74472-49-4	PCB-186	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	52663-68-0	PCB-187	pg/L	T	78 U	71 J	170	78 U	20 J	82 U	97	180	29 J
E1668A	74487-85-7	PCB-188	pg/L	T	200 U	200 U	200 U	200 U	190 U	200 U	190 U	190 U	190 U
E1668A	39635-31-9	PCB-189	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	38444-73-4	PCB-19	pg/L	T	39 U	150	1800	39 U	15 J	41 U	190	56	17 J
E1668A	41411-64-7	PCB-190	pg/L	T	78 U	78 U	26 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	74472-50-7	PCB-191	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	74472-51-8	PCB-192	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	35694-08-7	PCB-194	pg/L	T	120 U	120 U	77 J	120 U	120 U	120 U	63 J	490	120 U
E1668A	52663-78-2	PCB-195	pg/L	T	120 U	120 U	29 J	120 U	120 U	120 U	120 U	60 J	120 U
E1668A	42740-50-1	PCB-196/203	pg/L	T	120 U	120 U	39 J	120 U	120 U	120 U	30 J	210	120 U
E1668A	PCB197+200	PCB-197+200	pg/L	T	230 U	230 U	240 U	230 U	230 U	240 U	230 U	230 U	230 U
E1668A	PCB198+199	PCB-198/199	pg/L	T	230 U	230 U	82 J	230 U	230 U	240 U	120 J	620	230 U
E1668A	2051-61-8	PCB-2	pg/L	T	200 U	200 U	200 U	200 U	190 U	200 U	190 U	190 U	190 U
E1668A	PCB20+28	PCB20+28	pg/L	T	78 U	17 J	3700	78 U	71 J	82 U	310	120	63 J
E1668A	40186-71-8	PCB-201	pg/L	T	390 U	390 U	390 U	390 U	390 U	410 U	390 U	390 U	390 U
E1668A	2136-99-4	PCB-202	pg/L	T	120 U	120 U	120 U	120 U	120 U	120 U	29 J	82 J	120 U
E1668A	74472-52-9	PCB-204	pg/L	T	120 U	120 U	120 U	120 U	120 U	120 U	120 U	120 U	120 U
E1668A	74472-53-0	PCB-205	pg/L	T	120 U	120 U	120 U	120 U	120 U	120 U	120 U	120 U	120 U
E1668A	40186-72-9	PCB-206	pg/L	T	120 U	120 U	32 J	120 U	120 U	120 U	130	830	120 U
E1668A	52663-79-3	PCB-207	pg/L	T	120 U	120 U	120 U	120 U	120 U	120 U	120 U	76 J	120 U
E1668A	52663-77-1	PCB-208	pg/L	T	120 U	120 U	120 U	120 U	120 U	120 U	54 J	150	120 U
E1668A	PCB21+33	PCB-21/33	pg/L	T	78 U	78 U	130	78 U	29 J	82 U	43 J	29 J	77 U

				Location ID	ONCK-HIA	BB-BASELINE	LEYCK-PARK	ONCK-SPENCER	UHB-OFFSITE-01	QC	T5A-SW-15-NEW	T5A-BASELINE-NEW	HB-BASELINE-NEW
				Field Sample ID	OL-3721-02	OL-3721-03	OL-3721-04	OL-3721-05	OL-3721-06	OL-3721-07	OL-3721-08	OL-3721-09	OL-3721-10
				Start Depth (ft)	1	0.75	1.5	1.5	1.25		0.25	0.3	0.9
				End Depth (ft)	1	0.75	1.5	1.5	1.25		0.25	0.3	0.9
				Sampled	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
				SDG	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1
				Lab Sample ID	410-55112-2	410-55112-3	410-55112-4	410-55112-5	410-55112-6	410-55112-7	410-55112-8	410-55112-9	410-55112-10
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	FB	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	WQ	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	38444-85-8	PCB-22	pg/L	T	39 U	39 U	790	39 U	25 J	41 U	86	42	11 J
E1668A	55720-44-0	PCB-23	pg/L	T	39 U	39 U	39 U	39 U	39 U	41 U	39 U	39 U	39 U
E1668A	55702-45-9	PCB-24	pg/L	T	39 U	8.2 J	39 U	39 U	39 U	41 U	39 U	39 U	39 U
E1668A	55712-37-3	PCB-25	pg/L	T	39 U	39 U	2300	39 U	6.9 J	41 U	9.5 J	33 J	4.9 J
E1668A	PCB26+29	PCB26+29	pg/L	T	78 U	78 U	3600	78 U	77 U	82 U	77 U	52 J	77 U
E1668A	38444-76-7	PCB-27	pg/L	T	39 U	36 J	1300	39 U	7.3 J	41 U	130	22 J	7.2 J
E1668A	2051-62-9	PCB-3	pg/L	T	200 U	200 U	50 J	200 U	190 U	200 U	190 U	190 U	190 U
E1668A	16606-02-3	PCB-31	pg/L	T	13 J	14 J	4600	14 J	64	41 U	240	84	46
E1668A	38444-77-8	PCB-32	pg/L	T	39 U	38 J	2900	5.3 J	26 J	41 U	64	93	30 J
E1668A	37680-68-5	PCB-34	pg/L	T	39 U	39 U	39 U	39 U	39 U	41 U	39 U	39 U	39 U
E1668A	37680-69-6	PCB-35	pg/L	T	39 U	39 U	39 U	39 U	39 U	41 U	39 U	39 U	39 U
E1668A	38444-87-0	PCB-36	pg/L	T	39 U	39 U	39 U	39 U	39 U	41 U	9.1 J	39 U	39 U
E1668A	38444-90-5	PCB-37	pg/L	T	39 U	39 U	300	39 U	16 J	41 U	70	39	16 J
E1668A	53555-66-1	PCB-38	pg/L	T	39 U	39 U	39 U	39 U	39 U	41 U	39 U	39 U	39 U
E1668A	38444-88-1	PCB-39	pg/L	T	39 U	39 U	39 U	39 U	39 U	41 U	43	39 U	39 U
E1668A	13029-08-8	PCB-4	pg/L	T	11 J	42	5400	39 U	67	41 U	60	130	62
E1668A	PCB40+71	PCB40+71	pg/L	T	160 U	160 U	1600	160 U	25 J	160 U	230	130 J	29 J
E1668A	52663-59-9	PCB-41	pg/L	T	78 U	78 U	22 J	78 U	77 U	82 U	50 J	14 J	77 U
E1668A	36559-22-5	PCB-42	pg/L	T	78 U	78 U	1200	78 U	14 J	82 U	150	62 J	15 J
E1668A	70362-46-8	PCB-43	pg/L	T	78 U	78 U	130	78 U	77 U	82 U	15 J	78 U	77 U
E1668A	PCB44+47+65	PCB-44/47/65	pg/L	T	230 U	46 J	3500	230 U	51 J	240 U	510	220 J	59 J
E1668A	70362-45-7	PCB-45	pg/L	T	78 U	28 J	410	78 U	13 J	82 U	99	75 J	16 J
E1668A	41464-47-5	PCB-46	pg/L	T	78 U	11 J	470	78 U	77 U	82 U	44 J	34 J	77 U
E1668A	70362-47-9	PCB-48	pg/L	T	78 U	78 U	160	78 U	12 J	82 U	98	20 J	12 J
E1668A	PCB49+69	PCB49+69	pg/L	T	160 U	30 J	2900	160 U	30 J	160 U	330	120 J	34 J
E1668A	16605-91-7	PCB-5	pg/L	T	39 U	39 U	39 U	39 U	39 U	41 U	39 U	39 U	39 U
E1668A	PCB50+53	PCB-50/53	pg/L	T	290 U	290 U	1300	290 U	290 U	310 U	120 J	290 U	290 U
E1668A	68194-04-7	PCB-51	pg/L	T	78 U	78 U	480	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	35693-99-3	PCB-52	pg/L	T	78 U	80	4000	21 J	62 J	82 U	500	250	70 J
E1668A	15968-05-5	PCB-54	pg/L	T	78 U	78 U	41 J	78 U	77 U	82 U	10 J	78 U	77 U
E1668A	74338-24-2	PCB-55	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	41464-43-1	PCB-56	pg/L	T	78 U	78 U	350	78 U	10 J	82 U	220	86	13 J
E1668A	70424-67-8	PCB-57	pg/L	T	78 U	78 U	39 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	41464-49-7	PCB-58	pg/L	T	78 U	78 U	15 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	PCB59+62+75	PCB-59/62/75	pg/L	T	230 U	230 U	250	230 U	230 U	240 U	49 J	230 U	230 U
E1668A	25569-80-6	PCB-6	pg/L	T	39 U	25 J	1500	39 U	17 J	41 U	39 U	39 U	39 U
E1668A	PCB61+046	PCB-61/70/74/76	pg/L	T	310 U	310 U	1300	310 U	310 U	330 U	710	160 J	48 J
E1668A	74472-34-7	PCB-63	pg/L	T	78 U	78 U	120	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	32598-10-0	PCB-66	pg/L	T	78 U	13 J	1100	78 U	20 J	82 U	470	130	28 J
E1668A	73575-53-8	PCB-67	pg/L	T	78 U	78 U	39 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	73575-52-7	PCB-68	pg/L	T	78 U	78 U	34 J	78 U	77 U	82 U	20 J	78 U	77 U
E1668A	33284-50-3	PCB-7	pg/L	T	39 U	39 U	56	39 U	39 U	41 U	39 U	39 U	39 U
E1668A	74338-23-1	PCB-73	pg/L	T	78 U	78 U	22 J	78 U	77 U	82 U	24 J	78 U	77 U
E1668A	32598-13-3	PCB-77	pg/L	T	78 U	78 U	120	78 U	77 U	82 U	38 J	20 J	77 U
E1668A	70362-49-1	PCB-78	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	41464-48-6	PCB-79	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	34883-43-7	PCB-8	pg/L	T	39 U	10 J	1400	39 U	40	41 U	11 J	16 J	39 U
E1668A	33284-52-5	PCB-80	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	70362-50-4	PCB-81	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	52663-62-4	PCB-82	pg/L	T	78 U	78 U	110	78 U	77 U	82 U	55 J	37 J	77 U
E1668A	60145-20-2	PCB-83	pg/L	T	78 U	78 U	130	78 U	77 U	82 U	18 J	18 J	77 U

Method	Parameter Code	Parameter Name	Units	Fraction									
				Location ID	ONCK-HIA	BB-BASELINE	LEYCK-PARK	ONCK-SPENCER	UHB-OFFSITE-01	QC	T5A-SW-15-NEW	T5A-BASELINE-NEW	HB-BASELINE-NEW
				Field Sample ID	OL-3721-02	OL-3721-03	OL-3721-04	OL-3721-05	OL-3721-06	OL-3721-07	OL-3721-08	OL-3721-09	OL-3721-10
				Start Depth (ft)	1	0.75	1.5	1.5	1.25		0.25	0.3	0.9
				End Depth (ft)	1	0.75	1.5	1.5	1.25		0.25	0.3	0.9
				Sampled	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
				SDG	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1	410-55112-1
				Lab Sample ID	410-55112-2	410-55112-3	410-55112-4	410-55112-5	410-55112-6	410-55112-7	410-55112-8	410-55112-9	410-55112-10
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	FB	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	WQ	SW	SW	SW
E1668A	52663-60-2	PCB-84	pg/L	T	78 U	17 J	430	78 U	15 J	82 U	99	79	18 J
E1668A	PCB85+116+117	PCB85+116+117	pg/L	T	230 U	230 U	210 J	230 U	230 U	240 U	80 J	230 U	230 U
E1668A	PCB86+77091925	PCB86+77091925	pg/L	T	470 U	470 U	530	470 U	460 U	490 U	220 J	150 J	460 U
E1668A	55215-17-3	PCB-88	pg/L	T	78 U	78 U	78 U	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	73575-57-2	PCB-89	pg/L	T	78 U	78 U	30 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	34883-39-1	PCB-9	pg/L	T	39 U	39 U	91	39 U	39 U	41 U	39 U	39 U	39 U
E1668A	PCB90+101+113	PCB90+101+113	pg/L	T	230 U	81 J	750	230 U	40 J	240 U	240	170 J	53 J
E1668A	68194-05-8	PCB-91	pg/L	T	78 U	78 U	300	78 U	77 U	82 U	56 J	34 J	77 U
E1668A	52663-61-3	PCB-92	pg/L	T	78 U	22 J	250	78 U	77 U	82 U	42 J	32 J	77 U
E1668A	PCB93+100	PCB-93+100	pg/L	T	160 U	160 U	40 J	160 U	150 U	160 U	150 U	160 U	150 U
E1668A	73575-55-0	PCB-94	pg/L	T	78 U	78 U	31 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	38379-99-6	PCB-95	pg/L	T	20 J	78	860	21 J	49 J	82 U	220	190	56 J
E1668A	73575-54-9	PCB-96	pg/L	T	78 U	78 U	34 J	78 U	77 U	82 U	77 U	78 U	77 U
E1668A	PCB98+102	PCB-98+102	pg/L	T	200 U	200 U	93 J	200 U	190 U	200 U	190 U	190 U	190 U
E1668A	38380-01-7	PCB-99	pg/L	T	78 U	31 J	440	78 U	14 J	82 U	140	74 J	19 J
SM2540D	TSS	Total Suspended Solids	mg/L	T	88	3.1	6.2	60	2.2 J	3 U	2.4 J	3.7	5

					Duplicate of OL-3721-10								
				Location ID	HB-BASELINE-NEW	NMC-RTE48	NMC-RTE48	SC-BASELINE-NEW	BB-BASELINE	ONCK-HIA	ONCK-SPENCER	LEYCK-PARK	UHB-OFFSITE-01
				Field Sample ID	OL-3721-11	OL-3721-12	OL-3722-01	OL-3722-02	OL-3722-03	OL-3722-04	OL-3722-05	OL-3722-06	OL-3722-07
				Start Depth (ft)	0.9	1.9	2.2	1.4	1.9	1	1.5	2	1
				End Depth (ft)	0.9	1.9	2.2	1.4	1.9	1	1.5	2	1
				Sampled	9/14/2021	9/14/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
				SDG	410-55112-1	410-55112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1
				Lab Sample ID	410-55112-11	410-55112-12	410-64112-1	410-64112-2	410-64112-3	410-64112-4	410-64112-5	410-64112-6	410-64112-7
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	FD	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	33146-45-1	10-DiCB	pg/L	T	39 U	39 U	38 U	38 U	25 J	38 U	38 U	47 J	38 U
E1668A	74472-36-9	112-PeCB	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	41411-61-4	142-HXCB	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	68194-15-0	143-HxCB	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	41411-62-5	160-HXCB	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	74472-43-8	161-Hxcb	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	39635-34-2	162-HXCB	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	74472-45-0	164-HxCB	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	74472-46-1	165-HxCB	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	33025-41-1	2,3',4,4'-Tetrachlorobiphenyl	pg/L	T	78 U	12 J	22 J	75 U	76 U	12 J	76 U	44 J	76 U
E1668A	52663-76-0	203-OCCB	pg/L	T	120 U	120 U	110 U	110 U	110 U	110 U	110 U	22 J	110 U
E1668A	52663-58-8	64-TeCB	pg/L	T	30 J	37 J	42 J	13 J	19 J	76 U	76 U	240	10 J
E1668A	41464-42-0	72-TeCB	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	16 J	76 U
E1668A	2051-24-3	DCB Decachlorobiphenyl	pg/L	T	970 U	970 U	950 U	940 U	950 U	950 U	950 U	940 U	940 U
E1668A	2051-60-7	PCB-1	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U	190 U	160 J	190 U
E1668A	60145-21-3	PCB-103	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	56558-16-8	PCB-104	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	32598-14-4	PCB-105	pg/L	T	13 J	26 J	28 J	14 J	17 J	76 U	76 U	78	76 U
E1668A	70424-69-0	PCB-106/118	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	70424-68-9	PCB-107	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	19 J	76 U
E1668A	PCB108+124	PCB-108/124	pg/L	T	160 U	160 U	150 U	150 U	150 U	150 U	150 U	150 U	150 U
E1668A	2050-67-1	PCB-11	pg/L	T	290 U	290 U	290 U	280 U	280 U	280 U	280 U	280 U	280 U
E1668A	PCB110+115	PCB-110+115	pg/L	T	59 J	110 J	91 J	150 U	62 J	150 U	150 U	290	150 U
E1668A	39635-32-0	PCB-111	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	74472-37-0	PCB-114	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	31508-00-6	PCB-118	pg/L	T	27 J	64 J	55 J	35 J	38 J	17 J	76 U	180	22 J
E1668A	PCB12+13	PCB-12/13	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	140 J	76 U
E1668A	68194-12-7	PCB-120	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	56558-18-0	PCB-121	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	76842-07-4	PCB-122	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	65510-44-3	PCB-123	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	57465-28-8	PCB-126	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	39635-33-1	PCB-127	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	PCB128+166	PCB-128/166	pg/L	T	160 U	160 U	150 U	150 U	150 U	150 U	150 U	150 U	150 U
E1668A	PCB129+138+163	PCB129+138+163	pg/L	T	63 J	94 J	76 J	230 U	84 J	230 U	230 U	160 J	230 U
E1668A	52663-66-8	PCB-130	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	61798-70-7	PCB-131	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	38380-05-1	PCB-132	pg/L	T	23 J	33 J	29 J	75 U	28 J	76 U	76 U	50 J	16 J
E1668A	35694-04-3	PCB-133	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	52704-70-8	PCB-134	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	PCB135+151	PCB135+151	pg/L	T	160 U	160 U	150 U	150 U	53 J	150 U	150 U	62 J	150 U
E1668A	38411-22-2	PCB-136	pg/L	T	78 U	78 U	76 U	75 U	14 J	76 U	76 U	23 J	76 U
E1668A	35694-06-5	PCB-137	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	PCB139+140	PCB-139/140	pg/L	T	160 U	160 U	150 U	150 U	150 U	150 U	150 U	150 U	150 U
E1668A	34883-41-5	PCB-14	pg/L	T	39 U	39 U	38 U	38 U	38 U	38 U	38 U	38 U	38 U
E1668A	52712-04-6	PCB-141	pg/L	T	78 U	78 U	76 U	75 U	22 J	76 U	76 U	37 J	76 U
E1668A	68194-14-9	PCB-144	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	74472-40-5	PCB-145	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	51908-16-8	PCB-146	pg/L	T	78 U	15 J	15 J	75 U	20 J	76 U	76 U	25 J	76 U
E1668A	PCB147+149	PCB-147/149	pg/L	T	54 J	68 J	61 J	150 U	81 J	150 U	150 U	130 J	35 J
E1668A	74472-41-6	PCB-148	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U

					Duplicate of OL-3721-10								
				Location ID	HB-BASELINE-NEW	NMC-RTE48	NMC-RTE48	SC-BASELINE-NEW	BB-BASELINE	ONCK-HIA	ONCK-SPENCER	LEYCK-PARK	UHB-OFFSITE-01
				Field Sample ID	OL-3721-11	OL-3721-12	OL-3722-01	OL-3722-02	OL-3722-03	OL-3722-04	OL-3722-05	OL-3722-06	OL-3722-07
				Start Depth (ft)	0.9	1.9	2.2	1.4	1.9	1	1.5	2	1
				End Depth (ft)	0.9	1.9	2.2	1.4	1.9	1	1.5	2	1
				Sampled	9/14/2021	9/14/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
				SDG	410-55112-1	410-55112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1
				Lab Sample ID	410-55112-11	410-55112-12	410-64112-1	410-64112-2	410-64112-3	410-64112-4	410-64112-5	410-64112-6	410-64112-7
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	FD	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	2050-68-2	PCB-15	pg/L	T	25 J	39 U	38 U	38 U	38 U	38 U	13 J	490	38 U
E1668A	68194-08-1	PCB-150	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	68194-09-2	PCB-152	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	PCB153+168	PCB-153/168	pg/L	T	52 J	73 J	66 J	42 J	95 J	150 U	150 U	130 J	32 J
E1668A	60145-22-4	PCB-154	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U
E1668A	33979-03-2	PCB-155	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	PCB156+157	PCB-156/157	pg/L	T	160 U	160 U	150 U	150 U	150 U	150 U	150 U	150 U	150 U
E1668A	74472-42-7	PCB-158	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	39635-35-3	PCB-159	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	38444-78-9	PCB-16	pg/L	T	29 J	11 J	9.6 J	38 U	7.4 J	38 U	38 U	130	14 J
E1668A	52663-72-6	PCB-167	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	32774-16-6	PCB-169	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	37680-66-3	PCB-17	pg/L	T	34 J	14 J	12 J	38 U	7.8 J	38 U	38 U	480	17 J
E1668A	35065-30-6	PCB-170	pg/L	T	21 J	24 J	22 J	75 U	29 J	76 U	76 U	49 J	17 J
E1668A	PCB171+173	PCB-171/173	pg/L	T	160 U	160 U	150 U	150 U	150 U	150 U	150 U	150 U	150 U
E1668A	52663-74-8	PCB-172	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	38411-25-5	PCB-174	pg/L	T	26 J	27 J	26 J	75 U	36 J	76 U	76 U	48 J	18 J
E1668A	40186-70-7	PCB-175	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	52663-65-7	PCB-176	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	52663-70-4	PCB-177	pg/L	T	78 U	78 U	76 U	75 U	19 J	76 U	76 U	26 J	76 U
E1668A	52663-67-9	PCB-178	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	52663-64-6	PCB-179	pg/L	T	78 U	78 U	76 U	75 U	16 J	76 U	76 U	18 J	76 U
E1668A	PCB18+30	PCB-18+30	pg/L	T	62 J	26 J	21 J	75 U	24 J	76 U	76 U	470	26 J
E1668A	PCB180+193	PCB-180/193	pg/L	T	51 J	52 J	57 J	27 J	71 J	150 U	150 U	120 J	40 J
E1668A	74472-47-2	PCB-181	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	60145-23-5	PCB-182	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	PCB183+185	PCB-183+185	pg/L	T	160 U	160 U	150 U	150 U	150 U	150 U	150 U	150 U	150 U
E1668A	74472-48-3	PCB-184	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	74472-49-4	PCB-186	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	52663-68-0	PCB-187	pg/L	T	29 J	35 J	33 J	75 U	45 J	76 U	76 U	60 J	20 J
E1668A	74487-85-7	PCB-188	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U
E1668A	39635-31-9	PCB-189	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	38444-73-4	PCB-19	pg/L	T	16 J	39 U	38 U	38 U	160	38 U	38 U	300	9 J
E1668A	41411-64-7	PCB-190	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	74472-50-7	PCB-191	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	74472-51-8	PCB-192	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	35694-08-7	PCB-194	pg/L	T	120 U	120 U	110 U	110 U	110 U	110 U	110 U	34 J	110 U
E1668A	52663-78-2	PCB-195	pg/L	T	120 U	120 U	110 U	110 U	110 U	110 U	110 U	110 U	110 U
E1668A	42740-50-1	PCB-196/203	pg/L	T	120 U	120 U	110 U	110 U	110 U	110 U	110 U	110 U	110 U
E1668A	PCB197+200	PCB-197+200	pg/L	T	230 U	230 U	230 U	230 U	230 U	230 U	230 U	230 U	230 U
E1668A	PCB198+199	PCB-198/199	pg/L	T	230 U	230 U	230 U	230 U	230 U	230 U	230 U	230 U	230 U
E1668A	2051-61-8	PCB-2	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U
E1668A	PCB20+28	PCB20+28	pg/L	T	66 J	49 J	57 J	75 U	22 J	76 U	76 U	850	53 J
E1668A	40186-71-8	PCB-201	pg/L	T	390 U	390 U	380 U	380 U	380 U	380 U	380 U	380 U	380 U
E1668A	2136-99-4	PCB-202	pg/L	T	120 U	120 U	110 U	110 U	110 U	110 U	110 U	110 U	110 U
E1668A	74472-52-9	PCB-204	pg/L	T	120 U	120 U	110 U	110 U	110 U	110 U	110 U	110 U	110 U
E1668A	74472-53-0	PCB-205	pg/L	T	120 U	120 U	110 U	110 U	110 U	110 U	110 U	110 U	110 U
E1668A	40186-72-9	PCB-206	pg/L	T	120 U	120 U	110 U	110 U	110 U	110 U	110 U	110 U	110 U
E1668A	52663-79-3	PCB-207	pg/L	T	120 U	120 U	110 U	110 U	110 U	110 U	110 U	110 U	110 U
E1668A	52663-77-1	PCB-208	pg/L	T	120 U	120 U	110 U	110 U	110 U	110 U	110 U	110 U	110 U
E1668A	PCB21+33	PCB-21/33	pg/L	T	78 U	18 J	23 J	75 U	76 U	76 U	76 U	39 J	21 J

Method	Parameter Code	Parameter Name	Units	Fraction	Duplicate of OL-3721-10								
				Location ID	HB-BASELINE-NEW	NMC-RTE48	NMC-RTE48	SC-BASELINE-NEW	BB-BASELINE	ONCK-HIA	ONCK-SPENCER	LEYCK-PARK	UHB-OFFSITE-01
				Field Sample ID	OL-3721-11	OL-3721-12	OL-3722-01	OL-3722-02	OL-3722-03	OL-3722-04	OL-3722-05	OL-3722-06	OL-3722-07
				Start Depth (ft)	0.9	1.9	2.2	1.4	1.9	1	1.5	2	1
				End Depth (ft)	0.9	1.9	2.2	1.4	1.9	1	1.5	2	1
				Sampled	9/14/2021	9/14/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
				SDG	410-55112-1	410-55112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1
				Lab Sample ID	410-55112-11	410-55112-12	410-64112-1	410-64112-2	410-64112-3	410-64112-4	410-64112-5	410-64112-6	410-64112-7
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	FD	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
E1668A	38444-85-8	PCB-22	pg/L	T	10 J	13 J	17 J	38 U	7.4 J	38 U	5.6 J	160	19 J
E1668A	55720-44-0	PCB-23	pg/L	T	39 U	39 U	38 U	38 U	38 U	38 U	38 U	38 U	38 U
E1668A	55702-45-9	PCB-24	pg/L	T	39 U	39 U	38 U	38 U	8.4 J	38 U	38 U	38 U	38 U
E1668A	55712-37-3	PCB-25	pg/L	T	39 U	5.8 J	5.9 J	38 U	38 U	38 U	38 U	420	5.1 J
E1668A	PCB26+29	PCB26+29	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	680	76 U
E1668A	38444-76-7	PCB-27	pg/L	T	7.6 J	39 U	38 U	38 U	31 J	38 U	38 U	200	38 U
E1668A	2051-62-9	PCB-3	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U
E1668A	16606-02-3	PCB-31	pg/L	T	46	43	52	38 U	12 J	38 U	38 U	960	48
E1668A	38444-77-8	PCB-32	pg/L	T	29 J	7.3 J	7.3 J	38 U	68	38 U	38 U	470	14 J
E1668A	37680-68-5	PCB-34	pg/L	T	39 U	39 U	38 U	38 U	38 U	38 U	38 U	7.6 J	38 U
E1668A	37680-69-6	PCB-35	pg/L	T	39 U	39 U	38 U	38 U	38 U	38 U	38 U	38 U	38 U
E1668A	38444-87-0	PCB-36	pg/L	T	39 U	39 U	38 U	38 U	38 U	38 U	38 U	18 J	38 U
E1668A	38444-90-5	PCB-37	pg/L	T	15 J	11 J	14 J	38 U	9.5 J	38 U	38 U	83	11 J
E1668A	53555-66-1	PCB-38	pg/L	T	39 U	39 U	38 U	38 U	38 U	38 U	38 U	38 U	38 U
E1668A	38444-88-1	PCB-39	pg/L	T	39 U	39 U	38 U	38 U	38 U	38 U	38 U	38 U	38 U
E1668A	13029-08-8	PCB-4	pg/L	T	65	7.8 J	38 U	38 U	37 J	38 U	38 U	990	32 J
E1668A	PCB40+71	PCB40+71	pg/L	T	28 J	28 J	32 J	150 U	150 U	150 U	150 U	330	150 U
E1668A	52663-59-9	PCB-41	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	36559-22-5	PCB-42	pg/L	T	17 J	18 J	26 J	75 U	76 U	76 U	76 U	220	76 U
E1668A	70362-46-8	PCB-43	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	28 J	76 U
E1668A	PCB44+47+65	PCB-44/47/65	pg/L	T	58 J	74 J	76 J	230 U	47 J	230 U	230 U	730	230 U
E1668A	70362-45-7	PCB-45	pg/L	T	14 J	12 J	76 U	75 U	31 J	76 U	76 U	93	76 U
E1668A	41464-47-5	PCB-46	pg/L	T	78 U	78 U	76 U	75 U	12 J	76 U	76 U	75	76 U
E1668A	70362-47-9	PCB-48	pg/L	T	12 J	78 U	14 J	75 U	76 U	76 U	76 U	43 J	76 U
E1668A	PCB49+69	PCB49+69	pg/L	T	33 J	52 J	45 J	150 U	28 J	150 U	150 U	560	150 U
E1668A	16605-91-7	PCB-5	pg/L	T	39 U	39 U	38 U	38 U	38 U	38 U	38 U	38 U	38 U
E1668A	PCB50+53	PCB-50/53	pg/L	T	290 U	290 U	290 U	280 U	280 U	280 U	280 U	220 J	280 U
E1668A	68194-04-7	PCB-51	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	82	76 U
E1668A	35693-99-3	PCB-52	pg/L	T	72 J	100	82	75 U	79	76 U	76 U	770	32 J
E1668A	15968-05-5	PCB-54	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	74338-24-2	PCB-55	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	41464-43-1	PCB-56	pg/L	T	14 J	25 J	41 J	17 J	76 U	76 U	76 U	130	76 U
E1668A	70424-67-8	PCB-57	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	41464-49-7	PCB-58	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	PCB59+62+75	PCB-59/62/75	pg/L	T	230 U	230 U	230 U	230 U	230 U	230 U	230 U	56 J	230 U
E1668A	25569-80-6	PCB-6	pg/L	T	39 U	39 U	38 U	38 U	15 J	38 U	38 U	270	13 J
E1668A	PCB61+046	PCB-61/70/74/76	pg/L	T	49 J	100 J	120 J	300 U	300 U	300 U	300 U	440	300 U
E1668A	74472-34-7	PCB-63	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	31 J	76 U
E1668A	32598-10-0	PCB-66	pg/L	T	28 J	62 J	90	25 J	76 U	76 U	76 U	380	19 J
E1668A	73575-53-8	PCB-67	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	12 J	76 U
E1668A	73575-52-7	PCB-68	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	33284-50-3	PCB-7	pg/L	T	39 U	39 U	38 U	38 U	38 U	38 U	38 U	38 U	38 U
E1668A	74338-23-1	PCB-73	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	32598-13-3	PCB-77	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	42 J	76 U
E1668A	70362-49-1	PCB-78	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	41464-48-6	PCB-79	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	34883-43-7	PCB-8	pg/L	T	39 U	12 J	10 J	38 U	16 J	38 U	11 J	260	28 J
E1668A	33284-52-5	PCB-80	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	70362-50-4	PCB-81	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	52663-62-4	PCB-82	pg/L	T	78 U	78 U	15 J	75 U	76 U	76 U	76 U	30 J	76 U
E1668A	60145-20-2	PCB-83	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	25 J	76 U

					Duplicate of OL-3721-10								
				Location ID	HB-BASELINE-NEW	NMC-RTE48	NMC-RTE48	SC-BASELINE-NEW	BB-BASELINE	ONCK-HIA	ONCK-SPENCER	LEYCK-PARK	UHB-OFFSITE-01
				Field Sample ID	OL-3721-11	OL-3721-12	OL-3722-01	OL-3722-02	OL-3722-03	OL-3722-04	OL-3722-05	OL-3722-06	OL-3722-07
				Start Depth (ft)	0.9	1.9	2.2	1.4	1.9	1	1.5	2	1
				End Depth (ft)	0.9	1.9	2.2	1.4	1.9	1	1.5	2	1
				Sampled	9/14/2021	9/14/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
				SDG	410-55112-1	410-55112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1
				Lab Sample ID	410-55112-11	410-55112-12	410-64112-1	410-64112-2	410-64112-3	410-64112-4	410-64112-5	410-64112-6	410-64112-7
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	FD	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	52663-60-2	PCB-84	pg/L	T	17 J	31 J	23 J	75 U	14 J	76 U	76 U	98	76 U
E1668A	PCB85+116+117	PCB85+116+117	pg/L	T	230 U	230 U	230 U	230 U	230 U	230 U	230 U	230 U	230 U
E1668A	PCB86+77091925	PCB86+77091925	pg/L	T	470 U	470 U	460 U	450 U	460 U	460 U	450 U	150 J	450 U
E1668A	55215-17-3	PCB-88	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	73575-57-2	PCB-89	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	34883-39-1	PCB-9	pg/L	T	39 U	39 U	38 U	38 U	38 U	38 U	38 U	36 J	38 U
E1668A	PCB90+101+113	PCB90+101+113	pg/L	T	50 J	100 J	68 J	230 U	71 J	230 U	230 U	200 J	230 U
E1668A	68194-05-8	PCB-91	pg/L	T	78 U	16 J	18 J	75 U	76 U	76 U	76 U	71 J	76 U
E1668A	52663-61-3	PCB-92	pg/L	T	78 U	20 J	76 U	75 U	16 J	76 U	76 U	61 J	76 U
E1668A	PCB93+100	PCB-93+100	pg/L	T	160 U	160 U	150 U	150 U	150 U	150 U	150 U	150 U	150 U
E1668A	73575-55-0	PCB-94	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	38379-99-6	PCB-95	pg/L	T	57 J	95	59 J	19 J	65 J	76 U	76 U	270	39 J
E1668A	73575-54-9	PCB-96	pg/L	T	78 U	78 U	76 U	75 U	76 U	76 U	76 U	75 U	76 U
E1668A	PCB98+102	PCB-98+102	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U	190 U
E1668A	38380-01-7	PCB-99	pg/L	T	18 J	49 J	32 J	75 U	26 J	76 U	76 U	120	76 U
SM2540D	TSS	Total Suspended Solids	mg/L	T	4.7	20	26	1.9 J	2.3 J	37	42	5.3	13

								Duplicate of OL-3722-10					
				Location ID	T5A-SW-15-NEW	T5A-BASELINE-NEW	HB-BASELINE-NEW	HB-BASELINE-NEW	QC	LEYCK-PARK	ONCK-SPENCER	UHB-OFFSITE-01	HB-BASELINE-NEW
				Field Sample ID	OL-3722-08	OL-3722-09	OL-3722-10	OL-3722-11	OL-3722-12	OL-3723-01	OL-3723-02	OL-3723-03	OL-3723-04
				Start Depth (ft)	0.45	2	2	2		1.7	1.45	1.5	1.25
				End Depth (ft)	0.45	2	2	2		1.7	1.45	1.5	1.25
				Sampled	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	12/15/2021	12/15/2021	12/15/2021	12/15/2021
				SDG	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-67305-1	410-67305-1	410-67305-1	410-67305-1
				Lab Sample ID	410-64112-8	410-64112-9	410-64112-10	410-64112-11	410-64112-12	410-67305-1	410-67305-2	410-67305-3	410-67305-4
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	FD	EB	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	WQ	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	33146-45-1	10-DiCB	pg/L	T	170	38 U	38 U	38 U	38 U	44		6.9 J	38 U
E1668A	74472-36-9	112-PeCB	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	41411-61-4	142-HXCB	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	68194-15-0	143-HxCB	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	41411-62-5	160-HXCB	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	74472-43-8	161-Hxcb	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	39635-34-2	162-HXCB	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	74472-45-0	164-HxCB	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	74472-46-1	165-HxCB	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	33025-41-1	2,3',4,4'-Tetrachlorobiphenyl	pg/L	T	16 J	28 J	76 U	76 U	76 U	44 J		75 U	75 U
E1668A	52663-76-0	203-OCCB	pg/L	T	32 J	79 J	22 J	110 U	110 U	110 U		110 U	110 U
E1668A	52663-58-8	64-TeCB	pg/L	T	41 J	99	27 J	17 J	76 U	450		15 J	12 J
E1668A	41464-42-0	72-TeCB	pg/L	T	72 J	76 U	76 U	76 U	76 U	23 J		75 U	75 U
E1668A	2051-24-3	DCB Decachlorobiphenyl	pg/L	T	950 U	950 U	940 U	950 U	950 U	940 U		940 U	940 U
E1668A	2051-60-7	PCB-1	pg/L	T	61 J	190 U	190 U	190 U	190 U	200		190 U	190 U
E1668A	60145-21-3	PCB-103	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	56558-16-8	PCB-104	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	32598-14-4	PCB-105	pg/L	T	21 J	26 J	23 J	19 J	76 U	77		75 U	75 U
E1668A	70424-69-0	PCB-106/118	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	70424-68-9	PCB-107	pg/L	T	76 U	76 U	76 U	76 U	76 U	18 J		75 U	75 U
E1668A	PCB108+124	PCB-108/124	pg/L	T	150 U	150 U	150 U	150 U	150 U	150 U		150 U	150 U
E1668A	2050-67-1	PCB-11	pg/L	T	290 U	290 U	280 U	290 U	290 U	280 U		280 U	280 U
E1668A	PCB110+115	PCB-110+115	pg/L	T	100 J	100 J	76 J	59 J	150 U	310 J		150 UJ	150 UJ
E1668A	39635-32-0	PCB-111	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	74472-37-0	PCB-114	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	31508-00-6	PCB-118	pg/L	T	44 J	42 J	44 J	35 J	76 U	180		20 J	75 U
E1668A	PCB12+13	PCB-12/13	pg/L	T	76 U	76 U	76 U	76 U	76 U	150		75 U	75 U
E1668A	68194-12-7	PCB-120	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	56558-18-0	PCB-121	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	76842-07-4	PCB-122	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	65510-44-3	PCB-123	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	57465-28-8	PCB-126	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	39635-33-1	PCB-127	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	PCB128+166	PCB-128/166	pg/L	T	150 U	150 U	150 U	150 U	150 U	150 U		150 U	150 U
E1668A	PCB129+138+163	PCB129+138+163	pg/L	T	140 J	230 U	100 J	87 J	230 U	170 J		230 U	230 U
E1668A	52663-66-8	PCB-130	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	61798-70-7	PCB-131	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	38380-05-1	PCB-132	pg/L	T	52 J	15 J	35 J	30 J	76 U	55 J		75 U	75 U
E1668A	35694-04-3	PCB-133	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	52704-70-8	PCB-134	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	PCB135+151	PCB135+151	pg/L	T	68 J	150 U	43 J	150 U	150 U	150 U		150 U	150 U
E1668A	38411-22-2	PCB-136	pg/L	T	21 J	76 U	14 J	76 U	76 U	75 U		75 U	75 U
E1668A	35694-06-5	PCB-137	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	PCB139+140	PCB-139/140	pg/L	T	150 U	150 U	150 U	150 U	150 U	150 U		150 U	150 U
E1668A	34883-41-5	PCB-14	pg/L	T	38 U	38 U	38 U	38 U	38 U	38 U		38 U	38 U
E1668A	52712-04-6	PCB-141	pg/L	T	32 J	76 U	23 J	76 U	76 U	32 J		75 U	75 U
E1668A	68194-14-9	PCB-144	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	74472-40-5	PCB-145	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 UJ		75 UJ	75 UJ
E1668A	51908-16-8	PCB-146	pg/L	T	21 J	76 U	17 J	76 U	76 U	23 J		75 U	75 U
E1668A	PCB147+149	PCB-147/149	pg/L	T	120 J	150 U	98 J	80 J	150 U	110 J		150 U	150 U
E1668A	74472-41-6	PCB-148	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U

					Duplicate of OL-3722-10					

				Location ID	T5A-SW-15-NEW	T5A-BASELINE-NEW	HB-BASELINE-NEW	HB-BASELINE-NEW	QC	LEYCK-PARK	ONCK-SPENCER	UHB-OFFSITE-01	HB-BASELINE-NEW
				Field Sample ID	OL-3722-08	OL-3722-09	OL-3722-10	OL-3722-11	OL-3722-12	OL-3723-01	OL-3723-02	OL-3723-03	OL-3723-04
				Start Depth (ft)	0.45	2	2	2		1.7	1.45	1.5	1.25
				End Depth (ft)	0.45	2	2	2		1.7	1.45	1.5	1.25
				Sampled	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	12/15/2021	12/15/2021	12/15/2021	12/15/2021
				SDG	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-67305-1	410-67305-1	410-67305-1	410-67305-1
				Lab Sample ID	410-64112-8	410-64112-9	410-64112-10	410-64112-11	410-64112-12	410-67305-1	410-67305-2	410-67305-3	410-67305-4
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	FD	EB	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	WQ	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	2050-68-2	PCB-15	pg/L	T	38 J	17 J	25 J	29 J	38 U	500		17 J	13 J
E1668A	68194-08-1	PCB-150	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	68194-09-2	PCB-152	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	PCB153+168	PCB-153/168	pg/L	T	110 J	150 U	79 J	54 J	150 U	130 J		150 U	150 U
E1668A	60145-22-4	PCB-154	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U		190 U	190 U
E1668A	33979-03-2	PCB-155	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	PCB156+157	PCB-156/157	pg/L	T	150 U	150 U	150 U	150 U	150 U	150 U		150 U	150 U
E1668A	74472-42-7	PCB-158	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	39635-35-3	PCB-159	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	38444-78-9	PCB-16	pg/L	T	19 J	37 J	23 J	16 J	38 U	220		12 J	11 J
E1668A	52663-72-6	PCB-167	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	32774-16-6	PCB-169	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	37680-66-3	PCB-17	pg/L	T	61	50	21 J	19 J	38 U	710		13 J	13 J
E1668A	35065-30-6	PCB-170	pg/L	T	44 J	76 U	41 J	35 J	76 U	48 J		75 U	75 U
E1668A	PCB171+173	PCB-171/173	pg/L	T	150 U	150 U	150 U	150 U	150 U	150 U		150 U	150 U
E1668A	52663-74-8	PCB-172	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	38411-25-5	PCB-174	pg/L	T	55 J	76 U	49 J	36 J	76 U	50 J		75 U	75 U
E1668A	40186-70-7	PCB-175	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	52663-65-7	PCB-176	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	52663-70-4	PCB-177	pg/L	T	26 J	76 U	25 J	19 J	76 U	35 J		75 U	75 U
E1668A	52663-67-9	PCB-178	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	52663-64-6	PCB-179	pg/L	T	19 J	76 U	18 J	14 J	76 U	18 J		75 U	75 U
E1668A	PCB18+30	PCB-18+30	pg/L	T	53 J	110	33 J	35 J	76 U	750		25 J	23 J
E1668A	PCB180+193	PCB-180/193	pg/L	T	100 J	55 J	100 J	80 J	150 U	110 J		31 J	150 U
E1668A	74472-47-2	PCB-181	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	60145-23-5	PCB-182	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	PCB183+185	PCB-183+185	pg/L	T	150 U	150 U	150 U	150 U	150 U	150 UJ		150 UJ	150 UJ
E1668A	74472-48-3	PCB-184	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	74472-49-4	PCB-186	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	52663-68-0	PCB-187	pg/L	T	63 J	35 J	57 J	44 J	76 U	57 J		75 U	75 U
E1668A	74487-85-7	PCB-188	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U		190 U	190 U
E1668A	39635-31-9	PCB-189	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	38444-73-4	PCB-19	pg/L	T	680	76	18 J	16 J	38 U	450		11 J	7.7 J
E1668A	41411-64-7	PCB-190	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	74472-50-7	PCB-191	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	74472-51-8	PCB-192	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	35694-08-7	PCB-194	pg/L	T	110 U	91 J	27 J	110 U	110 U	32 J		110 U	110 U
E1668A	52663-78-2	PCB-195	pg/L	T	110 U	110 U	110 U	110 U	110 U	110 U		110 U	110 U
E1668A	42740-50-1	PCB-196/203	pg/L	T	110 U	41 J	110 U	110 U	110 U	110 U		110 U	110 U
E1668A	PCB197+200	PCB-197+200	pg/L	T	230 U	230 U	230 U	230 U	230 U	230 UJ		230 UJ	230 UJ
E1668A	PCB198+199	PCB-198/199	pg/L	T	53 J	110 J	230 U	230 U	230 U	230 U		230 U	230 U
E1668A	2051-61-8	PCB-2	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U		190 U	190 U
E1668A	PCB20+28	PCB20+28	pg/L	T	96	87	58 J	57 J	76 U	1100		43 J	26 J
E1668A	40186-71-8	PCB-201	pg/L	T	380 U	380 U	380 U	380 U	380 U	380 U		380 U	380 U
E1668A	2136-99-4	PCB-202	pg/L	T	110 U	110 U	110 U	110 U	110 U	110 U		110 U	110 U
E1668A	74472-52-9	PCB-204	pg/L	T	110 U	110 U	110 U	110 U	110 U	110 U		110 U	110 U
E1668A	74472-53-0	PCB-205	pg/L	T	110 U	110 U	110 U	110 U	110 U	110 U		110 U	110 U
E1668A	40186-72-9	PCB-206	pg/L	T	39 J	170	110 U	110 U	110 U	110 U		110 U	110 U
E1668A	52663-79-3	PCB-207	pg/L	T	110 U	110 U	110 U	110 U	110 U	110 U		110 U	110 U
E1668A	52663-77-1	PCB-208	pg/L	T	110 U	31 J	110 U	110 U	110 U	110 U		110 U	110 U
E1668A	PCB21+33	PCB-21/33	pg/L	T	76 U	10 J	11 J	14 J	76 U	57 J		15 J	75 U

								Duplicate of OL-3722-10					
				Location ID	T5A-SW-15-NEW	T5A-BASELINE-NEW	HB-BASELINE-NEW	HB-BASELINE-NEW	QC	LEYCK-PARK	ONCK-SPENCER	UHB-OFFSITE-01	HB-BASELINE-NEW
				Field Sample ID	OL-3722-08	OL-3722-09	OL-3722-10	OL-3722-11	OL-3722-12	OL-3723-01	OL-3723-02	OL-3723-03	OL-3723-04
				Start Depth (ft)	0.45	2	2	2		1.7	1.45	1.5	1.25
				End Depth (ft)	0.45	2	2	2		1.7	1.45	1.5	1.25
				Sampled	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	12/15/2021	12/15/2021	12/15/2021	12/15/2021
				SDG	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-67305-1	410-67305-1	410-67305-1	410-67305-1
				Lab Sample ID	410-64112-8	410-64112-9	410-64112-10	410-64112-11	410-64112-12	410-67305-1	410-67305-2	410-67305-3	410-67305-4
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	FD	EB	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	WQ	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	38444-85-8	PCB-22	pg/L	T	10 J	22 J	9.8 J	12 J	38 U	220		16 J	38 U
E1668A	55720-44-0	PCB-23	pg/L	T	38 U	38 U	38 U	38 U	38 U	38 U		38 U	38 U
E1668A	55702-45-9	PCB-24	pg/L	T	38 U	38 U	38 U	38 U	38 U	38 U		38 U	38 U
E1668A	55712-37-3	PCB-25	pg/L	T	12 J	33 J	4.8 J	38 U	38 U	560		4.7 J	38 U
E1668A	PCB26+29	PCB26+29	pg/L	T	76 U	55 J	76 U	76 U	76 U	900		75 U	75 U
E1668A	38444-76-7	PCB-27	pg/L	T	460	29 J	38 U	38 U	38 U	260		38 U	38 U
E1668A	2051-62-9	PCB-3	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 U		190 U	190 U
E1668A	16606-02-3	PCB-31	pg/L	T	67	66	37 J	40 J	38 U	1100		34 J	15 J
E1668A	38444-77-8	PCB-32	pg/L	T	150	120	21 J	16 J	38 U	650		13 J	11 J
E1668A	37680-68-5	PCB-34	pg/L	T	15 J	38 U	38 U	38 U	38 U	38 U		38 U	38 U
E1668A	37680-69-6	PCB-35	pg/L	T	38 U	38 U	38 U	38 U	38 U	38 U		38 U	38 U
E1668A	38444-87-0	PCB-36	pg/L	T	35 J	38 U	38 U	38 U	38 U	38 U		38 U	38 U
E1668A	38444-90-5	PCB-37	pg/L	T	22 J	14 J	22 J	23 J	38 U	100		8.7 J	8.2 J
E1668A	53555-66-1	PCB-38	pg/L	T	38 U	38 U	38 U	38 U	38 U	38 U		38 U	38 U
E1668A	38444-88-1	PCB-39	pg/L	T	140	38 U	38 U	38 U	38 U	38 U		38 U	38 U
E1668A	13029-08-8	PCB-4	pg/L	T	210 J	250 J	36 J	34 J	38 U	1500		48 J	40
E1668A	PCB40+71	PCB40+71	pg/L	T	59 J	110 J	24 J	150 U	150 U	610		150 U	150 U
E1668A	52663-59-9	PCB-41	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	36559-22-5	PCB-42	pg/L	T	53 J	45 J	14 J	76 U	76 U	450		75 U	75 U
E1668A	70362-46-8	PCB-43	pg/L	T	76 U	76 U	76 U	76 U	76 U	59 J		75 U	75 U
E1668A	PCB44+47+65	PCB-44/47/65	pg/L	T	160 J	150 J	44 J	37 J	230 U	1300		230 U	230 U
E1668A	70362-45-7	PCB-45	pg/L	T	62 J	73 J	76 U	76 U	76 U	200		75 U	75 U
E1668A	41464-47-5	PCB-46	pg/L	T	40 J	37 J	76 U	76 U	76 U	140		75 U	75 U
E1668A	70362-47-9	PCB-48	pg/L	T	19 J	13 J	12 J	76 U	76 U	86		75 U	75 U
E1668A	PCB49+69	PCB49+69	pg/L	T	220	76 J	28 J	150 U	150 U	1100		150 U	150 U
E1668A	16605-91-7	PCB-5	pg/L	T	38 U	38 U	38 U	38 U	38 U	38 U		38 U	38 U
E1668A	PCB50+53	PCB-50/53	pg/L	T	180 J	290 U	280 U	290 U	290 U	420		280 U	280 U
E1668A	68194-04-7	PCB-51	pg/L	T	72 J	76 U	76 U	76 U	76 U	150		75 U	75 U
E1668A	35693-99-3	PCB-52	pg/L	T	200	180	56 J	41 J	76 U	1500		32 J	26 J
E1668A	15968-05-5	PCB-54	pg/L	T	34 J	76 U	11 J	76 U	76 U	11 J		75 U	75 U
E1668A	74338-24-2	PCB-55	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	41464-43-1	PCB-56	pg/L	T	21 J	49 J	14 J	11 J	76 U	140		75 U	75 U
E1668A	70424-67-8	PCB-57	pg/L	T	76 U	76 U	76 U	76 U	76 U	13 J		75 U	75 U
E1668A	41464-49-7	PCB-58	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	PCB59+62+75	PCB-59/62/75	pg/L	T	65 J	230 U	230 U	230 U	230 U	89 J		230 U	230 U
E1668A	25569-80-6	PCB-6	pg/L	T	38 U	38 U	38 U	38 U	38 U	360		38 U	38 U
E1668A	PCB61+046	PCB-61/70/74/76	pg/L	T	76 J	85 J	52 J	46 J	310 U	600		300 U	300 U
E1668A	74472-34-7	PCB-63	pg/L	T	76 U	76 U	76 U	76 U	76 U	41 J		75 U	75 U
E1668A	32598-10-0	PCB-66	pg/L	T	56 J	77	28 J	27 J	76 U	500		75 U	12 J
E1668A	73575-53-8	PCB-67	pg/L	T	76 U	76 U	76 U	76 U	76 U	18 J		75 U	75 U
E1668A	73575-52-7	PCB-68	pg/L	T	59 J	76 U	76 U	76 U	76 U	16 J		75 U	75 U
E1668A	33284-50-3	PCB-7	pg/L	T	38 U	38 U	38 U	38 U	38 U	18 J		38 U	38 U
E1668A	74338-23-1	PCB-73	pg/L	T	69 J	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	32598-13-3	PCB-77	pg/L	T	76 U	76 U	76 U	76 U	76 U	50 J		75 U	75 U
E1668A	70362-49-1	PCB-78	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	41464-48-6	PCB-79	pg/L	T	14 J	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	34883-43-7	PCB-8	pg/L	T	11 J	38 U	13 J	38 U	38 U	300		21 J	38 U
E1668A	33284-52-5	PCB-80	pg/L	T	20 J	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	70362-50-4	PCB-81	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	52663-62-4	PCB-82	pg/L	T	13 J	16 J	76 U	76 U	76 U	37 J		75 U	75 U
E1668A	60145-20-2	PCB-83	pg/L	T	76 U	76 U	76 U	76 U	76 U	29 J		75 U	75 U

								Duplicate of OL-3722-10					
				Location ID	T5A-SW-15-NEW	T5A-BASELINE-NEW	HB-BASELINE-NEW	HB-BASELINE-NEW	QC	LEYCK-PARK	ONCK-SPENCER	UHB-OFFSITE-01	HB-BASELINE-NEW
				Field Sample ID	OL-3722-08	OL-3722-09	OL-3722-10	OL-3722-11	OL-3722-12	OL-3723-01	OL-3723-02	OL-3723-03	OL-3723-04
				Start Depth (ft)	0.45	2	2	2		1.7	1.45	1.5	1.25
				End Depth (ft)	0.45	2	2	2		1.7	1.45	1.5	1.25
				Sampled	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	12/15/2021	12/15/2021	12/15/2021	12/15/2021
				SDG	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-64112-1	410-67305-1	410-67305-1	410-67305-1	410-67305-1
				Lab Sample ID	410-64112-8	410-64112-9	410-64112-10	410-64112-11	410-64112-12	410-67305-1	410-67305-2	410-67305-3	410-67305-4
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	FD	EB	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	WQ	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	52663-60-2	PCB-84	pg/L	T	39 J	39 J	18 J	14 J	76 U	140		75 U	75 U
E1668A	PCB85+116+117	PCB85+116+117	pg/L	T	230 U	230 U	230 U	230 U	230 U	230 U		230 U	230 U
E1668A	PCB86+77091925	PCB86+77091925	pg/L	T	460 U	460 U	450 U	460 U	460 U	180 J		450 UJ	450 UJ
E1668A	55215-17-3	PCB-88	pg/L	T	76 U	76 U	76 U	76 U	76 U	94		75 U	75 U
E1668A	73575-57-2	PCB-89	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	34883-39-1	PCB-9	pg/L	T	38 U	38 U	38 U	38 U	38 U	21 J		38 U	38 U
E1668A	PCB90+101+113	PCB90+101+113	pg/L	T	110 J	68 J	56 J	45 J	230 U	240		230 U	230 U
E1668A	68194-05-8	PCB-91	pg/L	T	19 J	14 J	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	52663-61-3	PCB-92	pg/L	T	22 J	15 J	76 U	76 U	76 U	69 J		75 U	75 U
E1668A	PCB93+100	PCB-93+100	pg/L	T	150 U	150 U	150 U	150 U	150 U	150 U		150 U	150 U
E1668A	73575-55-0	PCB-94	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	38379-99-6	PCB-95	pg/L	T	140	94	83	65 J	76 U	330		34 J	26 J
E1668A	73575-54-9	PCB-96	pg/L	T	76 U	76 U	76 U	76 U	76 U	75 U		75 U	75 U
E1668A	PCB98+102	PCB-98+102	pg/L	T	190 U	190 U	190 U	190 U	190 U	190 UJ		190 UJ	190 UJ
E1668A	38380-01-7	PCB-99	pg/L	T	29 J	26 J	20 J	15 J	76 U	130		75 U	75 U
SM2540D	TSS	Total Suspended Solids	mg/L	T	3 U	2.2 J	11 J	4.5 J	3 U	4.6	7.8	4.2	4.7 J

					Duplicate of OL-3723-04													
				Location ID	HB-BASELINE-NEW		NMC-RTE48		ONCK-HIA		QC		ONCK-SPENCER		NMC-RTE48		ONCK-HIA	
				Field Sample ID	OL-3723-05		OL-3723-06		OL-3723-07		OL-3723-08		OL-3724-01		OL-3724-02		OL-3724-03	
				Start Depth (ft)	1.25		1.8		1.5				1.75		2.25		1.5	
				End Depth (ft)	1.25		1.8		1.5				1.75		2.25		1.5	
				Sampled	12/15/2021		12/15/2021		12/15/2021		12/15/2021		1/5/2022		1/5/2022		1/5/2022	
				SDG	410-67305-1		410-67305-1		410-67305-1		410-67305-1		410-68896-1		410-68896-1		410-68896-1	
				Lab Sample ID	410-67305-5		410-67305-6		410-67305-7		410-67305-8		410-68896-1		410-68896-3		410-68896-2	
				Medium	Water		Water		Water		Water		Water		Water		Water	
				Sample Type	FD		REG		REG		EB		REG		REG		REG	
				Matrix	SW		SW		SW		WQ		SW		SW		SW	
Method	Parameter Code	Parameter Name	Units	Fraction														
E1668A	33146-45-1	10-DiCB	pg/L	T							38	U	38	U	38	U	38	U
E1668A	74472-36-9	112-PeCB	pg/L	T							76	U	76	U	76	U	76	U
E1668A	41411-61-4	142-HXCB	pg/L	T							76	U	76	U	76	U	76	U
E1668A	68194-15-0	143-HxCB	pg/L	T							76	U	76	U	76	U	76	U
E1668A	41411-62-5	160-HXCB	pg/L	T							76	U	76	U	76	U	76	U
E1668A	74472-43-8	161-Hxcb	pg/L	T							76	U	76	U	76	U	76	U
E1668A	39635-34-2	162-HXCB	pg/L	T							76	U	76	U	76	U	76	U
E1668A	74472-45-0	164-HxCB	pg/L	T							76	U	76	U	76	U	76	U
E1668A	74472-46-1	165-HxCB	pg/L	T							76	U	76	U	76	U	76	U
E1668A	33025-41-1	2,3',4,4'-Tetrachlorobiphenyl	pg/L	T							76	U	76	U	76	U	76	U
E1668A	52663-76-0	203-OCCB	pg/L	T							110	U	110	U	110	U	110	U
E1668A	52663-58-8	64-TeCB	pg/L	T							76	U	76	U	76	U	12	J
E1668A	41464-42-0	72-TeCB	pg/L	T							76	U	76	U	76	U	76	U
E1668A	2051-24-3	DCB Decachlorobiphenyl	pg/L	T							940	U	950	U	950	U	950	U
E1668A	2051-60-7	PCB-1	pg/L	T							190	U	190	U	190	U	190	U
E1668A	60145-21-3	PCB-103	pg/L	T							76	U	76	U	76	U	76	U
E1668A	56558-16-8	PCB-104	pg/L	T							76	U	76	U	76	U	76	U
E1668A	32598-14-4	PCB-105	pg/L	T							76	U	76	U	76	U	76	U
E1668A	70424-69-0	PCB-106/118	pg/L	T							76	U	76	U	76	U	76	U
E1668A	70424-68-9	PCB-107	pg/L	T							76	U	76	U	76	U	76	U
E1668A	PCB108+124	PCB-108/124	pg/L	T							150	U	150	U	150	U	150	U
E1668A	2050-67-1	PCB-11	pg/L	T							280	U	280	U	280	U	280	U
E1668A	PCB110+115	PCB-110+115	pg/L	T							150	UJ	150	U	150	U	150	U
E1668A	39635-32-0	PCB-111	pg/L	T							76	U	76	U	76	U	76	U
E1668A	74472-37-0	PCB-114	pg/L	T							76	U	76	U	76	U	76	U
E1668A	31508-00-6	PCB-118	pg/L	T							76	U	76	U	76	U	19	J
E1668A	PCB12+13	PCB-12/13	pg/L	T							76	U	76	U	76	U	76	U
E1668A	68194-12-7	PCB-120	pg/L	T							76	U	76	U	76	U	76	U
E1668A	56558-18-0	PCB-121	pg/L	T							76	U	76	U	76	U	76	U
E1668A	76842-07-4	PCB-122	pg/L	T							76	U	76	U	76	U	76	U
E1668A	65510-44-3	PCB-123	pg/L	T							76	U	76	U	76	U	76	U
E1668A	57465-28-8	PCB-126	pg/L	T							76	U	76	U	76	U	76	U
E1668A	39635-33-1	PCB-127	pg/L	T							76	U	76	U	76	U	76	U
E1668A	PCB128+166	PCB-128/166	pg/L	T							150	U	150	U	150	U	150	U
E1668A	PCB129+138+163	PCB129+138+163	pg/L	T							230	U	230	U	230	U	230	U
E1668A	52663-66-8	PCB-130	pg/L	T							76	U	76	U	76	U	76	U
E1668A	61798-70-7	PCB-131	pg/L	T							76	U	76	U	76	U	76	U
E1668A	38380-05-1	PCB-132	pg/L	T							76	U	76	U	76	U	76	U
E1668A	35694-04-3	PCB-133	pg/L	T							76	U	76	U	76	U	76	U
E1668A	52704-70-8	PCB-134	pg/L	T							76	U	76	U	76	U	76	U
E1668A	PCB135+151	PCB135+151	pg/L	T							150	U	150	U	150	U	150	U
E1668A	38411-22-2	PCB-136	pg/L	T							76	U	76	U	76	U	76	U
E1668A	35694-06-5	PCB-137	pg/L	T							76	U	76	U	76	U	76	U
E1668A	PCB139+140	PCB-139/140	pg/L	T							150	U	150	U	150	U	150	U
E1668A	34883-41-5	PCB-14	pg/L	T							38	U	38	U	38	U	38	U
E1668A	52712-04-6	PCB-141	pg/L	T							76	U	76	U	76	U	76	U
E1668A	68194-14-9	PCB-144	pg/L	T							76	U	76	U	76	U	76	U
E1668A	74472-40-5	PCB-145	pg/L	T							76	UJ	76	U	76	U	76	U
E1668A	51908-16-8	PCB-146	pg/L	T							76	U	76	U	76	U	76	U
E1668A	PCB147+149	PCB-147/149	pg/L	T							150	U	150	U	150	U	150	U
E1668A	74472-41-6	PCB-148	pg/L	T							76	U	76	U	76	U	76	U

					Duplicate of OL-3723-04													
				Location ID	HB-BASELINE-NEW		NMC-RTE48		ONCK-HIA		QC		ONCK-SPENCER		NMC-RTE48		ONCK-HIA	
				Field Sample ID	OL-3723-05		OL-3723-06		OL-3723-07		OL-3723-08		OL-3724-01		OL-3724-02		OL-3724-03	
				Start Depth (ft)	1.25		1.8		1.5				1.75		2.25		1.5	
				End Depth (ft)	1.25		1.8		1.5				1.75		2.25		1.5	
				Sampled	12/15/2021		12/15/2021		12/15/2021		12/15/2021		1/5/2022		1/5/2022		1/5/2022	
				SDG	410-67305-1		410-67305-1		410-67305-1		410-67305-1		410-68896-1		410-68896-1		410-68896-1	
				Lab Sample ID	410-67305-5		410-67305-6		410-67305-7		410-67305-8		410-68896-1		410-68896-3		410-68896-2	
				Medium	Water		Water		Water		Water		Water		Water		Water	
				Sample Type	FD		REG		REG		EB		REG		REG		REG	
				Matrix	SW		SW		SW		WQ		SW		SW		SW	
Method	Parameter Code	Parameter Name	Units	Fraction														
E1668A	2050-68-2	PCB-15	pg/L	T							8	J	38	U	38	U	38	U
E1668A	68194-08-1	PCB-150	pg/L	T							76	U	76	U	76	U	76	U
E1668A	68194-09-2	PCB-152	pg/L	T							76	U	76	U	76	U	76	U
E1668A	PCB153+168	PCB-153/168	pg/L	T							150	U	150	U	150	U	150	U
E1668A	60145-22-4	PCB-154	pg/L	T							190	U	190	U	190	U	190	U
E1668A	33979-03-2	PCB-155	pg/L	T							76	U	76	U	76	U	76	U
E1668A	PCB156+157	PCB-156/157	pg/L	T							150	U	150	U	150	U	150	U
E1668A	74472-42-7	PCB-158	pg/L	T							76	U	76	U	76	U	76	U
E1668A	39635-35-3	PCB-159	pg/L	T							76	U	76	U	76	U	76	U
E1668A	38444-78-9	PCB-16	pg/L	T							38	U	38	U	38	U	38	U
E1668A	52663-72-6	PCB-167	pg/L	T							76	U	76	U	76	U	76	U
E1668A	32774-16-6	PCB-169	pg/L	T							76	U	76	U	76	U	76	U
E1668A	37680-66-3	PCB-17	pg/L	T							38	U	38	U	38	U	6.5	J
E1668A	35065-30-6	PCB-170	pg/L	T							76	U	76	U	76	U	76	U
E1668A	PCB171+173	PCB-171/173	pg/L	T							150	U	150	U	150	U	150	U
E1668A	52663-74-8	PCB-172	pg/L	T							76	U	76	U	76	U	76	U
E1668A	38411-25-5	PCB-174	pg/L	T							76	U	76	U	76	U	76	U
E1668A	40186-70-7	PCB-175	pg/L	T							76	U	76	U	76	U	76	U
E1668A	52663-65-7	PCB-176	pg/L	T							76	U	76	U	76	U	76	U
E1668A	52663-70-4	PCB-177	pg/L	T							76	U	76	U	76	U	76	U
E1668A	52663-67-9	PCB-178	pg/L	T							76	U	76	U	76	U	76	U
E1668A	52663-64-6	PCB-179	pg/L	T							76	U	76	U	76	U	76	U
E1668A	PCB18+30	PCB-18+30	pg/L	T							76	U	76	U	76	U	12	J
E1668A	PCB180+193	PCB-180/193	pg/L	T							150	U	150	U	150	U	150	U
E1668A	74472-47-2	PCB-181	pg/L	T							76	U	76	U	76	U	76	U
E1668A	60145-23-5	PCB-182	pg/L	T							76	U	76	U	76	U	76	U
E1668A	PCB183+185	PCB-183+185	pg/L	T							150	UJ	150	U	150	U	150	U
E1668A	74472-48-3	PCB-184	pg/L	T							76	U	76	U	76	U	76	U
E1668A	74472-49-4	PCB-186	pg/L	T							76	U	76	U	76	U	76	U
E1668A	52663-68-0	PCB-187	pg/L	T							76	U	76	U	76	U	76	U
E1668A	74487-85-7	PCB-188	pg/L	T							190	U	190	U	190	U	190	U
E1668A	39635-31-9	PCB-189	pg/L	T							76	U	76	U	76	U	76	U
E1668A	38444-73-4	PCB-19	pg/L	T							38	U	38	U	38	U	38	U
E1668A	41411-64-7	PCB-190	pg/L	T							76	U	76	U	76	U	76	U
E1668A	74472-50-7	PCB-191	pg/L	T							76	U	76	U	76	U	76	U
E1668A	74472-51-8	PCB-192	pg/L	T							76	U	76	U	76	U	76	U
E1668A	35694-08-7	PCB-194	pg/L	T							110	U	110	U	110	U	110	U
E1668A	52663-78-2	PCB-195	pg/L	T							110	U	110	U	110	U	110	U
E1668A	42740-50-1	PCB-196/203	pg/L	T							110	U	110	U	110	U	110	U
E1668A	PCB197+200	PCB-197+200	pg/L	T							230	UJ	230	U	230	U	230	U
E1668A	PCB198+199	PCB-198/199	pg/L	T							230	U	230	U	230	U	230	U
E1668A	2051-61-8	PCB-2	pg/L	T							190	U	190	U	190	U	190	U
E1668A	PCB20+28	PCB20+28	pg/L	T							76	U	76	U	76	U	19	J
E1668A	40186-71-8	PCB-201	pg/L	T							380	U	380	U	380	U	380	U
E1668A	2136-99-4	PCB-202	pg/L	T							110	U	110	U	110	U	110	U
E1668A	74472-52-9	PCB-204	pg/L	T							110	U	110	U	110	U	110	U
E1668A	74472-53-0	PCB-205	pg/L	T							110	U	110	U	110	U	110	U
E1668A	40186-72-9	PCB-206	pg/L	T							110	U	110	U	110	U	110	U
E1668A	52663-79-3	PCB-207	pg/L	T							110	U	110	U	110	U	110	U
E1668A	52663-77-1	PCB-208	pg/L	T							110	U	32	J	110	U	36	J
E1668A	PCB21+33	PCB-21/33	pg/L	T							76	U	76	U	76	U	76	U

					Duplicate of OL-3723-04						
				Location ID	HB-BASELINE-NEW	NMC-RTE48	ONCK-HIA	QC	ONCK-SPENCER	NMC-RTE48	ONCK-HIA
				Field Sample ID	OL-3723-05	OL-3723-06	OL-3723-07	OL-3723-08	OL-3724-01	OL-3724-02	OL-3724-03
				Start Depth (ft)	1.25	1.8	1.5		1.75	2.25	1.5
				End Depth (ft)	1.25	1.8	1.5		1.75	2.25	1.5
				Sampled	12/15/2021	12/15/2021	12/15/2021	12/15/2021	1/5/2022	1/5/2022	1/5/2022
				SDG	410-67305-1	410-67305-1	410-67305-1	410-67305-1	410-68896-1	410-68896-1	410-68896-1
				Lab Sample ID	410-67305-5	410-67305-6	410-67305-7	410-67305-8	410-68896-1	410-68896-3	410-68896-2
				Medium	Water	Water	Water	Water	Water	Water	Water
				Sample Type	FD	REG	REG	EB	REG	REG	REG
				Matrix	SW	SW	SW	WQ	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction							
E1668A	38444-85-8	PCB-22	pg/L	T				38 U	38 U	38 U	5.8 J
E1668A	55720-44-0	PCB-23	pg/L	T				38 U	38 U	38 U	38 U
E1668A	55702-45-9	PCB-24	pg/L	T				38 U	38 U	38 U	38 U
E1668A	55712-37-3	PCB-25	pg/L	T				38 U	38 U	38 U	38 U
E1668A	PCB26+29	PCB26+29	pg/L	T				76 U	76 U	76 U	76 U
E1668A	38444-76-7	PCB-27	pg/L	T				38 U	38 U	38 U	38 U
E1668A	2051-62-9	PCB-3	pg/L	T				190 U	190 U	190 U	190 U
E1668A	16606-02-3	PCB-31	pg/L	T				38 U	38 U	38 U	15 J
E1668A	38444-77-8	PCB-32	pg/L	T				38 U	38 U	38 U	38 U
E1668A	37680-68-5	PCB-34	pg/L	T				38 U	38 U	38 U	38 U
E1668A	37680-69-6	PCB-35	pg/L	T				38 U	38 U	38 U	38 U
E1668A	38444-87-0	PCB-36	pg/L	T				38 U	38 U	38 U	38 U
E1668A	38444-90-5	PCB-37	pg/L	T				38 U	38 U	38 U	38 U
E1668A	53555-66-1	PCB-38	pg/L	T				38 U	38 U	38 U	38 U
E1668A	38444-88-1	PCB-39	pg/L	T				38 U	38 U	38 U	38 U
E1668A	13029-08-8	PCB-4	pg/L	T				38 U	38 U	9.1 J	13 J
E1668A	PCB40+71	PCB40+71	pg/L	T				150 U	150 U	150 U	150 U
E1668A	52663-59-9	PCB-41	pg/L	T				76 U	76 U	76 U	76 U
E1668A	36559-22-5	PCB-42	pg/L	T				76 U	76 U	76 U	76 U
E1668A	70362-46-8	PCB-43	pg/L	T				76 U	76 U	76 U	76 U
E1668A	PCB44+47+65	PCB-44/47/65	pg/L	T				230 U	230 U	230 U	230 U
E1668A	70362-45-7	PCB-45	pg/L	T				76 U	76 U	76 U	76 U
E1668A	41464-47-5	PCB-46	pg/L	T				76 U	76 U	76 U	76 U
E1668A	70362-47-9	PCB-48	pg/L	T				76 U	76 U	76 U	76 U
E1668A	PCB49+69	PCB49+69	pg/L	T				150 U	150 U	150 U	150 U
E1668A	16605-91-7	PCB-5	pg/L	T				38 U	38 U	38 U	38 U
E1668A	PCB50+53	PCB-50/53	pg/L	T				280 U	280 U	280 U	280 U
E1668A	68194-04-7	PCB-51	pg/L	T				76 U	76 U	76 U	76 U
E1668A	35693-99-3	PCB-52	pg/L	T				76 U	76 U	76 U	31 J
E1668A	15968-05-5	PCB-54	pg/L	T				76 U	76 U	76 U	76 U
E1668A	74338-24-2	PCB-55	pg/L	T				76 U	76 U	76 U	76 U
E1668A	41464-43-1	PCB-56	pg/L	T				76 U	76 U	76 U	76 U
E1668A	70424-67-8	PCB-57	pg/L	T				76 U	76 U	76 U	76 U
E1668A	41464-49-7	PCB-58	pg/L	T				76 U	76 U	76 U	76 U
E1668A	PCB59+62+75	PCB-59/62/75	pg/L	T				230 U	230 U	230 U	230 U
E1668A	25569-80-6	PCB-6	pg/L	T				38 U	38 U	38 U	38 U
E1668A	PCB61+046	PCB-61/70/74/76	pg/L	T				300 U	300 U	300 U	300 U
E1668A	74472-34-7	PCB-63	pg/L	T				76 U	76 U	76 U	76 U
E1668A	32598-10-0	PCB-66	pg/L	T				76 U	76 U	76 U	18 J
E1668A	73575-53-8	PCB-67	pg/L	T				76 U	76 U	76 U	76 U
E1668A	73575-52-7	PCB-68	pg/L	T				76 U	76 U	76 U	76 U
E1668A	33284-50-3	PCB-7	pg/L	T				38 U	38 U	38 U	38 U
E1668A	74338-23-1	PCB-73	pg/L	T				76 U	76 U	76 U	76 U
E1668A	32598-13-3	PCB-77	pg/L	T				76 U	76 U	76 U	76 U
E1668A	70362-49-1	PCB-78	pg/L	T				76 U	76 U	76 U	76 U
E1668A	41464-48-6	PCB-79	pg/L	T				76 U	76 U	76 U	76 U
E1668A	34883-43-7	PCB-8	pg/L	T				38 U	38 U	38 U	13 J
E1668A	33284-52-5	PCB-80	pg/L	T				76 U	76 U	76 U	76 U
E1668A	70362-50-4	PCB-81	pg/L	T				76 U	76 U	76 U	76 U
E1668A	52663-62-4	PCB-82	pg/L	T				76 U	76 U	76 U	76 U
E1668A	60145-20-2	PCB-83	pg/L	T				76 U	76 U	76 U	76 U

					Duplicate of OL-3723-04													
				Location ID	HB-BASELINE-NEW		NMC-RTE48		ONCK-HIA		QC		ONCK-SPENCER		NMC-RTE48		ONCK-HIA	
				Field Sample ID	OL-3723-05		OL-3723-06		OL-3723-07		OL-3723-08		OL-3724-01		OL-3724-02		OL-3724-03	
				Start Depth (ft)	1.25		1.8		1.5				1.75		2.25		1.5	
				End Depth (ft)	1.25		1.8		1.5				1.75		2.25		1.5	
				Sampled	12/15/2021		12/15/2021		12/15/2021		12/15/2021		1/5/2022		1/5/2022		1/5/2022	
				SDG	410-67305-1		410-67305-1		410-67305-1		410-67305-1		410-68896-1		410-68896-1		410-68896-1	
				Lab Sample ID	410-67305-5		410-67305-6		410-67305-7		410-67305-8		410-68896-1		410-68896-3		410-68896-2	
				Medium	Water		Water		Water		Water		Water		Water		Water	
				Sample Type	FD		REG		REG		EB		REG		REG		REG	
				Matrix	SW		SW		SW		WQ		SW		SW		SW	
Method	Parameter Code	Parameter Name	Units	Fraction														
E1668A	52663-60-2	PCB-84	pg/L	T							76	U	76	U	76	U	76	U
E1668A	PCB85+116+117	PCB85+116+117	pg/L	T							230	U	230	U	230	U	230	U
E1668A	PCB86+77091925	PCB86+77091925	pg/L	T							450	UJ	460	U	460	U	450	U
E1668A	55215-17-3	PCB-88	pg/L	T							76	U	76	U	76	U	76	U
E1668A	73575-57-2	PCB-89	pg/L	T							76	U	76	U	76	U	76	U
E1668A	34883-39-1	PCB-9	pg/L	T							38	U	38	U	38	U	38	U
E1668A	PCB90+101+113	PCB90+101+113	pg/L	T							230	U	230	U	230	U	230	U
E1668A	68194-05-8	PCB-91	pg/L	T							76	U	76	U	76	U	76	U
E1668A	52663-61-3	PCB-92	pg/L	T							76	U	76	U	76	U	76	U
E1668A	PCB93+100	PCB-93+100	pg/L	T							150	U	150	U	150	U	150	U
E1668A	73575-55-0	PCB-94	pg/L	T							76	U	76	U	76	U	76	U
E1668A	38379-99-6	PCB-95	pg/L	T							76	U	76	U	76	U	24	J
E1668A	73575-54-9	PCB-96	pg/L	T							76	U	76	U	76	U	76	U
E1668A	PCB98+102	PCB-98+102	pg/L	T							190	UJ	190	U	190	U	190	U
E1668A	38380-01-7	PCB-99	pg/L	T							76	U	76	U	76	U	76	U
SM2540D	TSS	Total Suspended Solids	mg/L	T	13	J	4.9		7.9		3	U	6.1		4.8		3	

				Location ID	OL-RAIN-01		OL-RAIN-01		OL-RAIN-01		OL-RAIN-01		QC		QC	
				Field Sample ID	OL-3710-01-P1		OL-3711-01-P2		OL-3711-02-P2		OL-3712-01-P3		OL-3711-03-P2		OL-3712-02-P3	
				Sampled	8/19/2021		9/23/2021		9/23/2021		11/12/2021		9/24/2021		11/12/2021	
				SDG	410-52316-1		410-56680-1		410-56680-1		410-63322-1		410-56680-1		410-63322-1	
				Lab Sample ID	410-52316-1		410-56680-1		410-56680-2		410-63322-1		410-56680-3		410-63322-2	
				Medium	Water		Water		Water		Water		Water		Water	
				Sample Type	REG		REG		FD		REG		EB		EB	
				Matrix	SW		SW		SW		SW		WQ		WQ	
Method	Parameter Code	Parameter Name	Units	Fraction												
E1668A	33146-45-1	10-DiCB	pg/L	T	40	U	39	U	39	U	39	U	40	U	39	U
E1668A	74472-36-9	112-PeCB	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	41411-61-4	142-HXCB	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	68194-15-0	143-HxCB	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	41411-62-5	160-HXCB	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	74472-43-8	161-Hxcb	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	39635-34-2	162-HXCB	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	74472-45-0	164-HxCB	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	74472-46-1	165-HxCB	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	33025-41-1	2,3',4,4'-Tetrachlorobiphenyl	pg/L	T	80	U	78	U	78	U	12	J	79	U	77	U
E1668A	52663-76-0	203-OCCB	pg/L	T	120	U	120	U	120	U	120	U	120	U	120	U
E1668A	52663-58-8	64-TeCB	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	41464-42-0	72-TeCB	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	2051-24-3	DCB Decachlorobiphenyl	pg/L	T	1000	U	970	U	970	U	970	U	990	U	960	U
E1668A	2051-60-7	PCB-1	pg/L	T	200	U	190	U	190	U	190	U	200	U	190	U
E1668A	60145-21-3	PCB-103	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	56558-16-8	PCB-104	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	32598-14-4	PCB-105	pg/L	T	80	U	78	U	78	U	30	J	79	U	77	U
E1668A	70424-69-0	PCB-106/118	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	70424-68-9	PCB-107	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	PCB108+124	PCB-108/124	pg/L	T	160	U	160	U	160	U	160	U	160	U	150	U
E1668A	2050-67-1	PCB-11	pg/L	T	300	U	290	U	290	U	290	U	160	J	170	J
E1668A	PCB110+115	PCB-110+115	pg/L	T	160	U	160	U	160	U	160	U	72	J	150	U
E1668A	39635-32-0	PCB-111	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	74472-37-0	PCB-114	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	31508-00-6	PCB-118	pg/L	T	80	U	78	U	78	U	27	J	20	J	77	U
E1668A	PCB12+13	PCB-12/13	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	68194-12-7	PCB-120	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	56558-18-0	PCB-121	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	76842-07-4	PCB-122	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	65510-44-3	PCB-123	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	57465-28-8	PCB-126	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	39635-33-1	PCB-127	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	PCB128+166	PCB-128/166	pg/L	T	160	U	160	U	160	U	160	U	160	U	150	U
E1668A	PCB129+138+163	PCB129+138+163	pg/L	T	240	U	230	U	230	U	230	U	58	J	230	U
E1668A	52663-66-8	PCB-130	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U

				Location ID	OL-RAIN-01		OL-RAIN-01		OL-RAIN-01		OL-RAIN-01		QC		QC	
				Field Sample ID	OL-3710-01-P1		OL-3711-01-P2		OL-3711-02-P2		OL-3712-01-P3		OL-3711-03-P2		OL-3712-02-P3	
				Sampled	8/19/2021		9/23/2021		9/23/2021		11/12/2021		9/24/2021		11/12/2021	
				SDG	410-52316-1		410-56680-1		410-56680-1		410-63322-1		410-56680-1		410-63322-1	
				Lab Sample ID	410-52316-1		410-56680-1		410-56680-2		410-63322-1		410-56680-3		410-63322-2	
				Medium	Water		Water		Water		Water		Water		Water	
				Sample Type	REG		REG		FD		REG		EB		EB	
				Matrix	SW		SW		SW		SW		WQ		WQ	
Method	Parameter Code	Parameter Name	Units	Fraction												
E1668A	61798-70-7	PCB-131	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	38380-05-1	PCB-132	pg/L	T	80	U	78	U	78	U	78	U	30	J	77	U
E1668A	35694-04-3	PCB-133	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	52704-70-8	PCB-134	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	PCB135+151	PCB135+151	pg/L	T	160	U	160	U	160	U	160	U	80	J	150	U
E1668A	38411-22-2	PCB-136	pg/L	T	80	U	78	U	78	U	78	U	49	J	77	U
E1668A	35694-06-5	PCB-137	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	PCB139+140	PCB-139/140	pg/L	T	160	U	160	U	160	U	160	U	160	U	150	U
E1668A	34883-41-5	PCB-14	pg/L	T	40	U	39	U	39	U	39	U	40	U	39	U
E1668A	52712-04-6	PCB-141	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	68194-14-9	PCB-144	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	74472-40-5	PCB-145	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	51908-16-8	PCB-146	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	PCB147+149	PCB-147/149	pg/L	T	160	U	160	U	160	U	160	U	130	J	150	U
E1668A	74472-41-6	PCB-148	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	2050-68-2	PCB-15	pg/L	T	40	U	39	U	39	U	39	U	16	J	39	U
E1668A	68194-08-1	PCB-150	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	68194-09-2	PCB-152	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	PCB153+168	PCB-153/168	pg/L	T	160	U	160	U	160	U	160	U	74	J	150	U
E1668A	60145-22-4	PCB-154	pg/L	T	200	U	190	U	190	U	190	U	200	U	190	U
E1668A	33979-03-2	PCB-155	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	PCB156+157	PCB-156/157	pg/L	T	160	U	160	U	160	U	160	U	160	U	150	U
E1668A	74472-42-7	PCB-158	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	39635-35-3	PCB-159	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	38444-78-9	PCB-16	pg/L	T	40	U	39	U	39	U	39	U	19	J	7.8	J
E1668A	52663-72-6	PCB-167	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	32774-16-6	PCB-169	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	37680-66-3	PCB-17	pg/L	T	40	U	39	U	39	U	39	U	18	J	8.5	J
E1668A	35065-30-6	PCB-170	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	PCB171+173	PCB-171/173	pg/L	T	160	U	160	U	160	U	160	U	160	U	150	U
E1668A	52663-74-8	PCB-172	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	38411-25-5	PCB-174	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	40186-70-7	PCB-175	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	52663-65-7	PCB-176	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	52663-70-4	PCB-177	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	52663-67-9	PCB-178	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U

				Location ID	OL-RAIN-01		OL-RAIN-01		OL-RAIN-01		OL-RAIN-01		QC		QC	
				Field Sample ID	OL-3710-01-P1		OL-3711-01-P2		OL-3711-02-P2		OL-3712-01-P3		OL-3711-03-P2		OL-3712-02-P3	
				Sampled	8/19/2021		9/23/2021		9/23/2021		11/12/2021		9/24/2021		11/12/2021	
				SDG	410-52316-1		410-56680-1		410-56680-1		410-63322-1		410-56680-1		410-63322-1	
				Lab Sample ID	410-52316-1		410-56680-1		410-56680-2		410-63322-1		410-56680-3		410-63322-2	
				Medium	Water		Water		Water		Water		Water		Water	
				Sample Type	REG		REG		FD		REG		EB		EB	
				Matrix	SW		SW		SW		SW		WQ		WQ	
Method	Parameter Code	Parameter Name	Units	Fraction												
E1668A	52663-64-6	PCB-179	pg/L	T	80	U	78	U	78	U	78	U	20	J	77	U
E1668A	PCB18+30	PCB-18+30	pg/L	T	80	U	78	U	78	U	78	U	30	J	13	J
E1668A	PCB180+193	PCB-180/193	pg/L	T	160	U	160	U	160	U	160	U	160	U	150	U
E1668A	74472-47-2	PCB-181	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	60145-23-5	PCB-182	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	PCB183+185	PCB-183+185	pg/L	T	160	U	160	U	160	U	160	U	160	U	150	U
E1668A	74472-48-3	PCB-184	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	74472-49-4	PCB-186	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	52663-68-0	PCB-187	pg/L	T	80	U	78	U	78	U	78	U	24	J	77	U
E1668A	74487-85-7	PCB-188	pg/L	T	200	U	190	U	190	U	190	U	200	U	190	U
E1668A	39635-31-9	PCB-189	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	38444-73-4	PCB-19	pg/L	T	40	U	39	U	39	U	39	U	8.3	J	39	U
E1668A	41411-64-7	PCB-190	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	74472-50-7	PCB-191	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	74472-51-8	PCB-192	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	35694-08-7	PCB-194	pg/L	T	120	U	120	U	120	U	120	U	120	U	120	U
E1668A	52663-78-2	PCB-195	pg/L	T	120	U	120	U	120	U	120	U	120	U	120	U
E1668A	42740-50-1	PCB-196/203	pg/L	T	120	U	120	U	120	U	120	U	120	U	120	U
E1668A	PCB197+200	PCB-197+200	pg/L	T	240	U	230	U	230	U	230	U	240	U	230	U
E1668A	PCB198+199	PCB-198/199	pg/L	T	240	U	230	U	230	U	230	U	240	U	230	U
E1668A	2051-61-8	PCB-2	pg/L	T	200	U	190	U	190	U	190	U	200	U	190	U
E1668A	PCB20+28	PCB20+28	pg/L	T	80	U	78	U	78	U	78	U	46	J	77	U
E1668A	40186-71-8	PCB-201	pg/L	T	400	U	390	U	390	U	390	U	400	U	390	U
E1668A	2136-99-4	PCB-202	pg/L	T	120	U	120	U	120	U	120	U	120	U	120	U
E1668A	74472-52-9	PCB-204	pg/L	T	120	U	120	U	120	U	120	U	120	U	120	U
E1668A	74472-53-0	PCB-205	pg/L	T	120	U	120	U	120	U	120	U	120	U	120	U
E1668A	40186-72-9	PCB-206	pg/L	T	120	U	120	U	120	U	120	U	120	U	120	U
E1668A	52663-79-3	PCB-207	pg/L	T	120	U	120	U	120	U	120	U	120	U	120	U
E1668A	52663-77-1	PCB-208	pg/L	T	120	U	120	U	120	U	120	U	120	U	120	U
E1668A	PCB21+33	PCB-21/33	pg/L	T	80	U	78	U	78	U	78	U	31	J	12	J
E1668A	38444-85-8	PCB-22	pg/L	T	40	U	39	U	39	U	39	U	19	J	7.1	J
E1668A	55720-44-0	PCB-23	pg/L	T	40	U	39	U	39	U	39	U	40	U	39	U
E1668A	55702-45-9	PCB-24	pg/L	T	40	U	39	U	39	U	39	U	40	U	39	U
E1668A	55712-37-3	PCB-25	pg/L	T	40	U	39	U	39	U	39	U	4.9	J	39	U
E1668A	PCB26+29	PCB26+29	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	38444-76-7	PCB-27	pg/L	T	40	U	39	U	39	U	39	U	40	U	39	U

					OL-RAIN-01	OL-RAIN-01	OL-RAIN-01	OL-RAIN-01	QC	QC
				Location ID	OL-RAIN-01	OL-RAIN-01	OL-RAIN-01	OL-RAIN-01	QC	QC
				Field Sample ID	OL-3710-01-P1	OL-3711-01-P2	OL-3711-02-P2	OL-3712-01-P3	OL-3711-03-P2	OL-3712-02-P3
				Sampled	8/19/2021	9/23/2021	9/23/2021	11/12/2021	9/24/2021	11/12/2021
				SDG	410-52316-1	410-56680-1	410-56680-1	410-63322-1	410-56680-1	410-63322-1
				Lab Sample ID	410-52316-1	410-56680-1	410-56680-2	410-63322-1	410-56680-3	410-63322-2
				Medium	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	FD	REG	EB	EB
				Matrix	SW	SW	SW	SW	WQ	WQ
Method	Parameter Code	Parameter Name	Units	Fraction						
E1668A	2051-62-9	PCB-3	pg/L	T	200 U	190 U	190 U	190 U	200 U	190 U
E1668A	16606-02-3	PCB-31	pg/L	T	40 U	39 U	39 U	39 U	44	14 J
E1668A	38444-77-8	PCB-32	pg/L	T	40 U	39 U	39 U	39 U	16 J	5.6 J
E1668A	37680-68-5	PCB-34	pg/L	T	40 U	39 U	39 U	39 U	40 U	39 U
E1668A	37680-69-6	PCB-35	pg/L	T	40 U	39 U	39 U	39 U	40 U	39 U
E1668A	38444-87-0	PCB-36	pg/L	T	40 U	39 U	39 U	39 U	40 U	39 U
E1668A	38444-90-5	PCB-37	pg/L	T	40 U	39 U	39 U	8.3 J	16 J	39 U
E1668A	53555-66-1	PCB-38	pg/L	T	40 U	39 U	39 U	39 U	40 U	39 U
E1668A	38444-88-1	PCB-39	pg/L	T	40 U	39 U	39 U	39 U	40 U	39 U
E1668A	13029-08-8	PCB-4	pg/L	T	23 J	39 U	39 U	39 U	18 J	39 U
E1668A	PCB40+71	PCB40+71	pg/L	T	160 U	160 U	160 U	160 U	160 U	150 U
E1668A	52663-59-9	PCB-41	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	36559-22-5	PCB-42	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	70362-46-8	PCB-43	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	PCB44+47+65	PCB-44/47/65	pg/L	T	240 U	230 U	230 U	230 U	72 J	230 U
E1668A	70362-45-7	PCB-45	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	41464-47-5	PCB-46	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	70362-47-9	PCB-48	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	PCB49+69	PCB49+69	pg/L	T	160 U	160 U	160 U	160 U	39 J	150 U
E1668A	16605-91-7	PCB-5	pg/L	T	40 U	39 U	39 U	39 U	40 U	39 U
E1668A	PCB50+53	PCB-50/53	pg/L	T	300 U	290 U	290 U	290 U	300 U	290 U
E1668A	68194-04-7	PCB-51	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	35693-99-3	PCB-52	pg/L	T	80 U	78 U	78 U	78 U	83	77 U
E1668A	15968-05-5	PCB-54	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	74338-24-2	PCB-55	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	41464-43-1	PCB-56	pg/L	T	80 U	78 U	78 U	11 J	79 U	77 U
E1668A	70424-67-8	PCB-57	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	41464-49-7	PCB-58	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	PCB59+62+75	PCB-59/62/75	pg/L	T	240 U	230 U	230 U	230 U	240 U	230 U
E1668A	25569-80-6	PCB-6	pg/L	T	40 U	39 U	39 U	39 U	40 U	39 U
E1668A	PCB61+046	PCB-61/70/74/76	pg/L	T	320 U	310 U	310 U	310 U	62 J	310 U
E1668A	74472-34-7	PCB-63	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	32598-10-0	PCB-66	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	73575-53-8	PCB-67	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	73575-52-7	PCB-68	pg/L	T	80 U	78 U	78 U	78 U	79 U	77 U
E1668A	33284-50-3	PCB-7	pg/L	T	40 U	39 U	39 U	39 U	40 U	39 U

				Location ID	OL-RAIN-01		OL-RAIN-01		OL-RAIN-01		OL-RAIN-01		QC		QC	
				Field Sample ID	OL-3710-01-P1		OL-3711-01-P2		OL-3711-02-P2		OL-3712-01-P3		OL-3711-03-P2		OL-3712-02-P3	
				Sampled	8/19/2021		9/23/2021		9/23/2021		11/12/2021		9/24/2021		11/12/2021	
				SDG	410-52316-1		410-56680-1		410-56680-1		410-63322-1		410-56680-1		410-63322-1	
				Lab Sample ID	410-52316-1		410-56680-1		410-56680-2		410-63322-1		410-56680-3		410-63322-2	
				Medium	Water		Water		Water		Water		Water		Water	
				Sample Type	REG		REG		FD		REG		EB		EB	
				Matrix	SW		SW		SW		SW		WQ		WQ	
Method	Parameter Code	Parameter Name	Units	Fraction												
E1668A	74338-23-1	PCB-73	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	32598-13-3	PCB-77	pg/L	T	80	U	78	U	78	U	15	J	79	U	77	U
E1668A	70362-49-1	PCB-78	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	41464-48-6	PCB-79	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	34883-43-7	PCB-8	pg/L	T	40	U	39	U	39	U	39	U	25	J	19	J
E1668A	33284-52-5	PCB-80	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	70362-50-4	PCB-81	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	52663-62-4	PCB-82	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	60145-20-2	PCB-83	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	52663-60-2	PCB-84	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	PCB85+116+117	PCB85+116+117	pg/L	T	240	U	230	U	230	U	230	U	240	U	230	U
E1668A	PCB86+77091925	PCB86+77091925	pg/L	T	480	U	470	U	470	U	470	U	470	U	460	U
E1668A	55215-17-3	PCB-88	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	73575-57-2	PCB-89	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	34883-39-1	PCB-9	pg/L	T	40	U	39	U	39	U	39	U	40	U	39	U
E1668A	PCB90+101+113	PCB90+101+113	pg/L	T	240	U	230	U	230	U	230	U	120	J	230	U
E1668A	68194-05-8	PCB-91	pg/L	T	80	U	78	U	78	U	78	U	25	J	77	U
E1668A	52663-61-3	PCB-92	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	PCB93+100	PCB-93+100	pg/L	T	160	U	160	U	160	U	160	U	160	U	150	U
E1668A	73575-55-0	PCB-94	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	38379-99-6	PCB-95	pg/L	T	80	U	78	U	78	U	18	J	150		77	U
E1668A	73575-54-9	PCB-96	pg/L	T	80	U	78	U	78	U	78	U	79	U	77	U
E1668A	PCB98+102	PCB-98+102	pg/L	T	200	U	190	U	190	U	190	U	200	U	190	U
E1668A	38380-01-7	PCB-99	pg/L	T	80	U	78	U	78	U	78	U	43	J	77	U

				Location ID	DEEP_N		DEEP_N		OL-RAA-SW-01		OL-RAA-SW-01		OL-RAB-SW-01		OL-RAB-SW-01		OL-RAB-SW-02		OL-RAB-SW-02		OL-RAC-SW-01	
				Field Sample ID	OL-3730-01-R1		OL-3730-01-R1		OL-3730-02-R1		OL-3730-02-R1		OL-3730-03-R1		OL-3730-03-R1		OL-3730-04-R1		OL-3730-04-R1		OL-3730-05-R1	
				Start Depth (ft)	6.6		6.6		1.6		1.6		1.6		1.6		1.6		1.6		6.6	
				End Depth (ft)	6.6		6.6		1.6		1.6		1.6		1.6		1.6		1.6		6.6	
				Sampled	9/14/2021		9/14/2021		9/14/2021		9/14/2021		9/14/2021		9/14/2021		9/14/2021		9/14/2021		9/14/2021	
				SDG	1I00066		410-55129-1		1I00066		410-55129-1		1I00066		410-55129-1		1I00066		410-55129-1		1I00066	
				Lab Sample ID	1I00066-01/ 1I00066-02		410-55129-1		1I00066-03/ 1I00066-04		410-55129-2		1I00066-05/ 1I00066-06		410-55129-3		1I00066-07/ 1I00066-08		410-55129-4		1I00066-09/ 1I00066-10	
				Medium	Water		Water		Water		Water		Water		Water		Water		Water		Water	
				Sample Type	REG		REG		REG		REG		REG		REG		REG		REG		REG	
				Matrix	SW		SW		SW		SW		SW		SW		SW		SW		SW	
Method	Parameter Code	Parameter Name	Units	Fraction																		
E1630	22967-92-6	Methyl Mercury	ng/L	T	0.05	U			0.076				0.05	U			0.214				0.11	
E1631	7439-97-6	Mercury	ng/L	T	0.94				1.93				1.02				1.23				0.91	
E1631	7439-97-6	Mercury	ng/L	D	0.63				0.76				0.81				0.84				0.65	
E1668A	33146-45-1	10-DiCB	pg/L	T			39	U			39	U			40	U			40	U		
E1668A	74472-36-9	112-PeCB	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	41411-61-4	142-HXCB	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	68194-15-0	143-HxCB	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	41411-62-5	160-HXCB	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	74472-43-8	161-Hxcb	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	39635-34-2	162-HXCB	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	74472-45-0	164-HxCB	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	74472-46-1	165-HxCB	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	33025-41-1	2,3',4,4'-Tetrachlorobiphenyl	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	52663-76-0	203-OCCB	pg/L	T			120	U			120	U			120	U			120	U		
E1668A	52663-58-8	64-TeCB	pg/L	T			13	J			17	J			14	J			11	J		
E1668A	41464-42-0	72-TeCB	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	2051-24-3	DCB Decachlorobiphenyl	pg/L	T			970	U			970	U			990	U			990	U		
E1668A	2051-60-7	PCB-1	pg/L	T			190	U			190	U			200	U			200	U		
E1668A	60145-21-3	PCB-103	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	56558-16-8	PCB-104	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	32598-14-4	PCB-105	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	70424-69-0	PCB-106/118	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	70424-68-9	PCB-107	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	PCB108+124	PCB-108/124	pg/L	T			160	U			150	U			160	U			160	U		
E1668A	2050-67-1	PCB-11	pg/L	T			290	U			290	U			300	U			300	U		
E1668A	PCB110+115	PCB-110+115	pg/L	T			160	U			150	U			160	U			160	U		
E1668A	39635-32-0	PCB-111	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	74472-37-0	PCB-114	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	31508-00-6	PCB-118	pg/L	T			78	U			14	J			79	U			79	U		
E1668A	PCB12+13	PCB-12/13	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	68194-12-7	PCB-120	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	56558-18-0	PCB-121	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	76842-07-4	PCB-122	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	65510-44-3	PCB-123	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	57465-28-8	PCB-126	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	39635-33-1	PCB-127	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	PCB128+166	PCB-128/166	pg/L	T			160	U			150	U			160	U			160	U		
E1668A	PCB129+138+163	PCB129+138+163	pg/L	T			230	U			230	U			240	U			240	U		
E1668A	52663-66-8	PCB-130	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	61798-70-7	PCB-131	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	38380-05-1	PCB-132	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	35694-04-3	PCB-133	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	52704-70-8	PCB-134	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	PCB135+151	PCB135+151	pg/L	T			160	U			150	U			160	U			160	U		
E1668A	38411-22-2	PCB-136	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	35694-06-5	PCB-137	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	PCB139+140	PCB-139/140	pg/L	T			160	U			150	U			160	U			160	U		
E1668A	34883-41-5	PCB-14	pg/L	T			39	U			39	U			40	U			40	U		
E1668A	52712-04-6	PCB-141	pg/L	T			78	U			77	U			79	U			79	U		
E1668A	68194-14-9	PCB-144	pg/L	T			78	U			77	U			79	U			79	U		

				Location ID	DEEP_N	DEEP_N	OL-RAA-SW-01	OL-RAA-SW-01	OL-RAB-SW-01	OL-RAB-SW-01	OL-RAB-SW-02	OL-RAB-SW-02	OL-RAC-SW-01
				Field Sample ID	OL-3730-01-R1	OL-3730-01-R1	OL-3730-02-R1	OL-3730-02-R1	OL-3730-03-R1	OL-3730-03-R1	OL-3730-04-R1	OL-3730-04-R1	OL-3730-05-R1
				Start Depth (ft)	6.6	6.6	1.6	1.6	1.6	1.6	1.6	1.6	6.6
				End Depth (ft)	6.6	6.6	1.6	1.6	1.6	1.6	1.6	1.6	6.6
				Sampled	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
				SDG	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066
				Lab Sample ID	1I00066-01/ 1I00066-02	410-55129-1	1I00066-03/ 1I00066-04	410-55129-2	1I00066-05/ 1I00066-06	410-55129-3	1I00066-07/ 1I00066-08	410-55129-4	1I00066-09/ 1I00066-10
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	74472-40-5	PCB-145	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	51908-16-8	PCB-146	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	PCB147+149	PCB-147/149	pg/L	T		160 U		150 U		160 U		160 U	
E1668A	74472-41-6	PCB-148	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	2050-68-2	PCB-15	pg/L	T		9.1 J		39 U		9.2 J		40 U	
E1668A	68194-08-1	PCB-150	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	68194-09-2	PCB-152	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	PCB153+168	PCB-153/168	pg/L	T		160 U		150 U		160 U		160 U	
E1668A	60145-22-4	PCB-154	pg/L	T		190 U		190 U		200 U		200 U	
E1668A	33979-03-2	PCB-155	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	PCB156+157	PCB-156/157	pg/L	T		160 U		150 U		160 U		160 U	
E1668A	74472-42-7	PCB-158	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	39635-35-3	PCB-159	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	38444-78-9	PCB-16	pg/L	T		11 J		8 J		9.7 J		7.3 J	
E1668A	52663-72-6	PCB-167	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	32774-16-6	PCB-169	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	37680-66-3	PCB-17	pg/L	T		25 J		8.8 J		18 J		19 J	
E1668A	35065-30-6	PCB-170	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	PCB171+173	PCB-171/173	pg/L	T		160 U		150 U		160 U		160 U	
E1668A	52663-74-8	PCB-172	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	38411-25-5	PCB-174	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	40186-70-7	PCB-175	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	52663-65-7	PCB-176	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	52663-70-4	PCB-177	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	52663-67-9	PCB-178	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	52663-64-6	PCB-179	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	PCB18+30	PCB-18+30	pg/L	T		31 J		17 J		30 J		25 J	
E1668A	PCB180+193	PCB-180/193	pg/L	T		160 U		150 U		160 U		160 U	
E1668A	74472-47-2	PCB-181	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	60145-23-5	PCB-182	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	PCB183+185	PCB-183+185	pg/L	T		160 U		150 U		160 U		160 U	
E1668A	74472-48-3	PCB-184	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	74472-49-4	PCB-186	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	52663-68-0	PCB-187	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	74487-85-7	PCB-188	pg/L	T		190 U		190 U		200 U		200 U	
E1668A	39635-31-9	PCB-189	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	38444-73-4	PCB-19	pg/L	T		13 J		39 U		13 J		12 J	
E1668A	41411-64-7	PCB-190	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	74472-50-7	PCB-191	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	74472-51-8	PCB-192	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	35694-08-7	PCB-194	pg/L	T		120 U		120 U		120 U		120 U	
E1668A	52663-78-2	PCB-195	pg/L	T		120 U		120 U		120 U		120 U	
E1668A	42740-50-1	PCB-196/203	pg/L	T		120 U		120 U		120 U		120 U	
E1668A	PCB197+200	PCB-197+200	pg/L	T		230 U		230 U		240 U		240 U	
E1668A	PCB198+199	PCB-198/199	pg/L	T		230 U		230 U		240 U		240 U	
E1668A	2051-61-8	PCB-2	pg/L	T		190 U		190 U		200 U		200 U	
E1668A	PCB20+28	PCB20+28	pg/L	T		23 J		24 J		26 J		21 J	
E1668A	40186-71-8	PCB-201	pg/L	T		390 U		390 U		400 U		400 U	
E1668A	2136-99-4	PCB-202	pg/L	T		120 U		120 U		120 U		120 U	
E1668A	74472-52-9	PCB-204	pg/L	T		120 U		120 U		120 U		120 U	

				Location ID	DEEP_N	DEEP_N	OL-RAA-SW-01	OL-RAA-SW-01	OL-RAB-SW-01	OL-RAB-SW-01	OL-RAB-SW-02	OL-RAB-SW-02	OL-RAC-SW-01
				Field Sample ID	OL-3730-01-R1	OL-3730-01-R1	OL-3730-02-R1	OL-3730-02-R1	OL-3730-03-R1	OL-3730-03-R1	OL-3730-04-R1	OL-3730-04-R1	OL-3730-05-R1
				Start Depth (ft)	6.6	6.6	1.6	1.6	1.6	1.6	1.6	1.6	6.6
				End Depth (ft)	6.6	6.6	1.6	1.6	1.6	1.6	1.6	1.6	6.6
				Sampled	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
				SDG	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066
				Lab Sample ID	1I00066-01/ 1I00066-02	410-55129-1	1I00066-03/ 1I00066-04	410-55129-2	1I00066-05/ 1I00066-06	410-55129-3	1I00066-07/ 1I00066-08	410-55129-4	1I00066-09/ 1I00066-10
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	74472-53-0	PCB-205	pg/L	T		120 U		120 U		120 U		120 U	
E1668A	40186-72-9	PCB-206	pg/L	T		120 U		120 U		120 U		120 U	
E1668A	52663-79-3	PCB-207	pg/L	T		120 U		120 U		120 U		120 U	
E1668A	52663-77-1	PCB-208	pg/L	T		120 U		120 U		120 U		120 U	
E1668A	PCB21+33	PCB-21/33	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	38444-85-8	PCB-22	pg/L	T		6.2 J		6.9 J		6.8 J		40 U	
E1668A	55720-44-0	PCB-23	pg/L	T		39 U		39 U		40 U		40 U	
E1668A	55702-45-9	PCB-24	pg/L	T		39 U		39 U		40 U		40 U	
E1668A	55712-37-3	PCB-25	pg/L	T		10 J		39 U		9.8 J		8.7 J	
E1668A	PCB26+29	PCB26+29	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	38444-76-7	PCB-27	pg/L	T		9.4 J		39 U		8.5 J		7.9 J	
E1668A	2051-62-9	PCB-3	pg/L	T		190 U		190 U		200 U		200 U	
E1668A	16606-02-3	PCB-31	pg/L	T		30 J		22 J		30 J		26 J	
E1668A	38444-77-8	PCB-32	pg/L	T		12 J		5.4 J		8.6 J		8.5 J	
E1668A	37680-68-5	PCB-34	pg/L	T		39 U		39 U		40 U		40 U	
E1668A	37680-69-6	PCB-35	pg/L	T		39 U		39 U		40 U		40 U	
E1668A	38444-87-0	PCB-36	pg/L	T		39 U		39 U		40 U		40 U	
E1668A	38444-90-5	PCB-37	pg/L	T		39 U		39 U		40 U		40 U	
E1668A	53555-66-1	PCB-38	pg/L	T		39 U		39 U		40 U		40 U	
E1668A	38444-88-1	PCB-39	pg/L	T		39 U		39 U		40 U		40 U	
E1668A	13029-08-8	PCB-4	pg/L	T		44		7.9 J		40		38 J	
E1668A	PCB40+71	PCB40+71	pg/L	T		160 U		150 U		160 U		160 U	
E1668A	52663-59-9	PCB-41	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	36559-22-5	PCB-42	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	70362-46-8	PCB-43	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	PCB44+47+65	PCB-44/47/65	pg/L	T		40 J		38 J		39 J		240 U	
E1668A	70362-45-7	PCB-45	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	41464-47-5	PCB-46	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	70362-47-9	PCB-48	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	PCB49+69	PCB49+69	pg/L	T		27 J		150 U		30 J		25 J	
E1668A	16605-91-7	PCB-5	pg/L	T		39 U		39 U		40 U		40 U	
E1668A	PCB50+53	PCB-50/53	pg/L	T		290 U		290 U		300 U		300 U	
E1668A	68194-04-7	PCB-51	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	35693-99-3	PCB-52	pg/L	T		48 J		45 J		49 J		41 J	
E1668A	15968-05-5	PCB-54	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	74338-24-2	PCB-55	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	41464-43-1	PCB-56	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	70424-67-8	PCB-57	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	41464-49-7	PCB-58	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	PCB59+62+75	PCB-59/62/75	pg/L	T		230 U		230 U		240 U		240 U	
E1668A	25569-80-6	PCB-6	pg/L	T		39 U		39 U		40 U		40 U	
E1668A	PCB61+046	PCB-61/70/74/76	pg/L	T		310 U		310 U		320 U		320 U	
E1668A	74472-34-7	PCB-63	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	32598-10-0	PCB-66	pg/L	T		78 U		19 J		11 J		79 U	
E1668A	73575-53-8	PCB-67	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	73575-52-7	PCB-68	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	33284-50-3	PCB-7	pg/L	T		39 U		39 U		40 U		40 U	
E1668A	74338-23-1	PCB-73	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	32598-13-3	PCB-77	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	70362-49-1	PCB-78	pg/L	T		78 U		77 U		79 U		79 U	

				Location ID	DEEP_N	DEEP_N	OL-RAA-SW-01	OL-RAA-SW-01	OL-RAB-SW-01	OL-RAB-SW-01	OL-RAB-SW-02	OL-RAB-SW-02	OL-RAC-SW-01
				Field Sample ID	OL-3730-01-R1	OL-3730-01-R1	OL-3730-02-R1	OL-3730-02-R1	OL-3730-03-R1	OL-3730-03-R1	OL-3730-04-R1	OL-3730-04-R1	OL-3730-05-R1
				Start Depth (ft)	6.6	6.6	1.6	1.6	1.6	1.6	1.6	1.6	6.6
				End Depth (ft)	6.6	6.6	1.6	1.6	1.6	1.6	1.6	1.6	6.6
				Sampled	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
				SDG	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066
				Lab Sample ID	1I00066-01/ 1I00066-02	410-55129-1	1I00066-03/ 1I00066-04	410-55129-2	1I00066-05/ 1I00066-06	410-55129-3	1I00066-07/ 1I00066-08	410-55129-4	1I00066-09/ 1I00066-10
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	41464-48-6	PCB-79	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	34883-43-7	PCB-8	pg/L	T		39 U		39 U		40 U		40 U	
E1668A	33284-52-5	PCB-80	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	70362-50-4	PCB-81	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	52663-62-4	PCB-82	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	60145-20-2	PCB-83	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	52663-60-2	PCB-84	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	PCB85+116+117	PCB85+116+117	pg/L	T		230 U		230 U		240 U		240 U	
E1668A	PCB86+77091925	PCB86+77091925	pg/L	T		470 U		460 U		470 U		470 U	
E1668A	55215-17-3	PCB-88	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	73575-57-2	PCB-89	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	34883-39-1	PCB-9	pg/L	T		39 U		39 U		40 U		40 U	
E1668A	PCB90+101+113	PCB90+101+113	pg/L	T		230 U		230 U		240 U		240 U	
E1668A	68194-05-8	PCB-91	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	52663-61-3	PCB-92	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	PCB93+100	PCB-93+100	pg/L	T		160 U		150 U		160 U		160 U	
E1668A	73575-55-0	PCB-94	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	38379-99-6	PCB-95	pg/L	T		20 J		27 J		20 J		17 J	
E1668A	73575-54-9	PCB-96	pg/L	T		78 U		77 U		79 U		79 U	
E1668A	PCB98+102	PCB-98+102	pg/L	T		190 U		190 U		200 U		200 U	
E1668A	38380-01-7	PCB-99	pg/L	T		78 U		77 U		79 U		79 U	
SM2540D	TSS	Total Suspended Solids	mg/L	T		1.3 J		5.5		1.4 J		2 J	

				Location ID	OL-RAC-SW-01	OL-RAC-SW-02	OL-RAC-SW-02	OL-RAD-SW-01	OL-RAD-SW-01	OL-RAD-SW-02	OL-RAD-SW-02	OL-RAE-SW-01	OL-RAE-SW-01
				Field Sample ID	OL-3730-05-R1	OL-3730-06-R1	OL-3730-06-R1	OL-3730-07-R1	OL-3730-07-R1	OL-3730-08-R1	OL-3730-08-R1	OL-3730-09-R1	OL-3730-09-R1
				Start Depth (ft)	6.6	3.3	3.3	4.9	4.9	2.5	2.5	1.6	1.6
				End Depth (ft)	6.6	3.3	3.3	4.9	4.9	2.5	2.5	1.6	1.6
				Sampled	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
				SDG	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1
				Lab Sample ID	410-55129-5	1I00066-11/ 1I00066-12	410-55129-6	1I00066-13/ 1I00066-14	410-55129-7	1I00066-15/ 1I00066-16	410-55129-8	1I00066-17	410-55129-9
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1630	22967-92-6	Methyl Mercury	ng/L	T		0.259		0.087		0.072		0.198	
E1631	7439-97-6	Mercury	ng/L	T		1.01		1.75		1.14		1.03	
E1631	7439-97-6	Mercury	ng/L	D		0.76		0.77		1.34		R	
E1668A	33146-45-1	10-DiCB	pg/L	T	39 U		39 U		39 U		39 U		39 U
E1668A	74472-36-9	112-PeCB	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	41411-61-4	142-HXCB	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	68194-15-0	143-HxCB	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	41411-62-5	160-HXCB	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	74472-43-8	161-Hxcb	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	39635-34-2	162-HXCB	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	74472-45-0	164-HxCB	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	74472-46-1	165-HxCB	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	33025-41-1	2,3',4,4'-Tetrachlorobiphenyl	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	52663-76-0	203-OCCB	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	52663-58-8	64-TeCB	pg/L	T	17 J		14 J		15 J		16 J		19 J
E1668A	41464-42-0	72-TeCB	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	2051-24-3	DCB Decachlorobiphenyl	pg/L	T	970 U		970 U		970 U		970 U		980 U
E1668A	2051-60-7	PCB-1	pg/L	T	190 U		190 U		190 U		190 U		200 U
E1668A	60145-21-3	PCB-103	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	56558-16-8	PCB-104	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	32598-14-4	PCB-105	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	70424-69-0	PCB-106/118	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	70424-68-9	PCB-107	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB108+124	PCB-108/124	pg/L	T	150 U		160 U		160 U		160 U		160 U
E1668A	2050-67-1	PCB-11	pg/L	T	290 U		290 U		290 U		290 U		290 U
E1668A	PCB110+115	PCB-110+115	pg/L	T	150 U		160 U		160 U		160 U		160 U
E1668A	39635-32-0	PCB-111	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	74472-37-0	PCB-114	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	31508-00-6	PCB-118	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB12+13	PCB-12/13	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	68194-12-7	PCB-120	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	56558-18-0	PCB-121	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	76842-07-4	PCB-122	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	65510-44-3	PCB-123	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	57465-28-8	PCB-126	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	39635-33-1	PCB-127	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB128+166	PCB-128/166	pg/L	T	150 U		160 U		160 U		160 U		160 U
E1668A	PCB129+138+163	PCB129+138+163	pg/L	T	230 U		230 U		230 U		230 U		240 U
E1668A	52663-66-8	PCB-130	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	61798-70-7	PCB-131	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	38380-05-1	PCB-132	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	35694-04-3	PCB-133	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	52704-70-8	PCB-134	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB135+151	PCB135+151	pg/L	T	150 U		160 U		160 U		160 U		160 U
E1668A	38411-22-2	PCB-136	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	35694-06-5	PCB-137	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB139+140	PCB-139/140	pg/L	T	150 U		160 U		160 U		160 U		160 U
E1668A	34883-41-5	PCB-14	pg/L	T	39 U		39 U		39 U		39 U		39 U
E1668A	52712-04-6	PCB-141	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	68194-14-9	PCB-144	pg/L	T	77 U		78 U		78 U		78 U		79 U

				Location ID	OL-RAC-SW-01	OL-RAC-SW-02	OL-RAC-SW-02	OL-RAD-SW-01	OL-RAD-SW-01	OL-RAD-SW-02	OL-RAD-SW-02	OL-RAE-SW-01	OL-RAE-SW-01
				Field Sample ID	OL-3730-05-R1	OL-3730-06-R1	OL-3730-06-R1	OL-3730-07-R1	OL-3730-07-R1	OL-3730-08-R1	OL-3730-08-R1	OL-3730-09-R1	OL-3730-09-R1
				Start Depth (ft)	6.6	3.3	3.3	4.9	4.9	2.5	2.5	1.6	1.6
				End Depth (ft)	6.6	3.3	3.3	4.9	4.9	2.5	2.5	1.6	1.6
				Sampled	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
				SDG	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1
				Lab Sample ID	410-55129-5	1I00066-11/ 1I00066-12	410-55129-6	1I00066-13/ 1I00066-14	410-55129-7	1I00066-15/ 1I00066-16	410-55129-8	1I00066-17	410-55129-9
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	74472-40-5	PCB-145	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	51908-16-8	PCB-146	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB147+149	PCB-147/149	pg/L	T	150 U		160 U		160 U		160 U		160 U
E1668A	74472-41-6	PCB-148	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	2050-68-2	PCB-15	pg/L	T	11 J		10 J		10 J		12 J		14 J
E1668A	68194-08-1	PCB-150	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	68194-09-2	PCB-152	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB153+168	PCB-153/168	pg/L	T	150 U		160 U		160 U		160 U		160 U
E1668A	60145-22-4	PCB-154	pg/L	T	190 U		190 U		190 U		190 U		200 U
E1668A	33979-03-2	PCB-155	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB156+157	PCB-156/157	pg/L	T	150 U		160 U		160 U		160 U		160 U
E1668A	74472-42-7	PCB-158	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	39635-35-3	PCB-159	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	38444-78-9	PCB-16	pg/L	T	11 J		9.9 J		11 J		11 J		12 J
E1668A	52663-72-6	PCB-167	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	32774-16-6	PCB-169	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	37680-66-3	PCB-17	pg/L	T	26 J		16 J		26 J		25 J		25 J
E1668A	35065-30-6	PCB-170	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB171+173	PCB-171/173	pg/L	T	150 U		160 U		160 U		160 U		160 U
E1668A	52663-74-8	PCB-172	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	38411-25-5	PCB-174	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	40186-70-7	PCB-175	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	52663-65-7	PCB-176	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	52663-70-4	PCB-177	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	52663-67-9	PCB-178	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	52663-64-6	PCB-179	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB18+30	PCB-18+30	pg/L	T	31 J		29 J		34 J		32 J		33 J
E1668A	PCB180+193	PCB-180/193	pg/L	T	150 U		160 U		160 U		160 U		160 U
E1668A	74472-47-2	PCB-181	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	60145-23-5	PCB-182	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB183+185	PCB-183+185	pg/L	T	150 U		160 U		160 U		160 U		160 U
E1668A	74472-48-3	PCB-184	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	74472-49-4	PCB-186	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	52663-68-0	PCB-187	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	74487-85-7	PCB-188	pg/L	T	190 U		190 U		190 U		190 U		200 U
E1668A	39635-31-9	PCB-189	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	38444-73-4	PCB-19	pg/L	T	15 J		12 J		13 J		13 J		14 J
E1668A	41411-64-7	PCB-190	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	74472-50-7	PCB-191	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	74472-51-8	PCB-192	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	35694-08-7	PCB-194	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	52663-78-2	PCB-195	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	42740-50-1	PCB-196/203	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	PCB197+200	PCB-197+200	pg/L	T	230 U		230 U		230 U		230 U		240 U
E1668A	PCB198+199	PCB-198/199	pg/L	T	230 U		230 U		230 U		230 U		240 U
E1668A	2051-61-8	PCB-2	pg/L	T	190 U		190 U		190 U		190 U		200 U
E1668A	PCB20+28	PCB20+28	pg/L	T	27 J		26 J		30 J		30 J		35 J
E1668A	40186-71-8	PCB-201	pg/L	T	390 U		390 U		390 U		390 U		390 U
E1668A	2136-99-4	PCB-202	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	74472-52-9	PCB-204	pg/L	T	120 U		120 U		120 U		120 U		120 U

Method	Parameter Code	Parameter Name	Units	Fraction									
				Location ID	OL-RAC-SW-01	OL-RAC-SW-02	OL-RAC-SW-02	OL-RAD-SW-01	OL-RAD-SW-01	OL-RAD-SW-02	OL-RAD-SW-02	OL-RAE-SW-01	OL-RAE-SW-01
				Field Sample ID	OL-3730-05-R1	OL-3730-06-R1	OL-3730-06-R1	OL-3730-07-R1	OL-3730-07-R1	OL-3730-08-R1	OL-3730-08-R1	OL-3730-09-R1	OL-3730-09-R1
				Start Depth (ft)	6.6	3.3	3.3	4.9	4.9	2.5	2.5	1.6	1.6
				End Depth (ft)	6.6	3.3	3.3	4.9	4.9	2.5	2.5	1.6	1.6
				Sampled	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
				SDG	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1
				Lab Sample ID	410-55129-5	1I00066-11/ 1I00066-12	410-55129-6	1I00066-13/ 1I00066-14	410-55129-7	1I00066-15/ 1I00066-16	410-55129-8	1I00066-17	410-55129-9
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
E1668A	74472-53-0	PCB-205	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	40186-72-9	PCB-206	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	52663-79-3	PCB-207	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	52663-77-1	PCB-208	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	PCB21+33	PCB-21/33	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	38444-85-8	PCB-22	pg/L	T	7.5 J		6.5 J		8.2 J		7.1 J		9.4 J
E1668A	55720-44-0	PCB-23	pg/L	T	39 U		39 U		39 U		39 U		39 U
E1668A	55702-45-9	PCB-24	pg/L	T	39 U		39 U		39 U		39 U		39 U
E1668A	55712-37-3	PCB-25	pg/L	T	12 J		11 J		12 J		13 J		15 J
E1668A	PCB26+29	PCB26+29	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	38444-76-7	PCB-27	pg/L	T	9.9 J		8.8 J		9.4 J		9.4 J		11 J
E1668A	2051-62-9	PCB-3	pg/L	T	190 U		190 U		190 U		190 U		200 U
E1668A	16606-02-3	PCB-31	pg/L	T	36 J		32 J		37 J		37 J		42
E1668A	38444-77-8	PCB-32	pg/L	T	15 J		6.6 J		15 J		15 J		16 J
E1668A	37680-68-5	PCB-34	pg/L	T	39 U		39 U		39 U		39 U		39 U
E1668A	37680-69-6	PCB-35	pg/L	T	39 U		39 U		39 U		39 U		39 U
E1668A	38444-87-0	PCB-36	pg/L	T	39 U		39 U		39 U		39 U		39 U
E1668A	38444-90-5	PCB-37	pg/L	T	39 U		39 U		39 U		39 U		5.8 J
E1668A	53555-66-1	PCB-38	pg/L	T	39 U		39 U		39 U		39 U		39 U
E1668A	38444-88-1	PCB-39	pg/L	T	39 U		39 U		39 U		39 U		39 U
E1668A	13029-08-8	PCB-4	pg/L	T	49		34 J		47		48		52 J
E1668A	PCB40+71	PCB40+71	pg/L	T	150 U		160 U		160 U		160 U		21 J
E1668A	52663-59-9	PCB-41	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	36559-22-5	PCB-42	pg/L	T	77 U		78 U		78 U		14 J		14 J
E1668A	70362-46-8	PCB-43	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB44+47+65	PCB-44/47/65	pg/L	T	46 J		38 J		44 J		43 J		47 J
E1668A	70362-45-7	PCB-45	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	41464-47-5	PCB-46	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	70362-47-9	PCB-48	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB49+69	PCB49+69	pg/L	T	33 J		28 J		32 J		31 J		34 J
E1668A	16605-91-7	PCB-5	pg/L	T	39 U		39 U		39 U		39 U		39 U
E1668A	PCB50+53	PCB-50/53	pg/L	T	290 U		290 U		290 U		290 U		290 U
E1668A	68194-04-7	PCB-51	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	35693-99-3	PCB-52	pg/L	T	54 J		50 J		56 J		57 J		61 J
E1668A	15968-05-5	PCB-54	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	74338-24-2	PCB-55	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	41464-43-1	PCB-56	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	70424-67-8	PCB-57	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	41464-49-7	PCB-58	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB59+62+75	PCB-59/62/75	pg/L	T	230 U		230 U		230 U		230 U		240 U
E1668A	25569-80-6	PCB-6	pg/L	T	39 U		39 U		39 U		39 U		39 U
E1668A	PCB61+046	PCB-61/70/74/76	pg/L	T	310 U		310 U		310 U		310 U		310 U
E1668A	74472-34-7	PCB-63	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	32598-10-0	PCB-66	pg/L	T	12 J		12 J		13 J		12 J		16 J
E1668A	73575-53-8	PCB-67	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	73575-52-7	PCB-68	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	33284-50-3	PCB-7	pg/L	T	39 U		39 U		39 U		39 U		39 U
E1668A	74338-23-1	PCB-73	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	32598-13-3	PCB-77	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	70362-49-1	PCB-78	pg/L	T	77 U		78 U		78 U		78 U		79 U

Location ID					OL-RAC-SW-01	OL-RAC-SW-02	OL-RAC-SW-02	OL-RAD-SW-01	OL-RAD-SW-01	OL-RAD-SW-02	OL-RAD-SW-02	OL-RAE-SW-01	OL-RAE-SW-01
Field Sample ID					OL-3730-05-R1	OL-3730-06-R1	OL-3730-06-R1	OL-3730-07-R1	OL-3730-07-R1	OL-3730-08-R1	OL-3730-08-R1	OL-3730-09-R1	OL-3730-09-R1
Start Depth (ft)					6.6	3.3	3.3	4.9	4.9	2.5	2.5	1.6	1.6
End Depth (ft)					6.6	3.3	3.3	4.9	4.9	2.5	2.5	1.6	1.6
Sampled					9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
SDG					410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	410-55129-1
Lab Sample ID					410-55129-5	1I00066-11/ 1I00066-12	410-55129-6	1I00066-13/ 1I00066-14	410-55129-7	1I00066-15/ 1I00066-16	410-55129-8	1I00066-17	410-55129-9
Medium					Water	Water	Water	Water	Water	Water	Water	Water	Water
Sample Type					REG	REG	REG	REG	REG	REG	REG	REG	REG
Matrix					SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	41464-48-6	PCB-79	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	34883-43-7	PCB-8	pg/L	T	39 U		39 U		11 J		39 U		13 J
E1668A	33284-52-5	PCB-80	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	70362-50-4	PCB-81	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	52663-62-4	PCB-82	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	60145-20-2	PCB-83	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	52663-60-2	PCB-84	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB85+116+117	PCB85+116+117	pg/L	T	230 U		230 U		230 U		230 U		240 U
E1668A	PCB86+77091925	PCB86+77091925	pg/L	T	460 U		470 U		470 U		470 U		470 U
E1668A	55215-17-3	PCB-88	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	73575-57-2	PCB-89	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	34883-39-1	PCB-9	pg/L	T	39 U		39 U		39 U		39 U		39 U
E1668A	PCB90+101+113	PCB90+101+113	pg/L	T	230 U		230 U		230 U		230 U		240 U
E1668A	68194-05-8	PCB-91	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	52663-61-3	PCB-92	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB93+100	PCB-93+100	pg/L	T	150 U		160 U		160 U		160 U		160 U
E1668A	73575-55-0	PCB-94	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	38379-99-6	PCB-95	pg/L	T	20 J		18 J		23 J		22 J		24 J
E1668A	73575-54-9	PCB-96	pg/L	T	77 U		78 U		78 U		78 U		79 U
E1668A	PCB98+102	PCB-98+102	pg/L	T	190 U		190 U		190 U		190 U		200 U
E1668A	38380-01-7	PCB-99	pg/L	T	77 U		78 U		78 U		78 U		79 U
SM2540D	TSS	Total Suspended Solids	mg/L	T	1.8 J		1.1 J		1.7 J		1.6 J		1.7 J

															Duplicate of OL-3730-12-R1				Duplicate of OL-3730-12-R1			
				Location ID	OL-RAE-SW-02		OL-RAE-SW-02		OL-RAE-SW-03		OL-RAE-SW-03		DEEP_S		DEEP_S		DEEP_S		DEEP_S		QC	
				Field Sample ID	OL-3730-10-R1		OL-3730-10-R1		OL-3730-11-R1		OL-3730-11-R1		OL-3730-12-R1		OL-3730-13-R1		OL-3730-12-R1		OL-3730-13-R1		OL-3730-14-R1	
				Start Depth (ft)	1.6		1.6		1.6		1.6		6.6		6.6		6.6		6.6			
				End Depth (ft)	1.6		1.6		1.6		1.6		6.6		6.6		6.6		6.6			
				Sampled	9/14/2021		9/14/2021		9/14/2021		9/14/2021		9/14/2021		9/14/2021		9/14/2021		9/14/2021		9/14/2021	
				SDG	1I00066		410-55129-1		1I00066		410-55129-1		1I00066		1I00066		410-55129-1		410-55129-1		1I00066	
				Lab Sample ID	1I00066-19		410-55129-10		1I00066-21/ 1I00066-22		410-55129-11		1I00066-23/ 1I00066-24		1I00066-25/ 1I00066-26		410-55129-12		410-55129-13		1I00066-27/ 1I00066-28	
				Medium	Water		Water		Water		Water		Water		Water		Water		Water		Water	
				Sample Type	REG		REG		REG		REG		REG		FD		REG		FD		FB	
				Matrix	SW		SW		SW		SW		SW		SW		SW		SW		WQ	
Method	Parameter Code	Parameter Name	Units	Fraction																		
E1630	22967-92-6	Methyl Mercury	ng/L	T	0.061	U			0.054	U			0.118	J	0.075	J					0.068	
E1631	7439-97-6	Mercury	ng/L	T	0.97				1.23				0.77	J	1.26	J					0.74	
E1631	7439-97-6	Mercury	ng/L	D		R			1.68				0.65	J	0.92	J					0.23	J
E1668A	33146-45-1	10-DiCB	pg/L	T			39	U			39						39	U	40	U		
E1668A	74472-36-9	112-PeCB	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	41411-61-4	142-HXCB	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	68194-15-0	143-HxCB	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	41411-62-5	160-HXCB	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	74472-43-8	161-Hxcb	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	39635-34-2	162-HXCB	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	74472-45-0	164-HxCB	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	74472-46-1	165-HxCB	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	33025-41-1	2,3',4,4'-Tetrachlorobiphenyl	pg/L	T			78	U			18	J					77	U	80	U		
E1668A	52663-76-0	203-OCCB	pg/L	T			120	U			120	U					120	U	120	U		
E1668A	52663-58-8	64-TeCB	pg/L	T			28	J			200						18	J	13	J		
E1668A	41464-42-0	72-TeCB	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	2051-24-3	DCB Decachlorobiphenyl	pg/L	T			970	U			960	U					970	U	990	U		
E1668A	2051-60-7	PCB-1	pg/L	T			190	U			210						190	U	200	U		
E1668A	60145-21-3	PCB-103	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	56558-16-8	PCB-104	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	32598-14-4	PCB-105	pg/L	T			78	U			29	J					77	U	80	U		
E1668A	70424-69-0	PCB-106/118	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	70424-68-9	PCB-107	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	PCB108+124	PCB-108/124	pg/L	T			160	U			150	U					150	U	160	U		
E1668A	2050-67-1	PCB-11	pg/L	T			290	U			290	U					290	U	300	U		
E1668A	PCB110+115	PCB-110+115	pg/L	T			160	U			180						150	U	160	U		
E1668A	39635-32-0	PCB-111	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	74472-37-0	PCB-114	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	31508-00-6	PCB-118	pg/L	T			78	U			69	J					14	J	80	U		
E1668A	PCB12+13	PCB-12/13	pg/L	T			78	U			150						77	U	80	U		
E1668A	68194-12-7	PCB-120	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	56558-18-0	PCB-121	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	76842-07-4	PCB-122	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	65510-44-3	PCB-123	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	57465-28-8	PCB-126	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	39635-33-1	PCB-127	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	PCB128+166	PCB-128/166	pg/L	T			160	U			150	U					150	U	160	U		
E1668A	PCB129+138+163	PCB129+138+163	pg/L	T			230	U			77	J					230	U	240	U		
E1668A	52663-66-8	PCB-130	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	61798-70-7	PCB-131	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	38380-05-1	PCB-132	pg/L	T			78	U			27	J					77	U	80	U		
E1668A	35694-04-3	PCB-133	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	52704-70-8	PCB-134	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	PCB135+151	PCB135+151	pg/L	T			160	U			150	U					150	U	160	U		
E1668A	38411-22-2	PCB-136	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	35694-06-5	PCB-137	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	PCB139+140	PCB-139/140	pg/L	T			160	U			150	U					150	U	160	U		
E1668A	34883-41-5	PCB-14	pg/L	T			39	U			39	U					39	U	40	U		
E1668A	52712-04-6	PCB-141	pg/L	T			78	U			77	U					77	U	80	U		
E1668A	68194-14-9	PCB-144	pg/L	T			78	U			77	U					77	U	80	U		

				Location ID	OL-RAE-SW-02	OL-RAE-SW-02	OL-RAE-SW-03	OL-RAE-SW-03	DEEP_S	Duplicate of OL-3730-12-R1 DEEP_S	DEEP_S	Duplicate of OL-3730-12-R1 DEEP_S	QC
				Field Sample ID	OL-3730-10-R1	OL-3730-10-R1	OL-3730-11-R1	OL-3730-11-R1	OL-3730-12-R1	OL-3730-13-R1	OL-3730-12-R1	OL-3730-13-R1	OL-3730-14-R1
				Start Depth (ft)	1.6	1.6	1.6	1.6	6.6	6.6	6.6	6.6	
				End Depth (ft)	1.6	1.6	1.6	1.6	6.6	6.6	6.6	6.6	
				Sampled	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
				SDG	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	1I00066	410-55129-1	410-55129-1	1I00066
				Lab Sample ID	1I00066-19	410-55129-10	1I00066-21/ 1I00066-22	410-55129-11	1I00066-23/ 1I00066-24	1I00066-25/ 1I00066-26	410-55129-12	410-55129-13	1I00066-27/ 1I00066-28
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	FD	REG	FD	FB
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	WQ
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	74472-40-5	PCB-145	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	51908-16-8	PCB-146	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	PCB147+149	PCB-147/149	pg/L	T		160 U		68 J			150 U	160 U	
E1668A	74472-41-6	PCB-148	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	2050-68-2	PCB-15	pg/L	T		19 J		450			22 J	15 J	
E1668A	68194-08-1	PCB-150	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	68194-09-2	PCB-152	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	PCB153+168	PCB-153/168	pg/L	T		160 U		61 J			150 U	160 U	
E1668A	60145-22-4	PCB-154	pg/L	T		190 U		190 U			190 U	200 U	
E1668A	33979-03-2	PCB-155	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	PCB156+157	PCB-156/157	pg/L	T		160 U		150 U			150 U	160 U	
E1668A	74472-42-7	PCB-158	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	39635-35-3	PCB-159	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	38444-78-9	PCB-16	pg/L	T		12 J		160			12 J	11 J	
E1668A	52663-72-6	PCB-167	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	32774-16-6	PCB-169	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	37680-66-3	PCB-17	pg/L	T		36 J		580			36 J	27 J	
E1668A	35065-30-6	PCB-170	pg/L	T		78 U		21 J			77 U	80 U	
E1668A	PCB171+173	PCB-171/173	pg/L	T		160 U		150 U			150 U	160 U	
E1668A	52663-74-8	PCB-172	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	38411-25-5	PCB-174	pg/L	T		78 U		23 J			77 U	80 U	
E1668A	40186-70-7	PCB-175	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	52663-65-7	PCB-176	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	52663-70-4	PCB-177	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	52663-67-9	PCB-178	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	52663-64-6	PCB-179	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	PCB18+30	PCB-18+30	pg/L	T		44 J		640			43 J	34 J	
E1668A	PCB180+193	PCB-180/193	pg/L	T		160 U		50 J			150 U	160 U	
E1668A	74472-47-2	PCB-181	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	60145-23-5	PCB-182	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	PCB183+185	PCB-183+185	pg/L	T		160 U		150 U			150 U	160 U	
E1668A	74472-48-3	PCB-184	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	74472-49-4	PCB-186	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	52663-68-0	PCB-187	pg/L	T		78 U		30 J			77 U	80 U	
E1668A	74487-85-7	PCB-188	pg/L	T		190 U		190 U			190 U	200 U	
E1668A	39635-31-9	PCB-189	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	38444-73-4	PCB-19	pg/L	T		18 J		420			22 J	16 J	
E1668A	41411-64-7	PCB-190	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	74472-50-7	PCB-191	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	74472-51-8	PCB-192	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	35694-08-7	PCB-194	pg/L	T		120 U		120 U			120 U	120 U	
E1668A	52663-78-2	PCB-195	pg/L	T		120 U		120 U			120 U	120 U	
E1668A	42740-50-1	PCB-196/203	pg/L	T		120 U		120 U			120 U	120 U	
E1668A	PCB197+200	PCB-197+200	pg/L	T		230 U		230 U			230 U	240 U	
E1668A	PCB198+199	PCB-198/199	pg/L	T		230 U		230 U			230 U	240 U	
E1668A	2051-61-8	PCB-2	pg/L	T		190 U		190 U			190 U	200 U	
E1668A	PCB20+28	PCB20+28	pg/L	T		50 J		660			42 J	28 J	
E1668A	40186-71-8	PCB-201	pg/L	T		390 U		390 U			390 U	400 U	
E1668A	2136-99-4	PCB-202	pg/L	T		120 U		120 U			120 U	120 U	
E1668A	74472-52-9	PCB-204	pg/L	T		120 U		120 U			120 U	120 U	

										Duplicate of OL-3730-12-R1		Duplicate of OL-3730-12-R1	
				Location ID	OL-RAE-SW-02	OL-RAE-SW-02	OL-RAE-SW-03	OL-RAE-SW-03	DEEP_S	DEEP_S	DEEP_S	DEEP_S	QC
				Field Sample ID	OL-3730-10-R1	OL-3730-10-R1	OL-3730-11-R1	OL-3730-11-R1	OL-3730-12-R1	OL-3730-13-R1	OL-3730-12-R1	OL-3730-13-R1	OL-3730-14-R1
				Start Depth (ft)	1.6	1.6	1.6	1.6	6.6	6.6	6.6	6.6	
				End Depth (ft)	1.6	1.6	1.6	1.6	6.6	6.6	6.6	6.6	
				Sampled	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
				SDG	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	1I00066	410-55129-1	410-55129-1	1I00066
				Lab Sample ID	1I00066-19	410-55129-10	1I00066-21/ 1I00066-22	410-55129-11	1I00066-23/ 1I00066-24	1I00066-25/ 1I00066-26	410-55129-12	410-55129-13	1I00066-27/ 1I00066-28
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	FD	REG	FD	FB
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	WQ
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	74472-53-0	PCB-205	pg/L	T		120 U		120 U			120 U	120 U	
E1668A	40186-72-9	PCB-206	pg/L	T		120 U		120 U			120 U	120 U	
E1668A	52663-79-3	PCB-207	pg/L	T		120 U		120 U			120 U	120 U	
E1668A	52663-77-1	PCB-208	pg/L	T		120 U		120 U			120 U	120 U	
E1668A	PCB21+33	PCB-21/33	pg/L	T		78 U		24 J			77 U	80 U	
E1668A	38444-85-8	PCB-22	pg/L	T		11 J		140			11 J	6.7 J	
E1668A	55720-44-0	PCB-23	pg/L	T		39 U		39 U			39 U	40 U	
E1668A	55702-45-9	PCB-24	pg/L	T		39 U		39 U			39 U	40 U	
E1668A	55712-37-3	PCB-25	pg/L	T		23 J		360			19 J	13 J	
E1668A	PCB26+29	PCB26+29	pg/L	T		40 J		630			36 J	80 U	
E1668A	38444-76-7	PCB-27	pg/L	T		15 J		260			13 J	9 J	
E1668A	2051-62-9	PCB-3	pg/L	T		190 U		190 U			190 U	200 U	
E1668A	16606-02-3	PCB-31	pg/L	T		64		850			53 J	37 J	
E1668A	38444-77-8	PCB-32	pg/L	T		22 J		420			23 J	15 J	
E1668A	37680-68-5	PCB-34	pg/L	T		39 U		39 U			39 U	40 U	
E1668A	37680-69-6	PCB-35	pg/L	T		39 U		39 U			39 U	40 U	
E1668A	38444-87-0	PCB-36	pg/L	T		39 U		39 U			39 U	40 U	
E1668A	38444-90-5	PCB-37	pg/L	T		39 U		50			6.9 J	40 U	
E1668A	53555-66-1	PCB-38	pg/L	T		39 U		39 U			39 U	40 U	
E1668A	38444-88-1	PCB-39	pg/L	T		39 U		39 U			39 U	40 U	
E1668A	13029-08-8	PCB-4	pg/L	T		45		1700			69 J	56	
E1668A	PCB40+71	PCB40+71	pg/L	T		29 J		270			22 J	160 U	
E1668A	52663-59-9	PCB-41	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	36559-22-5	PCB-42	pg/L	T		22 J		200			17 J	80 U	
E1668A	70362-46-8	PCB-43	pg/L	T		78 U		27 J			77 U	80 U	
E1668A	PCB44+47+65	PCB-44/47/65	pg/L	T		72 J		600			54 J	42 J	
E1668A	70362-45-7	PCB-45	pg/L	T		11 J		92			11 J	80 U	
E1668A	41464-47-5	PCB-46	pg/L	T		78 U		74 J			77 U	80 U	
E1668A	70362-47-9	PCB-48	pg/L	T		78 U		31 J			77 U	80 U	
E1668A	PCB49+69	PCB49+69	pg/L	T		58 J		510			40 J	32 J	
E1668A	16605-91-7	PCB-5	pg/L	T		39 U		39 U			39 U	40 U	
E1668A	PCB50+53	PCB-50/53	pg/L	T		290 U		220 J			290 U	300 U	
E1668A	68194-04-7	PCB-51	pg/L	T		78 U		60 J			77 U	80 U	
E1668A	35693-99-3	PCB-52	pg/L	T		92		740			66 J	48 J	
E1668A	15968-05-5	PCB-54	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	74338-24-2	PCB-55	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	41464-43-1	PCB-56	pg/L	T		78 U		58 J			77 U	80 U	
E1668A	70424-67-8	PCB-57	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	41464-49-7	PCB-58	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	PCB59+62+75	PCB-59/62/75	pg/L	T		230 U		47 J			230 U	240 U	
E1668A	25569-80-6	PCB-6	pg/L	T		39 U		340			39 U	40 U	
E1668A	PCB61+046	PCB-61/70/74/76	pg/L	T		310 U		220 J			310 U	320 U	
E1668A	74472-34-7	PCB-63	pg/L	T		78 U		23 J			77 U	80 U	
E1668A	32598-10-0	PCB-66	pg/L	T		18 J		170			17 J	11 J	
E1668A	73575-53-8	PCB-67	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	73575-52-7	PCB-68	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	33284-50-3	PCB-7	pg/L	T		39 U		13 J			39 U	40 U	
E1668A	74338-23-1	PCB-73	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	32598-13-3	PCB-77	pg/L	T		78 U		19 J			77 U	80 U	
E1668A	70362-49-1	PCB-78	pg/L	T		78 U		77 U			77 U	80 U	

										Duplicate of OL-3730-12-R1		Duplicate of OL-3730-12-R1	
				Location ID	OL-RAE-SW-02	OL-RAE-SW-02	OL-RAE-SW-03	OL-RAE-SW-03	DEEP_S	DEEP_S	DEEP_S	DEEP_S	QC
				Field Sample ID	OL-3730-10-R1	OL-3730-10-R1	OL-3730-11-R1	OL-3730-11-R1	OL-3730-12-R1	OL-3730-13-R1	OL-3730-12-R1	OL-3730-13-R1	OL-3730-14-R1
				Start Depth (ft)	1.6	1.6	1.6	1.6	6.6	6.6	6.6	6.6	
				End Depth (ft)	1.6	1.6	1.6	1.6	6.6	6.6	6.6	6.6	
				Sampled	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021	9/14/2021
				SDG	1I00066	410-55129-1	1I00066	410-55129-1	1I00066	1I00066	410-55129-1	410-55129-1	1I00066
				Lab Sample ID	1I00066-19	410-55129-10	1I00066-21/ 1I00066-22	410-55129-11	1I00066-23/ 1I00066-24	1I00066-25/ 1I00066-26	410-55129-12	410-55129-13	1I00066-27/ 1I00066-28
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	FD	REG	FD	FB
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	WQ
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	41464-48-6	PCB-79	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	34883-43-7	PCB-8	pg/L	T		15 J		300			17 J	11 J	
E1668A	33284-52-5	PCB-80	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	70362-50-4	PCB-81	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	52663-62-4	PCB-82	pg/L	T		78 U		16 J			77 U	80 U	
E1668A	60145-20-2	PCB-83	pg/L	T		78 U		18 J			77 U	80 U	
E1668A	52663-60-2	PCB-84	pg/L	T		12 J		68 J			77 U	80 U	
E1668A	PCB85+116+117	PCB85+116+117	pg/L	T		230 U		230 U			230 U	240 U	
E1668A	PCB86+77091925	PCB86+77091925	pg/L	T		470 U		460 U			460 U	480 U	
E1668A	55215-17-3	PCB-88	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	73575-57-2	PCB-89	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	34883-39-1	PCB-9	pg/L	T		39 U		26 J			39 U	40 U	
E1668A	PCB90+101+113	PCB90+101+113	pg/L	T		230 U		130 J			230 U	240 U	
E1668A	68194-05-8	PCB-91	pg/L	T		78 U		45 J			77 U	80 U	
E1668A	52663-61-3	PCB-92	pg/L	T		78 U		43 J			77 U	80 U	
E1668A	PCB93+100	PCB-93+100	pg/L	T		160 U		150 U			150 U	160 U	
E1668A	73575-55-0	PCB-94	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	38379-99-6	PCB-95	pg/L	T		28 J		160			23 J	20 J	
E1668A	73575-54-9	PCB-96	pg/L	T		78 U		77 U			77 U	80 U	
E1668A	PCB98+102	PCB-98+102	pg/L	T		190 U		190 U			190 U	200 U	
E1668A	38380-01-7	PCB-99	pg/L	T		78 U		70 J			77 U	80 U	
SM2540D	TSS	Total Suspended Solids	mg/L	T		1.5 J		1.4 J			1.8 J	3.1 J	

Method	Parameter Code	Parameter Name	Units	Fraction									
				Location ID	QC	OL-RAE-SW-03	OL-RAE-SW-03	OL-RAE-SW-02	OL-RAE-SW-02	OL-RAE-SW-01	OL-RAE-SW-01	OL-RAD-SW-02	OL-RAD-SW-02
				Field Sample ID	OL-3730-14-R1	OL-3731-01-R2	OL-3731-01-R2	OL-3731-02-R2	OL-3731-02-R2	OL-3731-03-R2	OL-3731-03-R2	OL-3731-04-R2	OL-3731-04-R2
				Start Depth (ft)		3.3	3.3	8.2	8.2	1.6	1.6	4.9	4.9
				End Depth (ft)		3.3	3.3	8.2	8.2	1.6	1.6	4.9	4.9
				Sampled	9/14/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
				SDG	410-55129-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1
				Lab Sample ID	410-55129-14	1K00153-01/ 1K00153-02	410-64096-1	1K00153-03/ 1K00153-04	410-64096-2	1K00153-05/ 1K00153-06	410-64096-3	1K00153-07/ 1K00153-08	410-64096-4
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	FB	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	WQ	SW	SW	SW	SW	SW	SW	SW	SW
E1630	22967-92-6	Methyl Mercury	ng/L	T		0.064		0.046 J		0.041 J		0.027 J	
E1631	7439-97-6	Mercury	ng/L	T		3.18		1.65		0.82		0.58	
E1631	7439-97-6	Mercury	ng/L	D		0.51		0.15 J		0.18 J		0.27 J	
E1668A	33146-45-1	10-DiCB	pg/L	T	39 U		19 J		39 U		39 U		39 U
E1668A	74472-36-9	112-PeCB	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	41411-61-4	142-HXCB	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	68194-15-0	143-HxCB	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	41411-62-5	160-HXCB	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	74472-43-8	161-Hxcb	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	39635-34-2	162-HXCB	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	74472-45-0	164-HxCB	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	74472-46-1	165-HxCB	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	33025-41-1	2,3',4,4'-Tetrachlorobiphenyl	pg/L	T	78 U		19 J		77 U		78 U		77 U
E1668A	52663-76-0	203-OCCB	pg/L	T	120 U		110 U		120 U		120 U		120 U
E1668A	52663-58-8	64-TeCB	pg/L	T	78 U		120		77 U		18 J		23 J
E1668A	41464-42-0	72-TeCB	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	2051-24-3	DCB Decachlorobiphenyl	pg/L	T	970 U		960 U		960 U		970 U		970 U
E1668A	2051-60-7	PCB-1	pg/L	T	190 U		190 U		190 U		190 U		190 U
E1668A	60145-21-3	PCB-103	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	56558-16-8	PCB-104	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	32598-14-4	PCB-105	pg/L	T	78 U		33 J		77 U		78 U		77 U
E1668A	70424-69-0	PCB-106/118	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	70424-68-9	PCB-107	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	PCB108+124	PCB-108/124	pg/L	T	160 U		150 U		150 U		160 U		150 U
E1668A	2050-67-1	PCB-11	pg/L	T	290 U		290 U		290 U		290 U		290 U
E1668A	PCB110+115	PCB-110+115	pg/L	T	160 U		160		150 U		160 U		150 U
E1668A	39635-32-0	PCB-111	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	74472-37-0	PCB-114	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	31508-00-6	PCB-118	pg/L	T	78 U		70 J		77 U		18 J		17 J
E1668A	PCB12+13	PCB-12/13	pg/L	T	78 U		59 J		77 U		78 U		77 U
E1668A	68194-12-7	PCB-120	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	56558-18-0	PCB-121	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	76842-07-4	PCB-122	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	65510-44-3	PCB-123	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	57465-28-8	PCB-126	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	39635-33-1	PCB-127	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	PCB128+166	PCB-128/166	pg/L	T	160 U		150 U		150 U		160 U		150 U
E1668A	PCB129+138+163	PCB129+138+163	pg/L	T	230 U		120 J		230 U		230 U		230 U
E1668A	52663-66-8	PCB-130	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	61798-70-7	PCB-131	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	38380-05-1	PCB-132	pg/L	T	78 U		44 J		77 U		78 U		77 U
E1668A	35694-04-3	PCB-133	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	52704-70-8	PCB-134	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	PCB135+151	PCB135+151	pg/L	T	160 U		60 J		150 U		160 U		150 U
E1668A	38411-22-2	PCB-136	pg/L	T	78 U		21 J		77 UJ		78 UJ		77 UJ
E1668A	35694-06-5	PCB-137	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	PCB139+140	PCB-139/140	pg/L	T	160 U		150 U		150 U		160 U		150 U
E1668A	34883-41-5	PCB-14	pg/L	T	39 U		38 U		39 U		39 U		39 U
E1668A	52712-04-6	PCB-141	pg/L	T	78 U		26 J		77 U		78 U		77 U
E1668A	68194-14-9	PCB-144	pg/L	T	78 U		77 U		77 U		78 U		77 U

				Location ID	QC	OL-RAE-SW-03	OL-RAE-SW-03	OL-RAE-SW-02	OL-RAE-SW-02	OL-RAE-SW-01	OL-RAE-SW-01	OL-RAD-SW-02	OL-RAD-SW-02
				Field Sample ID	OL-3730-14-R1	OL-3731-01-R2	OL-3731-01-R2	OL-3731-02-R2	OL-3731-02-R2	OL-3731-03-R2	OL-3731-03-R2	OL-3731-04-R2	OL-3731-04-R2
				Start Depth (ft)		3.3	3.3	8.2	8.2	1.6	1.6	4.9	4.9
				End Depth (ft)		3.3	3.3	8.2	8.2	1.6	1.6	4.9	4.9
				Sampled	9/14/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
				SDG	410-55129-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1
				Lab Sample ID	410-55129-14	1K00153-01/ 1K00153-02	410-64096-1	1K00153-03/ 1K00153-04	410-64096-2	1K00153-05/ 1K00153-06	410-64096-3	1K00153-07/ 1K00153-08	410-64096-4
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	FB	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	WQ	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	74472-40-5	PCB-145	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	51908-16-8	PCB-146	pg/L	T	78 U		20 J		77 U		78 U		77 U
E1668A	PCB147+149	PCB-147/149	pg/L	T	160 U		100 J		150 U		160 U		150 U
E1668A	74472-41-6	PCB-148	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	2050-68-2	PCB-15	pg/L	T	39 U		210		39 U		23 J		25 J
E1668A	68194-08-1	PCB-150	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	68194-09-2	PCB-152	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	PCB153+168	PCB-153/168	pg/L	T	160 U		96 J		150 U		160 U		150 U
E1668A	60145-22-4	PCB-154	pg/L	T	190 U		190 U		190 U		190 U		190 U
E1668A	33979-03-2	PCB-155	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	PCB156+157	PCB-156/157	pg/L	T	160 U		150 U		150 U		160 U		150 U
E1668A	74472-42-7	PCB-158	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	39635-35-3	PCB-159	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	38444-78-9	PCB-16	pg/L	T	39 U		72		5.5 J		13 J		16 J
E1668A	52663-72-6	PCB-167	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	32774-16-6	PCB-169	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	37680-66-3	PCB-17	pg/L	T	39 U		290		12 J		31 J		46
E1668A	35065-30-6	PCB-170	pg/L	T	78 U		29 J		77 U		78 U		77 U
E1668A	PCB171+173	PCB-171/173	pg/L	T	160 U		150 U		150 U		160 U		150 U
E1668A	52663-74-8	PCB-172	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	38411-25-5	PCB-174	pg/L	T	78 U		41 J		77 U		78 U		77 U
E1668A	40186-70-7	PCB-175	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	52663-65-7	PCB-176	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	52663-70-4	PCB-177	pg/L	T	78 U		20 J		77 U		78 U		77 U
E1668A	52663-67-9	PCB-178	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	52663-64-6	PCB-179	pg/L	T	78 U		18 J		77 U		78 U		77 U
E1668A	PCB18+30	PCB-18+30	pg/L	T	78 U		270		17 J		40 J		51 J
E1668A	PCB180+193	PCB-180/193	pg/L	T	160 U		89 J		150 U		160 U		150 U
E1668A	74472-47-2	PCB-181	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	60145-23-5	PCB-182	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	PCB183+185	PCB-183+185	pg/L	T	160 U		150 U		150 U		160 U		150 U
E1668A	74472-48-3	PCB-184	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	74472-49-4	PCB-186	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	52663-68-0	PCB-187	pg/L	T	78 U		48 J		77 U		78 U		77 U
E1668A	74487-85-7	PCB-188	pg/L	T	190 U		190 U		190 U		190 U		190 U
E1668A	39635-31-9	PCB-189	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	38444-73-4	PCB-19	pg/L	T	39 U		150		5.6 J		21 J		28 J
E1668A	41411-64-7	PCB-190	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	74472-50-7	PCB-191	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	74472-51-8	PCB-192	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	35694-08-7	PCB-194	pg/L	T	120 U		110 U		120 U		120 U		120 U
E1668A	52663-78-2	PCB-195	pg/L	T	120 U		110 U		120 U		120 U		120 U
E1668A	42740-50-1	PCB-196/203	pg/L	T	120 U		110 U		120 U		120 U		120 U
E1668A	PCB197+200	PCB-197+200	pg/L	T	230 U		230 U		230 U		230 U		230 U
E1668A	PCB198+199	PCB-198/199	pg/L	T	230 U		230 U		230 U		230 U		230 U
E1668A	2051-61-8	PCB-2	pg/L	T	190 U		190 U		190 U		190 U		190 U
E1668A	PCB20+28	PCB20+28	pg/L	T	78 U		340		18 J		34 J		43 J
E1668A	40186-71-8	PCB-201	pg/L	T	390 U		380 U		390 U		390 U		390 U
E1668A	2136-99-4	PCB-202	pg/L	T	120 U		110 U		120 U		120 U		120 U
E1668A	74472-52-9	PCB-204	pg/L	T	120 U		110 U		120 U		120 U		120 U

				Location ID	QC	OL-RAE-SW-03	OL-RAE-SW-03	OL-RAE-SW-02	OL-RAE-SW-02	OL-RAE-SW-01	OL-RAE-SW-01	OL-RAD-SW-02	OL-RAD-SW-02
				Field Sample ID	OL-3730-14-R1	OL-3731-01-R2	OL-3731-01-R2	OL-3731-02-R2	OL-3731-02-R2	OL-3731-03-R2	OL-3731-03-R2	OL-3731-04-R2	OL-3731-04-R2
				Start Depth (ft)		3.3	3.3	8.2	8.2	1.6	1.6	4.9	4.9
				End Depth (ft)		3.3	3.3	8.2	8.2	1.6	1.6	4.9	4.9
				Sampled	9/14/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
				SDG	410-55129-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1
				Lab Sample ID	410-55129-14	1K00153-01/ 1K00153-02	410-64096-1	1K00153-03/ 1K00153-04	410-64096-2	1K00153-05/ 1K00153-06	410-64096-3	1K00153-07/ 1K00153-08	410-64096-4
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	FB	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	WQ	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	74472-53-0	PCB-205	pg/L	T	120 U		110 U		120 U		120 U		120 U
E1668A	40186-72-9	PCB-206	pg/L	T	120 U		110 U		120 U		120 U		120 U
E1668A	52663-79-3	PCB-207	pg/L	T	120 U		110 U		120 U		120 U		120 U
E1668A	52663-77-1	PCB-208	pg/L	T	120 U		110 U		120 U		120 U		120 U
E1668A	PCB21+33	PCB-21/33	pg/L	T	78 U		18 J		77 U		78 U		77 U
E1668A	38444-85-8	PCB-22	pg/L	T	39 U		77		6 J		7.9 J		8.2 J
E1668A	55720-44-0	PCB-23	pg/L	T	39 U		38 U		39 U		39 U		39 U
E1668A	55702-45-9	PCB-24	pg/L	T	39 U		38 U		39 U		39 U		39 U
E1668A	55712-37-3	PCB-25	pg/L	T	39 U		200		7.8 J		17 J		27 J
E1668A	PCB26+29	PCB26+29	pg/L	T	78 U		320		77 U		32 J		45 J
E1668A	38444-76-7	PCB-27	pg/L	T	39 U		110		39 U		12 J		19 J
E1668A	2051-62-9	PCB-3	pg/L	T	190 U		190 U		190 U		190 U		190 U
E1668A	16606-02-3	PCB-31	pg/L	T	39 U		470		22 J		48		61
E1668A	38444-77-8	PCB-32	pg/L	T	39 U		240		9.7 J		26 J		38 J
E1668A	37680-68-5	PCB-34	pg/L	T	39 U		38 U		39 U		39 U		39 U
E1668A	37680-69-6	PCB-35	pg/L	T	39 U		38 U		39 U		39 U		39 U
E1668A	38444-87-0	PCB-36	pg/L	T	39 U		38 U		39 U		39 U		39 U
E1668A	38444-90-5	PCB-37	pg/L	T	39 U		36 J		39 U		39 U		8.4 J
E1668A	53555-66-1	PCB-38	pg/L	T	39 U		38 U		39 U		39 U		39 U
E1668A	38444-88-1	PCB-39	pg/L	T	39 U		38 U		39 U		39 U		39 U
E1668A	13029-08-8	PCB-4	pg/L	T	6.8 J		540		26 J		67		92
E1668A	PCB40+71	PCB40+71	pg/L	T	160 U		170		150 U		24 J		30 J
E1668A	52663-59-9	PCB-41	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	36559-22-5	PCB-42	pg/L	T	78 U		110		77 U		15 J		19 J
E1668A	70362-46-8	PCB-43	pg/L	T	78 U		14 J		77 U		78 U		77 U
E1668A	PCB44+47+65	PCB-44/47/65	pg/L	T	230 U		370		230 U		47 J		64 J
E1668A	70362-45-7	PCB-45	pg/L	T	78 U		45 J		77 U		78 U		77 U
E1668A	41464-47-5	PCB-46	pg/L	T	78 U		45 J		77 U		78 U		77 U
E1668A	70362-47-9	PCB-48	pg/L	T	78 U		20 J		77 U		78 U		77 U
E1668A	PCB49+69	PCB49+69	pg/L	T	160 U		300		150 U		34 J		49 J
E1668A	16605-91-7	PCB-5	pg/L	T	39 U		38 U		39 U		39 U		39 U
E1668A	PCB50+53	PCB-50/53	pg/L	T	290 U		130 J		290 U		290 U		290 U
E1668A	68194-04-7	PCB-51	pg/L	T	78 U		46 J		77 U		78 U		77 U
E1668A	35693-99-3	PCB-52	pg/L	T	78 U		420		29 J		61 J		78
E1668A	15968-05-5	PCB-54	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	74338-24-2	PCB-55	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	41464-43-1	PCB-56	pg/L	T	78 U		48 J		77 U		15 J		11 J
E1668A	70424-67-8	PCB-57	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	41464-49-7	PCB-58	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	PCB59+62+75	PCB-59/62/75	pg/L	T	230 U		230 U		230 U		230 U		230 U
E1668A	25569-80-6	PCB-6	pg/L	T	39 U		68		39 U		39 U		39 U
E1668A	PCB61+046	PCB-61/70/74/76	pg/L	T	310 U		170 J		310 U		310 U		310 U
E1668A	74472-34-7	PCB-63	pg/L	T	78 U		14 J		77 U		78 U		77 U
E1668A	32598-10-0	PCB-66	pg/L	T	78 U		130		77 U		25 J		25 J
E1668A	73575-53-8	PCB-67	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	73575-52-7	PCB-68	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	33284-50-3	PCB-7	pg/L	T	39 U		38 U		39 U		39 U		39 U
E1668A	74338-23-1	PCB-73	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	32598-13-3	PCB-77	pg/L	T	78 U		16 J		77 U		78 U		77 U
E1668A	70362-49-1	PCB-78	pg/L	T	78 U		77 U		77 U		78 U		77 U

				Location ID	QC	OL-RAE-SW-03	OL-RAE-SW-03	OL-RAE-SW-02	OL-RAE-SW-02	OL-RAE-SW-01	OL-RAE-SW-01	OL-RAD-SW-02	OL-RAD-SW-02
				Field Sample ID	OL-3730-14-R1	OL-3731-01-R2	OL-3731-01-R2	OL-3731-02-R2	OL-3731-02-R2	OL-3731-03-R2	OL-3731-03-R2	OL-3731-04-R2	OL-3731-04-R2
				Start Depth (ft)		3.3	3.3	8.2	8.2	1.6	1.6	4.9	4.9
				End Depth (ft)		3.3	3.3	8.2	8.2	1.6	1.6	4.9	4.9
				Sampled	9/14/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
				SDG	410-55129-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1
				Lab Sample ID	410-55129-14	1K00153-01/ 1K00153-02	410-64096-1	1K00153-03/ 1K00153-04	410-64096-2	1K00153-05/ 1K00153-06	410-64096-3	1K00153-07/ 1K00153-08	410-64096-4
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	FB	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	WQ	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	41464-48-6	PCB-79	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	34883-43-7	PCB-8	pg/L	T	39 U		67		39 U		39 U		11 J
E1668A	33284-52-5	PCB-80	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	70362-50-4	PCB-81	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	52663-62-4	PCB-82	pg/L	T	78 U		15 J		77 U		78 U		77 U
E1668A	60145-20-2	PCB-83	pg/L	T	78 U		17 J		77 U		78 U		77 U
E1668A	52663-60-2	PCB-84	pg/L	T	78 U		69 J		77 U		13 J		12 J
E1668A	PCB85+116+117	PCB85+116+117	pg/L	T	230 U		230 U		230 U		230 U		230 U
E1668A	PCB86+77091925	PCB86+77091925	pg/L	T	470 U		460 U		460 U		470 U		460 U
E1668A	55215-17-3	PCB-88	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	73575-57-2	PCB-89	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	34883-39-1	PCB-9	pg/L	T	39 U		38 U		39 U		39 U		39 U
E1668A	PCB90+101+113	PCB90+101+113	pg/L	T	230 U		110 J		230 U		230 U		230 U
E1668A	68194-05-8	PCB-91	pg/L	T	78 U		43 J		77 U		78 U		77 U
E1668A	52663-61-3	PCB-92	pg/L	T	78 U		35 J		77 U		78 U		77 U
E1668A	PCB93+100	PCB-93+100	pg/L	T	160 U		150 U		150 U		160 U		150 U
E1668A	73575-55-0	PCB-94	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	38379-99-6	PCB-95	pg/L	T	78 U		140		15 J		27 J		25 J
E1668A	73575-54-9	PCB-96	pg/L	T	78 U		77 U		77 U		78 U		77 U
E1668A	PCB98+102	PCB-98+102	pg/L	T	190 U		190 U		190 U		190 U		190 U
E1668A	38380-01-7	PCB-99	pg/L	T	78 U		61 J		77 U		14 J		77 U
SM2540D	TSS	Total Suspended Solids	mg/L	T	3 U		3		16		3		2.2 J

												Duplicate of OL-3731-08-R2	
				Location ID	OL-RAD-SW-01	OL-RAD-SW-01	OL-RAC-SW-02	OL-RAC-SW-02	OL-RAC-SW-01	OL-RAC-SW-01	DEEP_S	DEEP_S	DEEP_S
				Field Sample ID	OL-3731-05-R2	OL-3731-05-R2	OL-3731-06-R2	OL-3731-06-R2	OL-3731-07-R2	OL-3731-07-R2	OL-3731-08-R2	OL-3731-09-R2	OL-3731-08-R2
				Start Depth (ft)	3.3	3.3	3.3	3.3	9.8	9.8	6.6	6.6	6.6
				End Depth (ft)	3.3	3.3	3.3	3.3	9.8	9.8	6.6	6.6	6.6
				Sampled	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
				SDG	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	1K00153	410-64096-1
				Lab Sample ID	1K00153-09/ 1K00153-10	410-64096-5	1K00153-11/ 1K00153-12	410-64096-6	1K00153-13/ 1K00153-14	410-64096-7	1K00153-15/ 1K00153-16	1K00153-17/ 1K00153-18	410-64096-8
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	REG	REG	REG	REG	REG	REG	REG	FD	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1630	22967-92-6	Methyl Mercury	ng/L	T	0.035 J		0.038 J		0.031 J		0.077 J	0.026 UJ	
E1631	7439-97-6	Mercury	ng/L	T	0.53		0.6		0.71		0.96	0.89	
E1631	7439-97-6	Mercury	ng/L	D	0.15 J		0.18 J		0.16 J		0.21 J	0.12 J	
E1668A	33146-45-1	10-DiCB	pg/L	T		39 U		38 U		39 U			39 U
E1668A	74472-36-9	112-PeCB	pg/L	T		77 U		77 U		77 U			77 U
E1668A	41411-61-4	142-HXCB	pg/L	T		77 U		77 U		77 U			77 U
E1668A	68194-15-0	143-HxCB	pg/L	T		77 U		77 U		77 U			77 U
E1668A	41411-62-5	160-HXCB	pg/L	T		77 U		77 U		77 U			77 U
E1668A	74472-43-8	161-Hxcb	pg/L	T		77 U		77 U		77 U			77 U
E1668A	39635-34-2	162-HXCB	pg/L	T		77 U		77 U		77 U			77 U
E1668A	74472-45-0	164-HxCB	pg/L	T		77 U		77 U		77 U			77 U
E1668A	74472-46-1	165-HxCB	pg/L	T		77 U		77 U		77 U			77 U
E1668A	33025-41-1	2,3',4,4'-Tetrachlorobiphenyl	pg/L	T		77 U		77 U		77 U			16 J
E1668A	52663-76-0	203-OCCB	pg/L	T		120 U		120 U		120 U			120 U
E1668A	52663-58-8	64-TeCB	pg/L	T		22 J		26 J		33 J			33 J
E1668A	41464-42-0	72-TeCB	pg/L	T		77 U		77 U		77 U			77 U
E1668A	2051-24-3	DCB Decachlorobiphenyl	pg/L	T		970 U		960 U		960 U			970 U
E1668A	2051-60-7	PCB-1	pg/L	T		190 U		190 U		190 U			190 U
E1668A	60145-21-3	PCB-103	pg/L	T		77 U		77 U		77 U			77 U
E1668A	56558-16-8	PCB-104	pg/L	T		77 U		77 U		77 U			77 U
E1668A	32598-14-4	PCB-105	pg/L	T		77 U		77 U		15 J			20 J
E1668A	70424-69-0	PCB-106/118	pg/L	T		77 U		77 U		77 U			77 U
E1668A	70424-68-9	PCB-107	pg/L	T		77 U		77 U		77 U			77 U
E1668A	PCB108+124	PCB-108/124	pg/L	T		150 U		150 U		150 U			150 U
E1668A	2050-67-1	PCB-11	pg/L	T		290 U		290 U		290 U			290 U
E1668A	PCB110+115	PCB-110+115	pg/L	T		150 U		150 U		150 U			150 U
E1668A	39635-32-0	PCB-111	pg/L	T		77 U		77 U		77 U			77 U
E1668A	74472-37-0	PCB-114	pg/L	T		77 U		77 U		77 U			77 U
E1668A	31508-00-6	PCB-118	pg/L	T		13 J		15 J		20 J			30 J
E1668A	PCB12+13	PCB-12/13	pg/L	T		77 U		77 U		77 U			77 U
E1668A	68194-12-7	PCB-120	pg/L	T		77 U		77 U		77 U			77 U
E1668A	56558-18-0	PCB-121	pg/L	T		77 U		77 U		77 U			77 U
E1668A	76842-07-4	PCB-122	pg/L	T		77 U		77 U		77 U			77 U
E1668A	65510-44-3	PCB-123	pg/L	T		77 U		77 U		77 U			77 U
E1668A	57465-28-8	PCB-126	pg/L	T		77 U		77 U		77 U			77 U
E1668A	39635-33-1	PCB-127	pg/L	T		77 U		77 U		77 U			77 U
E1668A	PCB128+166	PCB-128/166	pg/L	T		150 U		150 U		150 U			150 U
E1668A	PCB129+138+163	PCB129+138+163	pg/L	T		230 U		230 U		230 U			230 U
E1668A	52663-66-8	PCB-130	pg/L	T		77 U		77 U		77 U			77 U
E1668A	61798-70-7	PCB-131	pg/L	T		77 U		77 U		77 U			77 U
E1668A	38380-05-1	PCB-132	pg/L	T		77 U		77 U		77 U			77 U
E1668A	35694-04-3	PCB-133	pg/L	T		77 U		77 U		77 U			77 U
E1668A	52704-70-8	PCB-134	pg/L	T		77 U		77 U		77 U			77 U
E1668A	PCB135+151	PCB135+151	pg/L	T		150 U		150 U		150 U			150 U
E1668A	38411-22-2	PCB-136	pg/L	T		77 UJ		77 UJ		77 UJ			77 UJ
E1668A	35694-06-5	PCB-137	pg/L	T		77 U		77 U		77 U			77 U
E1668A	PCB139+140	PCB-139/140	pg/L	T		150 U		150 U		150 U			150 U
E1668A	34883-41-5	PCB-14	pg/L	T		39 U		38 U		39 U			39 U
E1668A	52712-04-6	PCB-141	pg/L	T		77 U		77 U		77 U			77 U
E1668A	68194-14-9	PCB-144	pg/L	T		77 U		77 U		77 U			77 U

												Duplicate of OL-3731-08-R2	
Location ID					OL-RAD-SW-01	OL-RAD-SW-01	OL-RAC-SW-02	OL-RAC-SW-02	OL-RAC-SW-01	OL-RAC-SW-01	DEEP_S	DEEP_S	DEEP_S
Field Sample ID					OL-3731-05-R2	OL-3731-05-R2	OL-3731-06-R2	OL-3731-06-R2	OL-3731-07-R2	OL-3731-07-R2	OL-3731-08-R2	OL-3731-09-R2	OL-3731-08-R2
Start Depth (ft)					3.3	3.3	3.3	3.3	9.8	9.8	6.6	6.6	6.6
End Depth (ft)					3.3	3.3	3.3	3.3	9.8	9.8	6.6	6.6	6.6
Sampled					11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
SDG					1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	1K00153	410-64096-1
Lab Sample ID					1K00153-09/ 1K00153-10	410-64096-5	1K00153-11/ 1K00153-12	410-64096-6	1K00153-13/ 1K00153-14	410-64096-7	1K00153-15/ 1K00153-16	1K00153-17/ 1K00153-18	410-64096-8
Medium					Water	Water	Water	Water	Water	Water	Water	Water	Water
Sample Type					REG	REG	REG	REG	REG	REG	REG	FD	REG
Matrix					SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	74472-40-5	PCB-145	pg/L	T		77 U		77 U		77 U			77 U
E1668A	51908-16-8	PCB-146	pg/L	T		77 U		77 U		77 U			77 U
E1668A	PCB147+149	PCB-147/149	pg/L	T		150 U		150 U		150 U			150 U
E1668A	74472-41-6	PCB-148	pg/L	T		77 U		77 U		77 U			77 U
E1668A	2050-68-2	PCB-15	pg/L	T		24 J		23 J		31 J			35 J
E1668A	68194-08-1	PCB-150	pg/L	T		77 U		77 U		77 U			77 U
E1668A	68194-09-2	PCB-152	pg/L	T		77 U		77 U		77 U			77 U
E1668A	PCB153+168	PCB-153/168	pg/L	T		150 U		150 U		150 U			150 U
E1668A	60145-22-4	PCB-154	pg/L	T		190 U		190 U		190 U			190 U
E1668A	33979-03-2	PCB-155	pg/L	T		77 U		77 U		77 U			77 U
E1668A	PCB156+157	PCB-156/157	pg/L	T		150 U		150 U		150 U			150 U
E1668A	74472-42-7	PCB-158	pg/L	T		77 U		77 U		77 U			77 U
E1668A	39635-35-3	PCB-159	pg/L	T		77 U		77 U		77 U			77 U
E1668A	38444-78-9	PCB-16	pg/L	T		19 J		19 J		15 J			17 J
E1668A	52663-72-6	PCB-167	pg/L	T		77 U		77 U		77 U			77 U
E1668A	32774-16-6	PCB-169	pg/L	T		77 U		77 U		77 U			77 U
E1668A	37680-66-3	PCB-17	pg/L	T		46		50		50			49
E1668A	35065-30-6	PCB-170	pg/L	T		77 U		77 U		77 U			77 U
E1668A	PCB171+173	PCB-171/173	pg/L	T		150 U		150 U		150 U			150 U
E1668A	52663-74-8	PCB-172	pg/L	T		77 U		77 U		77 U			77 U
E1668A	38411-25-5	PCB-174	pg/L	T		77 U		77 U		77 U			77 U
E1668A	40186-70-7	PCB-175	pg/L	T		77 U		77 U		77 U			77 U
E1668A	52663-65-7	PCB-176	pg/L	T		77 U		77 U		77 U			77 U
E1668A	52663-70-4	PCB-177	pg/L	T		77 U		77 U		77 U			77 U
E1668A	52663-67-9	PCB-178	pg/L	T		77 U		77 U		77 U			77 U
E1668A	52663-64-6	PCB-179	pg/L	T		77 U		77 U		77 U			77 U
E1668A	PCB18+30	PCB-18+30	pg/L	T		51 J		54 J		61 J			56 J
E1668A	PCB180+193	PCB-180/193	pg/L	T		150 U		150 U		150 U			150 U
E1668A	74472-47-2	PCB-181	pg/L	T		77 U		77 U		77 U			77 U
E1668A	60145-23-5	PCB-182	pg/L	T		77 U		77 U		77 U			77 U
E1668A	PCB183+185	PCB-183+185	pg/L	T		150 U		150 U		150 U			150 U
E1668A	74472-48-3	PCB-184	pg/L	T		77 U		77 U		77 U			77 U
E1668A	74472-49-4	PCB-186	pg/L	T		77 U		77 U		77 U			77 U
E1668A	52663-68-0	PCB-187	pg/L	T		77 U		77 U		77 U			77 U
E1668A	74487-85-7	PCB-188	pg/L	T		190 U		190 U		190 U			190 U
E1668A	39635-31-9	PCB-189	pg/L	T		77 U		77 U		77 U			77 U
E1668A	38444-73-4	PCB-19	pg/L	T		27 J		26 J		28 J			29 J
E1668A	41411-64-7	PCB-190	pg/L	T		77 U		77 U		77 U			77 U
E1668A	74472-50-7	PCB-191	pg/L	T		77 U		77 U		77 U			77 U
E1668A	74472-51-8	PCB-192	pg/L	T		77 U		77 U		77 U			77 U
E1668A	35694-08-7	PCB-194	pg/L	T		120 U		120 U		120 U			120 U
E1668A	52663-78-2	PCB-195	pg/L	T		120 U		120 U		120 U			120 U
E1668A	42740-50-1	PCB-196/203	pg/L	T		120 U		120 U		120 U			120 U
E1668A	PCB197+200	PCB-197+200	pg/L	T		230 U		230 U		230 U			230 U
E1668A	PCB198+199	PCB-198/199	pg/L	T		230 U		230 U		230 U			230 U
E1668A	2051-61-8	PCB-2	pg/L	T		190 U		190 U		190 U			190 U
E1668A	PCB20+28	PCB20+28	pg/L	T		41 J		45 J		52 J			57 J
E1668A	40186-71-8	PCB-201	pg/L	T		390 U		380 U		390 U			390 U
E1668A	2136-99-4	PCB-202	pg/L	T		120 U		120 U		120 U			120 U
E1668A	74472-52-9	PCB-204	pg/L	T		120 U		120 U		120 U			120 U

												Duplicate of OL-3731-08-R2	
		Location ID			OL-RAD-SW-01	OL-RAD-SW-01	OL-RAC-SW-02	OL-RAC-SW-02	OL-RAC-SW-01	OL-RAC-SW-01	DEEP_S	DEEP_S	DEEP_S
		Field Sample ID			OL-3731-05-R2	OL-3731-05-R2	OL-3731-06-R2	OL-3731-06-R2	OL-3731-07-R2	OL-3731-07-R2	OL-3731-08-R2	OL-3731-09-R2	OL-3731-08-R2
		Start Depth (ft)			3.3	3.3	3.3	3.3	9.8	9.8	6.6	6.6	6.6
		End Depth (ft)			3.3	3.3	3.3	3.3	9.8	9.8	6.6	6.6	6.6
		Sampled			11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
		SDG			1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	1K00153	410-64096-1
		Lab Sample ID			1K00153-09/ 1K00153-10	410-64096-5	1K00153-11/ 1K00153-12	410-64096-6	1K00153-13/ 1K00153-14	410-64096-7	1K00153-15/ 1K00153-16	1K00153-17/ 1K00153-18	410-64096-8
		Medium			Water	Water	Water	Water	Water	Water	Water	Water	Water
		Sample Type			REG	REG	REG	REG	REG	REG	REG	FD	REG
		Matrix			SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	74472-53-0	PCB-205	pg/L	T		120 U		120 U		120 U			120 U
E1668A	40186-72-9	PCB-206	pg/L	T		120 U		120 U		120 U			120 U
E1668A	52663-79-3	PCB-207	pg/L	T		120 U		120 U		120 U			120 U
E1668A	52663-77-1	PCB-208	pg/L	T		120 U		120 U		120 U			120 U
E1668A	PCB21+33	PCB-21/33	pg/L	T		77 U		77 U		77 U			77 U
E1668A	38444-85-8	PCB-22	pg/L	T		6.8 J		8.8 J		12 J			10 J
E1668A	55720-44-0	PCB-23	pg/L	T		39 U		38 U		39 U			39 U
E1668A	55702-45-9	PCB-24	pg/L	T		39 U		38 U		39 U			39 U
E1668A	55712-37-3	PCB-25	pg/L	T		25 J		29 J		29 J			32 J
E1668A	PCB26+29	PCB26+29	pg/L	T		43 J		48 J		52 J			56 J
E1668A	38444-76-7	PCB-27	pg/L	T		17 J		18 J		20 J			20 J
E1668A	2051-62-9	PCB-3	pg/L	T		190 U		190 U		190 U			190 U
E1668A	16606-02-3	PCB-31	pg/L	T		59		63		66			74
E1668A	38444-77-8	PCB-32	pg/L	T		36 J		37 J		40			39
E1668A	37680-68-5	PCB-34	pg/L	T		39 U		38 U		39 U			39 U
E1668A	37680-69-6	PCB-35	pg/L	T		39 U		38 U		39 U			39 U
E1668A	38444-87-0	PCB-36	pg/L	T		39 U		38 U		39 U			39 U
E1668A	38444-90-5	PCB-37	pg/L	T		39 U		6.8 J		7.1 J			8.1 J
E1668A	53555-66-1	PCB-38	pg/L	T		39 U		38 U		39 U			39 U
E1668A	38444-88-1	PCB-39	pg/L	T		39 U		38 U		39 U			39 U
E1668A	13029-08-8	PCB-4	pg/L	T		87 J		91		95			96
E1668A	PCB40+71	PCB40+71	pg/L	T		28 J		33 J		39 J			43 J
E1668A	52663-59-9	PCB-41	pg/L	T		77 U		77 U		77 U			77 U
E1668A	36559-22-5	PCB-42	pg/L	T		18 J		22 J		24 J			27 J
E1668A	70362-46-8	PCB-43	pg/L	T		77 U		77 U		77 U			77 U
E1668A	PCB44+47+65	PCB-44/47/65	pg/L	T		67 J		70 J		86 J			87 J
E1668A	70362-45-7	PCB-45	pg/L	T		77 U		11 J		12 J			12 J
E1668A	41464-47-5	PCB-46	pg/L	T		77 U		9.6 J		9.6 J			9.7 J
E1668A	70362-47-9	PCB-48	pg/L	T		77 U		77 U		77 U			77 U
E1668A	PCB49+69	PCB49+69	pg/L	T		48 J		50 J		60 J			64 J
E1668A	16605-91-7	PCB-5	pg/L	T		39 U		38 U		39 U			39 U
E1668A	PCB50+53	PCB-50/53	pg/L	T		290 U		290 U		290 U			290 U
E1668A	68194-04-7	PCB-51	pg/L	T		77 U		77 U		77 U			77 U
E1668A	35693-99-3	PCB-52	pg/L	T		76 J		83		99			94
E1668A	15968-05-5	PCB-54	pg/L	T		77 U		77 U		77 U			77 U
E1668A	74338-24-2	PCB-55	pg/L	T		77 U		77 U		77 U			77 U
E1668A	41464-43-1	PCB-56	pg/L	T		77 U		14 J		19 J			25 J
E1668A	70424-67-8	PCB-57	pg/L	T		77 U		77 U		77 U			77 U
E1668A	41464-49-7	PCB-58	pg/L	T		77 U		77 U		77 U			77 U
E1668A	PCB59+62+75	PCB-59/62/75	pg/L	T		230 U		230 U		230 U			230 U
E1668A	25569-80-6	PCB-6	pg/L	T		39 U		38 U		39 U			39 U
E1668A	PCB61+046	PCB-61/70/74/76	pg/L	T		310 U		310 U		50 J			53 J
E1668A	74472-34-7	PCB-63	pg/L	T		77 U		77 U		77 U			77 U
E1668A	32598-10-0	PCB-66	pg/L	T		19 J		27 J		36 J			45 J
E1668A	73575-53-8	PCB-67	pg/L	T		77 U		77 U		77 U			77 U
E1668A	73575-52-7	PCB-68	pg/L	T		77 U		77 U		77 U			77 U
E1668A	33284-50-3	PCB-7	pg/L	T		39 U		38 U		39 U			39 U
E1668A	74338-23-1	PCB-73	pg/L	T		77 U		77 U		77 U			77 U
E1668A	32598-13-3	PCB-77	pg/L	T		77 U		77 U		77 U			77 U
E1668A	70362-49-1	PCB-78	pg/L	T		77 U		77 U		77 U			77 U

																			Duplicate of OL-3731-08-R2			
Location ID					OL-RAD-SW-01		OL-RAD-SW-01		OL-RAC-SW-02		OL-RAC-SW-02		OL-RAC-SW-01		OL-RAC-SW-01		DEEP_S		DEEP_S		DEEP_S	
Field Sample ID					OL-3731-05-R2		OL-3731-05-R2		OL-3731-06-R2		OL-3731-06-R2		OL-3731-07-R2		OL-3731-07-R2		OL-3731-08-R2		OL-3731-09-R2		OL-3731-08-R2	
Start Depth (ft)					3.3		3.3		3.3		3.3		9.8		9.8		6.6		6.6		6.6	
End Depth (ft)					3.3		3.3		3.3		3.3		9.8		9.8		6.6		6.6		6.6	
Sampled					11/17/2021		11/17/2021		11/17/2021		11/17/2021		11/17/2021		11/17/2021		11/17/2021		11/17/2021		11/17/2021	
SDG					1K00153		410-64096-1		1K00153		410-64096-1		1K00153		410-64096-1		1K00153		1K00153		410-64096-1	
Lab Sample ID					1K00153-09/ 1K00153-10		410-64096-5		1K00153-11/ 1K00153-12		410-64096-6		1K00153-13/ 1K00153-14		410-64096-7		1K00153-15/ 1K00153-16		1K00153-17/ 1K00153-18		410-64096-8	
Medium					Water		Water		Water		Water		Water		Water		Water		Water		Water	
Sample Type					REG		REG		REG		REG		REG		REG		REG		FD		REG	
Matrix					SW		SW		SW		SW		SW		SW		SW		SW		SW	
Method	Parameter Code	Parameter Name	Units	Fraction																		
E1668A	41464-48-6	PCB-79	pg/L	T			77	U			77	U			77	U					77	U
E1668A	34883-43-7	PCB-8	pg/L	T			39	U			38	U			39	U					10	J
E1668A	33284-52-5	PCB-80	pg/L	T			77	U			77	U			77	U					77	U
E1668A	70362-50-4	PCB-81	pg/L	T			77	U			77	U			77	U					77	U
E1668A	52663-62-4	PCB-82	pg/L	T			77	U			77	U			77	U					77	U
E1668A	60145-20-2	PCB-83	pg/L	T			77	U			77	U			77	U					77	U
E1668A	52663-60-2	PCB-84	pg/L	T			12	J			13	J			15	J					20	J
E1668A	PCB85+116+117	PCB85+116+117	pg/L	T			230	U			230	U			230	U					230	U
E1668A	PCB86+77091925	PCB86+77091925	pg/L	T			460	U			460	U			460	U					460	U
E1668A	55215-17-3	PCB-88	pg/L	T			77	U			77	U			77	U					77	U
E1668A	73575-57-2	PCB-89	pg/L	T			77	U			77	U			77	U					77	U
E1668A	34883-39-1	PCB-9	pg/L	T			39	U			38	U			39	U					39	U
E1668A	PCB90+101+113	PCB90+101+113	pg/L	T			230	U			230	U			230	U					230	U
E1668A	68194-05-8	PCB-91	pg/L	T			77	U			77	U			77	U					77	U
E1668A	52663-61-3	PCB-92	pg/L	T			77	U			77	U			77	U					77	U
E1668A	PCB93+100	PCB-93+100	pg/L	T			150	U			150	U			150	U					150	U
E1668A	73575-55-0	PCB-94	pg/L	T			77	U			77	U			77	U					77	U
E1668A	38379-99-6	PCB-95	pg/L	T			24	J			30	J			33	J					40	J
E1668A	73575-54-9	PCB-96	pg/L	T			77	U			77	U			77	U					77	U
E1668A	PCB98+102	PCB-98+102	pg/L	T			190	U			190	U			190	U					190	U
E1668A	38380-01-7	PCB-99	pg/L	T			77	U			77	U			17	J					17	J
SM2540D	TSS	Total Suspended Solids	mg/L	T			1.9	J			2.7	J			3.1						4.1	

Method	Parameter Code	Parameter Name	Units	Fraction	Duplicate of OL-3731-08-R2								
				Location ID	DEEP_S	OL-RAB-SW-01	OL-RAB-SW-01	OL-RAB-SW-02	OL-RAB-SW-02	OL-RAA-SW-01	OL-RAA-SW-01	DEEP_N	DEEP_N
				Field Sample ID	OL-3731-09-R2	OL-3731-10-R2	OL-3731-10-R2	OL-3731-11-R2	OL-3731-11-R2	OL-3731-12-R2	OL-3731-12-R2	OL-3731-13-R2	OL-3731-13-R2
				Start Depth (ft)	6.6	1.6	1.6	3.3	3.3	1.6	1.6	6.6	6.6
				End Depth (ft)	6.6	1.6	1.6	3.3	3.3	1.6	1.6	6.6	6.6
				Sampled	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
				SDG	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1
				Lab Sample ID	410-64096-9	1K00153-19/ 1K00153-20	410-64096-10	1K00153-21/ 1K00153-22	410-64096-11	1K00153-23/ 1K00153-24	410-64096-12	1K00153-25/ 1K00153-26	410-64096-13
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	FD	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1630	22967-92-6	Methyl Mercury	ng/L	T		0.038 J		0.026 U		0.036 J		0.032 J	
E1631	7439-97-6	Mercury	ng/L	T		0.9		0.59		1.06		0.79	
E1631	7439-97-6	Mercury	ng/L	D		0.18 J		0.16 J		0.18 J		0.17 J	
E1668A	33146-45-1	10-DiCB	pg/L	T	39 U		39 U		38 U		38 U		39 U
E1668A	74472-36-9	112-PeCB	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	41411-61-4	142-HXCB	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	68194-15-0	143-HxCB	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	41411-62-5	160-HXCB	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	74472-43-8	161-Hxcb	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	39635-34-2	162-HXCB	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	74472-45-0	164-HxCB	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	74472-46-1	165-HxCB	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	33025-41-1	2,3',4,4'-Tetrachlorobiphenyl	pg/L	T	12 J		77 U		12 J		12 J		78 U
E1668A	52663-76-0	203-OCCB	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	52663-58-8	64-TeCB	pg/L	T	33 J		25 J		30 J		20 J		32 J
E1668A	41464-42-0	72-TeCB	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	2051-24-3	DCB Decachlorobiphenyl	pg/L	T	970 U		960 U		960 U		960 U		970 U
E1668A	2051-60-7	PCB-1	pg/L	T	190 U		190 U		190 U		190 U		190 U
E1668A	60145-21-3	PCB-103	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	56558-16-8	PCB-104	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	32598-14-4	PCB-105	pg/L	T	14 J		77 U		77 U		77 U		78 U
E1668A	70424-69-0	PCB-106/118	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	70424-68-9	PCB-107	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	PCB108+124	PCB-108/124	pg/L	T	150 U		150 U		150 U		150 U		160 U
E1668A	2050-67-1	PCB-11	pg/L	T	290 U		290 U		290 U		290 U		290 U
E1668A	PCB110+115	PCB-110+115	pg/L	T	150 U		150 U		150 U		150 U		160 U
E1668A	39635-32-0	PCB-111	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	74472-37-0	PCB-114	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	31508-00-6	PCB-118	pg/L	T	20 J		16 J		16 J		14 J		18 J
E1668A	PCB12+13	PCB-12/13	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	68194-12-7	PCB-120	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	56558-18-0	PCB-121	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	76842-07-4	PCB-122	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	65510-44-3	PCB-123	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	57465-28-8	PCB-126	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	39635-33-1	PCB-127	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	PCB128+166	PCB-128/166	pg/L	T	150 U		150 U		150 U		150 U		160 U
E1668A	PCB129+138+163	PCB129+138+163	pg/L	T	230 U		230 U		230 U		230 U		230 U
E1668A	52663-66-8	PCB-130	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	61798-70-7	PCB-131	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	38380-05-1	PCB-132	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	35694-04-3	PCB-133	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	52704-70-8	PCB-134	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	PCB135+151	PCB135+151	pg/L	T	150 U		150 UJ		150 U		150 U		160 U
E1668A	38411-22-2	PCB-136	pg/L	T	77 UJ		77 UJ		77 U		77 U		78 U
E1668A	35694-06-5	PCB-137	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	PCB139+140	PCB-139/140	pg/L	T	150 U		150 U		150 U		150 U		160 U
E1668A	34883-41-5	PCB-14	pg/L	T	39 U		39 U		38 U		38 U		39 U
E1668A	52712-04-6	PCB-141	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	68194-14-9	PCB-144	pg/L	T	77 U		77 U		77 U		77 U		78 U

					Duplicate of OL-3731-08-R2								
				Location ID	DEEP_S	OL-RAB-SW-01	OL-RAB-SW-01	OL-RAB-SW-02	OL-RAB-SW-02	OL-RAA-SW-01	OL-RAA-SW-01	DEEP_N	DEEP_N
				Field Sample ID	OL-3731-09-R2	OL-3731-10-R2	OL-3731-10-R2	OL-3731-11-R2	OL-3731-11-R2	OL-3731-12-R2	OL-3731-12-R2	OL-3731-13-R2	OL-3731-13-R2
				Start Depth (ft)	6.6	1.6	1.6	3.3	3.3	1.6	1.6	6.6	6.6
				End Depth (ft)	6.6	1.6	1.6	3.3	3.3	1.6	1.6	6.6	6.6
				Sampled	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
				SDG	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1
				Lab Sample ID	410-64096-9	1K00153-19/ 1K00153-20	410-64096-10	1K00153-21/ 1K00153-22	410-64096-11	1K00153-23/ 1K00153-24	410-64096-12	1K00153-25/ 1K00153-26	410-64096-13
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	FD	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	74472-40-5	PCB-145	pg/L	T	77 U		77 UJ		77 U		77 U		78 U
E1668A	51908-16-8	PCB-146	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	PCB147+149	PCB-147/149	pg/L	T	150 U		150 U		150 U		150 U		160 U
E1668A	74472-41-6	PCB-148	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	2050-68-2	PCB-15	pg/L	T	34 J		25 J		21 J		38 U		25 J
E1668A	68194-08-1	PCB-150	pg/L	T	77 U		77 UJ		77 U		77 U		78 U
E1668A	68194-09-2	PCB-152	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	PCB153+168	PCB-153/168	pg/L	T	150 U		150 U		150 U		150 U		160 U
E1668A	60145-22-4	PCB-154	pg/L	T	190 U		190 UJ		190 U		190 U		190 U
E1668A	33979-03-2	PCB-155	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	PCB156+157	PCB-156/157	pg/L	T	150 U		150 U		150 U		150 U		160 U
E1668A	74472-42-7	PCB-158	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	39635-35-3	PCB-159	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	38444-78-9	PCB-16	pg/L	T	19 J		17 J		14 J		38 U		20 J
E1668A	52663-72-6	PCB-167	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	32774-16-6	PCB-169	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	37680-66-3	PCB-17	pg/L	T	58		42		48		7.6 J		45
E1668A	35065-30-6	PCB-170	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	PCB171+173	PCB-171/173	pg/L	T	150 U		150 U		150 U		150 U		160 U
E1668A	52663-74-8	PCB-172	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	38411-25-5	PCB-174	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	40186-70-7	PCB-175	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	52663-65-7	PCB-176	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	52663-70-4	PCB-177	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	52663-67-9	PCB-178	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	52663-64-6	PCB-179	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	PCB18+30	PCB-18+30	pg/L	T	64 J		52 J		49 J		11 J		57 J
E1668A	PCB180+193	PCB-180/193	pg/L	T	150 U		150 U		150 U		150 U		160 U
E1668A	74472-47-2	PCB-181	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	60145-23-5	PCB-182	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	PCB183+185	PCB-183+185	pg/L	T	150 U		150 U		150 U		150 U		160 U
E1668A	74472-48-3	PCB-184	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	74472-49-4	PCB-186	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	52663-68-0	PCB-187	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	74487-85-7	PCB-188	pg/L	T	190 U		190 U		190 U		190 U		190 U
E1668A	39635-31-9	PCB-189	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	38444-73-4	PCB-19	pg/L	T	30 J		27 J		31 J		38 U		28 J
E1668A	41411-64-7	PCB-190	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	74472-50-7	PCB-191	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	74472-51-8	PCB-192	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	35694-08-7	PCB-194	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	52663-78-2	PCB-195	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	42740-50-1	PCB-196/203	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	PCB197+200	PCB-197+200	pg/L	T	230 U		230 U		230 U		230 U		230 U
E1668A	PCB198+199	PCB-198/199	pg/L	T	230 U		230 U		230 U		230 U		230 U
E1668A	2051-61-8	PCB-2	pg/L	T	190 U		190 U		190 U		190 U		190 U
E1668A	PCB20+28	PCB20+28	pg/L	T	53 J		49 J		45 J		21 J		49 J
E1668A	40186-71-8	PCB-201	pg/L	T	390 U		390 U		380 U		380 U		390 U
E1668A	2136-99-4	PCB-202	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	74472-52-9	PCB-204	pg/L	T	120 U		120 U		120 U		120 U		120 U

					Duplicate of OL-3731-08-R2								
				Location ID	DEEP_S	OL-RAB-SW-01	OL-RAB-SW-01	OL-RAB-SW-02	OL-RAB-SW-02	OL-RAA-SW-01	OL-RAA-SW-01	DEEP_N	DEEP_N
				Field Sample ID	OL-3731-09-R2	OL-3731-10-R2	OL-3731-10-R2	OL-3731-11-R2	OL-3731-11-R2	OL-3731-12-R2	OL-3731-12-R2	OL-3731-13-R2	OL-3731-13-R2
				Start Depth (ft)	6.6	1.6	1.6	3.3	3.3	1.6	1.6	6.6	6.6
				End Depth (ft)	6.6	1.6	1.6	3.3	3.3	1.6	1.6	6.6	6.6
				Sampled	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021	11/17/2021
				SDG	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1	1K00153	410-64096-1
				Lab Sample ID	410-64096-9	1K00153-19/ 1K00153-20	410-64096-10	1K00153-21/ 1K00153-22	410-64096-11	1K00153-23/ 1K00153-24	410-64096-12	1K00153-25/ 1K00153-26	410-64096-13
				Medium	Water	Water	Water	Water	Water	Water	Water	Water	Water
				Sample Type	FD	REG	REG	REG	REG	REG	REG	REG	REG
				Matrix	SW	SW	SW	SW	SW	SW	SW	SW	SW
Method	Parameter Code	Parameter Name	Units	Fraction									
E1668A	74472-53-0	PCB-205	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	40186-72-9	PCB-206	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	52663-79-3	PCB-207	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	52663-77-1	PCB-208	pg/L	T	120 U		120 U		120 U		120 U		120 U
E1668A	PCB21+33	PCB-21/33	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	38444-85-8	PCB-22	pg/L	T	9.9 J		9.9 J		8.4 J		8.3 J		12 J
E1668A	55720-44-0	PCB-23	pg/L	T	39 U		39 U		38 U		38 U		39 U
E1668A	55702-45-9	PCB-24	pg/L	T	39 U		39 U		38 U		38 U		39 U
E1668A	55712-37-3	PCB-25	pg/L	T	31 J		28 J		24 J		38 U		30 J
E1668A	PCB26+29	PCB26+29	pg/L	T	54 J		52 J		44 J		77 U		50 J
E1668A	38444-76-7	PCB-27	pg/L	T	24 J		19 J		21 J		38 U		20 J
E1668A	2051-62-9	PCB-3	pg/L	T	190 U		190 U		190 U		190 U		190 U
E1668A	16606-02-3	PCB-31	pg/L	T	79		64		50		20 J		60 J
E1668A	38444-77-8	PCB-32	pg/L	T	40		39		34 J		38 U		38 J
E1668A	37680-68-5	PCB-34	pg/L	T	39 U		39 U		38 U		38 U		39 U
E1668A	37680-69-6	PCB-35	pg/L	T	39 U		39 U		38 U		38 U		39 U
E1668A	38444-87-0	PCB-36	pg/L	T	39 U		39 U		38 U		38 U		39 U
E1668A	38444-90-5	PCB-37	pg/L	T	9.2 J		39 U		38 U		38 U		39 U
E1668A	53555-66-1	PCB-38	pg/L	T	39 U		39 U		38 U		38 U		39 U
E1668A	38444-88-1	PCB-39	pg/L	T	39 U		39 U		38 U		38 U		39 U
E1668A	13029-08-8	PCB-4	pg/L	T	92		88		92		38 U		75 J
E1668A	PCB40+71	PCB40+71	pg/L	T	43 J		32 J		150 U		150 U		36 J
E1668A	52663-59-9	PCB-41	pg/L	T	77 U		77 U		21 J		77 U		78 U
E1668A	36559-22-5	PCB-42	pg/L	T	25 J		23 J		25 J		77 U		23 J
E1668A	70362-46-8	PCB-43	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	PCB44+47+65	PCB-44/47/65	pg/L	T	87 J		69 J		60 J		230 U		73 J
E1668A	70362-45-7	PCB-45	pg/L	T	12 J		20 J		77 U		77 U		13 J
E1668A	41464-47-5	PCB-46	pg/L	T	77 U		77 U		77 U		77 U		10 J
E1668A	70362-47-9	PCB-48	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	PCB49+69	PCB49+69	pg/L	T	59 J		52 J		46 J		150 U		51 J
E1668A	16605-91-7	PCB-5	pg/L	T	39 U		39 U		38 U		38 U		39 U
E1668A	PCB50+53	PCB-50/53	pg/L	T	290 U		290 U		290 U		290 U		290 U
E1668A	68194-04-7	PCB-51	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	35693-99-3	PCB-52	pg/L	T	93		83		72 J		34 J		82
E1668A	15968-05-5	PCB-54	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	74338-24-2	PCB-55	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	41464-43-1	PCB-56	pg/L	T	21 J		16 J		19 J		15 J		18 J
E1668A	70424-67-8	PCB-57	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	41464-49-7	PCB-58	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	PCB59+62+75	PCB-59/62/75	pg/L	T	230 U		230 U		230 U		230 U		230 U
E1668A	25569-80-6	PCB-6	pg/L	T	39 U		39 U		38 U		38 U		39 U
E1668A	PCB61+046	PCB-61/70/74/76	pg/L	T	47 J		310 U		47 J		310 U		49 J
E1668A	74472-34-7	PCB-63	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	32598-10-0	PCB-66	pg/L	T	43 J		34 J		36 J		33 J		39 J
E1668A	73575-53-8	PCB-67	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	73575-52-7	PCB-68	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	33284-50-3	PCB-7	pg/L	T	39 U		39 U		38 U		38 U		39 U
E1668A	74338-23-1	PCB-73	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	32598-13-3	PCB-77	pg/L	T	77 U		77 U		77 U		77 U		78 U
E1668A	70362-49-1	PCB-78	pg/L	T	77 U		77 U		77 U		77 U		78 U

					Duplicate of OL-3731-08-R2																	
				Location ID	DEEP_S		OL-RAB-SW-01		OL-RAB-SW-01		OL-RAB-SW-02		OL-RAB-SW-02		OL-RAA-SW-01		OL-RAA-SW-01		DEEP_N		DEEP_N	
				Field Sample ID	OL-3731-09-R2		OL-3731-10-R2		OL-3731-10-R2		OL-3731-11-R2		OL-3731-11-R2		OL-3731-12-R2		OL-3731-12-R2		OL-3731-13-R2		OL-3731-13-R2	
				Start Depth (ft)	6.6		1.6		1.6		3.3		3.3		1.6		1.6		6.6		6.6	
				End Depth (ft)	6.6		1.6		1.6		3.3		3.3		1.6		1.6		6.6		6.6	
				Sampled	11/17/2021		11/17/2021		11/17/2021		11/17/2021		11/17/2021		11/17/2021		11/17/2021		11/17/2021		11/17/2021	
				SDG	410-64096-1		1K00153		410-64096-1		1K00153		410-64096-1		1K00153		410-64096-1		1K00153		410-64096-1	
				Lab Sample ID	410-64096-9		1K00153-19/ 1K00153-20		410-64096-10		1K00153-21/ 1K00153-22		410-64096-11		1K00153-23/ 1K00153-24		410-64096-12		1K00153-25/ 1K00153-26		410-64096-13	
				Medium	Water		Water		Water		Water		Water		Water		Water		Water		Water	
				Sample Type	FD		REG		REG		REG		REG		REG		REG		REG		REG	
				Matrix	SW		SW		SW		SW		SW		SW		SW		SW		SW	
Method	Parameter Code	Parameter Name	Units	Fraction																		
E1668A	41464-48-6	PCB-79	pg/L	T	77	U			77	U			77	U			77	U			78	U
E1668A	34883-43-7	PCB-8	pg/L	T	39	U			11	J			38	U			38	U			39	U
E1668A	33284-52-5	PCB-80	pg/L	T	77	U			77	U			77	U			77	U			78	U
E1668A	70362-50-4	PCB-81	pg/L	T	77	U			77	U			77	U			77	U			78	U
E1668A	52663-62-4	PCB-82	pg/L	T	77	U			77	U			77	U			77	U			78	U
E1668A	60145-20-2	PCB-83	pg/L	T	77	U			77	U			77	U			77	U			78	U
E1668A	52663-60-2	PCB-84	pg/L	T	18	J			16	J			14	J			77	U			15	J
E1668A	PCB85+116+117	PCB85+116+117	pg/L	T	230	U			230	U			230	U			230	U			230	U
E1668A	PCB86+77091925	PCB86+77091925	pg/L	T	460	U			460	U			460	U			460	U			470	U
E1668A	55215-17-3	PCB-88	pg/L	T	77	U			77	U			77	U			77	U			78	U
E1668A	73575-57-2	PCB-89	pg/L	T	77	U			77	U			77	U			77	U			78	U
E1668A	34883-39-1	PCB-9	pg/L	T	39	U			39	U			38	U			38	U			39	U
E1668A	PCB90+101+113	PCB90+101+113	pg/L	T	230	U			230	U			230	U			230	U			230	U
E1668A	68194-05-8	PCB-91	pg/L	T	77	U			77	U			77	U			77	U			78	U
E1668A	52663-61-3	PCB-92	pg/L	T	77	U			77	U			77	U			77	U			78	U
E1668A	PCB93+100	PCB-93+100	pg/L	T	150	U			150	U			150	U			150	U			160	U
E1668A	73575-55-0	PCB-94	pg/L	T	77	U			77	U			77	U			77	U			78	U
E1668A	38379-99-6	PCB-95	pg/L	T	39	J			34	J			28	J			18	J			31	J
E1668A	73575-54-9	PCB-96	pg/L	T	77	U			77	U			77	U			77	U			78	U
E1668A	PCB98+102	PCB-98+102	pg/L	T	190	U			190	U			190	U			190	U			190	U
E1668A	38380-01-7	PCB-99	pg/L	T	17	J			14	J			77	U			77	U			78	U
SM2540D	TSS	Total Suspended Solids	mg/L	T	3.4				3.3				2.1	J			3.4				3.9	

				Location ID	QC		QC	
				Field Sample ID	OL-3731-14-R2		OL-3731-14-R2	
				Start Depth (ft)				
				End Depth (ft)				
				Sampled	11/17/2021		11/17/2021	
				SDG	1K00153		410-64096-1	
				Lab Sample ID	1K00153-27/ 1K00153-28		410-64096-14	
				Medium	Water		Water	
				Sample Type	FB		FB	
				Matrix	WQ		WQ	
Method	Parameter Code	Parameter Name	Units	Fraction				
E1630	22967-92-6	Methyl Mercury	ng/L	T	0.026	U		
E1631	7439-97-6	Mercury	ng/L	T	0.08	U		
E1631	7439-97-6	Mercury	ng/L	D	0.08	U		
E1668A	33146-45-1	10-DiCB	pg/L	T			39	U
E1668A	74472-36-9	112-PeCB	pg/L	T			78	U
E1668A	41411-61-4	142-HXCB	pg/L	T			78	U
E1668A	68194-15-0	143-HxCB	pg/L	T			78	U
E1668A	41411-62-5	160-HXCB	pg/L	T			78	U
E1668A	74472-43-8	161-Hxcb	pg/L	T			78	U
E1668A	39635-34-2	162-HXCB	pg/L	T			78	U
E1668A	74472-45-0	164-HxCB	pg/L	T			78	U
E1668A	74472-46-1	165-HxCB	pg/L	T			78	U
E1668A	33025-41-1	2,3',4,4'-Tetrachlorobiphenyl	pg/L	T			78	U
E1668A	52663-76-0	203-OCCB	pg/L	T			120	U
E1668A	52663-58-8	64-TeCB	pg/L	T			13	J
E1668A	41464-42-0	72-TeCB	pg/L	T			78	U
E1668A	2051-24-3	DCB Decachlorobiphenyl	pg/L	T			970	U
E1668A	2051-60-7	PCB-1	pg/L	T			190	U
E1668A	60145-21-3	PCB-103	pg/L	T			78	U
E1668A	56558-16-8	PCB-104	pg/L	T			78	U
E1668A	32598-14-4	PCB-105	pg/L	T			78	U
E1668A	70424-69-0	PCB-106/118	pg/L	T			78	U
E1668A	70424-68-9	PCB-107	pg/L	T			78	U
E1668A	PCB108+124	PCB-108/124	pg/L	T			160	U
E1668A	2050-67-1	PCB-11	pg/L	T			290	U
E1668A	PCB110+115	PCB-110+115	pg/L	T			160	U
E1668A	39635-32-0	PCB-111	pg/L	T			78	U
E1668A	74472-37-0	PCB-114	pg/L	T			78	U
E1668A	31508-00-6	PCB-118	pg/L	T			78	U
E1668A	PCB12+13	PCB-12/13	pg/L	T			78	U
E1668A	68194-12-7	PCB-120	pg/L	T			78	U
E1668A	56558-18-0	PCB-121	pg/L	T			78	U
E1668A	76842-07-4	PCB-122	pg/L	T			78	U
E1668A	65510-44-3	PCB-123	pg/L	T			78	U
E1668A	57465-28-8	PCB-126	pg/L	T			78	U
E1668A	39635-33-1	PCB-127	pg/L	T			78	U
E1668A	PCB128+166	PCB-128/166	pg/L	T			160	U
E1668A	PCB129+138+163	PCB129+138+163	pg/L	T			230	U
E1668A	52663-66-8	PCB-130	pg/L	T			78	U
E1668A	61798-70-7	PCB-131	pg/L	T			78	U
E1668A	38380-05-1	PCB-132	pg/L	T			78	U
E1668A	35694-04-3	PCB-133	pg/L	T			78	U
E1668A	52704-70-8	PCB-134	pg/L	T			78	U
E1668A	PCB135+151	PCB135+151	pg/L	T			160	U
E1668A	38411-22-2	PCB-136	pg/L	T			78	U
E1668A	35694-06-5	PCB-137	pg/L	T			78	U
E1668A	PCB139+140	PCB-139/140	pg/L	T			160	U
E1668A	34883-41-5	PCB-14	pg/L	T			39	U
E1668A	52712-04-6	PCB-141	pg/L	T			78	U
E1668A	68194-14-9	PCB-144	pg/L	T			78	U

				Location ID	QC		QC	
				Field Sample ID	OL-3731-14-R2		OL-3731-14-R2	
				Start Depth (ft)				
				End Depth (ft)				
				Sampled	11/17/2021		11/17/2021	
				SDG	1K00153		410-64096-1	
				Lab Sample ID	1K00153-27/ 1K00153-28		410-64096-14	
				Medium	Water		Water	
				Sample Type	FB		FB	
				Matrix	WQ		WQ	
Method	Parameter Code	Parameter Name	Units	Fraction				
E1668A	74472-40-5	PCB-145	pg/L	T			78	U
E1668A	51908-16-8	PCB-146	pg/L	T			78	U
E1668A	PCB147+149	PCB-147/149	pg/L	T			160	U
E1668A	74472-41-6	PCB-148	pg/L	T			78	U
E1668A	2050-68-2	PCB-15	pg/L	T			39	U
E1668A	68194-08-1	PCB-150	pg/L	T			78	U
E1668A	68194-09-2	PCB-152	pg/L	T			78	U
E1668A	PCB153+168	PCB-153/168	pg/L	T			160	U
E1668A	60145-22-4	PCB-154	pg/L	T			190	U
E1668A	33979-03-2	PCB-155	pg/L	T			78	U
E1668A	PCB156+157	PCB-156/157	pg/L	T			160	U
E1668A	74472-42-7	PCB-158	pg/L	T			78	U
E1668A	39635-35-3	PCB-159	pg/L	T			78	U
E1668A	38444-78-9	PCB-16	pg/L	T			39	U
E1668A	52663-72-6	PCB-167	pg/L	T			78	U
E1668A	32774-16-6	PCB-169	pg/L	T			78	U
E1668A	37680-66-3	PCB-17	pg/L	T			39	U
E1668A	35065-30-6	PCB-170	pg/L	T			78	U
E1668A	PCB171+173	PCB-171/173	pg/L	T			160	U
E1668A	52663-74-8	PCB-172	pg/L	T			78	U
E1668A	38411-25-5	PCB-174	pg/L	T			78	U
E1668A	40186-70-7	PCB-175	pg/L	T			78	U
E1668A	52663-65-7	PCB-176	pg/L	T			78	U
E1668A	52663-70-4	PCB-177	pg/L	T			78	U
E1668A	52663-67-9	PCB-178	pg/L	T			78	U
E1668A	52663-64-6	PCB-179	pg/L	T			78	U
E1668A	PCB18+30	PCB-18+30	pg/L	T			78	U
E1668A	PCB180+193	PCB-180/193	pg/L	T			160	U
E1668A	74472-47-2	PCB-181	pg/L	T			78	U
E1668A	60145-23-5	PCB-182	pg/L	T			78	U
E1668A	PCB183+185	PCB-183+185	pg/L	T			160	U
E1668A	74472-48-3	PCB-184	pg/L	T			78	U
E1668A	74472-49-4	PCB-186	pg/L	T			78	U
E1668A	52663-68-0	PCB-187	pg/L	T			78	U
E1668A	74487-85-7	PCB-188	pg/L	T			190	U
E1668A	39635-31-9	PCB-189	pg/L	T			78	U
E1668A	38444-73-4	PCB-19	pg/L	T			39	U
E1668A	41411-64-7	PCB-190	pg/L	T			78	U
E1668A	74472-50-7	PCB-191	pg/L	T			78	U
E1668A	74472-51-8	PCB-192	pg/L	T			78	U
E1668A	35694-08-7	PCB-194	pg/L	T			120	U
E1668A	52663-78-2	PCB-195	pg/L	T			120	U
E1668A	42740-50-1	PCB-196/203	pg/L	T			120	U
E1668A	PCB197+200	PCB-197+200	pg/L	T			230	U
E1668A	PCB198+199	PCB-198/199	pg/L	T			230	U
E1668A	2051-61-8	PCB-2	pg/L	T			190	U
E1668A	PCB20+28	PCB20+28	pg/L	T			78	U
E1668A	40186-71-8	PCB-201	pg/L	T			390	U
E1668A	2136-99-4	PCB-202	pg/L	T			120	U
E1668A	74472-52-9	PCB-204	pg/L	T			120	U

			Location ID		QC		QC	
			Field Sample ID		OL-3731-14-R2		OL-3731-14-R2	
			Start Depth (ft)					
			End Depth (ft)					
			Sampled		11/17/2021		11/17/2021	
			SDG		1K00153		410-64096-1	
			Lab Sample ID		1K00153-27/ 1K00153-28		410-64096-14	
			Medium		Water		Water	
			Sample Type		FB		FB	
			Matrix		WQ		WQ	
Method	Parameter Code	Parameter Name	Units	Fraction				
E1668A	74472-53-0	PCB-205	pg/L	T			120	U
E1668A	40186-72-9	PCB-206	pg/L	T			120	U
E1668A	52663-79-3	PCB-207	pg/L	T			120	U
E1668A	52663-77-1	PCB-208	pg/L	T			120	U
E1668A	PCB21+33	PCB-21/33	pg/L	T			78	U
E1668A	38444-85-8	PCB-22	pg/L	T			39	U
E1668A	55720-44-0	PCB-23	pg/L	T			39	U
E1668A	55702-45-9	PCB-24	pg/L	T			39	U
E1668A	55712-37-3	PCB-25	pg/L	T			39	U
E1668A	PCB26+29	PCB26+29	pg/L	T			78	U
E1668A	38444-76-7	PCB-27	pg/L	T			39	U
E1668A	2051-62-9	PCB-3	pg/L	T			190	U
E1668A	16606-02-3	PCB-31	pg/L	T			39	U
E1668A	38444-77-8	PCB-32	pg/L	T			39	U
E1668A	37680-68-5	PCB-34	pg/L	T			39	U
E1668A	37680-69-6	PCB-35	pg/L	T			39	U
E1668A	38444-87-0	PCB-36	pg/L	T			39	U
E1668A	38444-90-5	PCB-37	pg/L	T			6.7	J
E1668A	53555-66-1	PCB-38	pg/L	T			39	U
E1668A	38444-88-1	PCB-39	pg/L	T			39	U
E1668A	13029-08-8	PCB-4	pg/L	T			39	U
E1668A	PCB40+71	PCB40+71	pg/L	T			160	U
E1668A	52663-59-9	PCB-41	pg/L	T			78	U
E1668A	36559-22-5	PCB-42	pg/L	T			78	U
E1668A	70362-46-8	PCB-43	pg/L	T			78	U
E1668A	PCB44+47+65	PCB-44/47/65	pg/L	T			230	U
E1668A	70362-45-7	PCB-45	pg/L	T			78	U
E1668A	41464-47-5	PCB-46	pg/L	T			78	U
E1668A	70362-47-9	PCB-48	pg/L	T			78	U
E1668A	PCB49+69	PCB49+69	pg/L	T			160	U
E1668A	16605-91-7	PCB-5	pg/L	T			39	U
E1668A	PCB50+53	PCB-50/53	pg/L	T			290	U
E1668A	68194-04-7	PCB-51	pg/L	T			78	U
E1668A	35693-99-3	PCB-52	pg/L	T			78	U
E1668A	15968-05-5	PCB-54	pg/L	T			78	U
E1668A	74338-24-2	PCB-55	pg/L	T			78	U
E1668A	41464-43-1	PCB-56	pg/L	T			78	U
E1668A	70424-67-8	PCB-57	pg/L	T			78	U
E1668A	41464-49-7	PCB-58	pg/L	T			78	U
E1668A	PCB59+62+75	PCB-59/62/75	pg/L	T			230	U
E1668A	25569-80-6	PCB-6	pg/L	T			39	U
E1668A	PCB61+046	PCB-61/70/74/76	pg/L	T			310	U
E1668A	74472-34-7	PCB-63	pg/L	T			78	U
E1668A	32598-10-0	PCB-66	pg/L	T			78	U
E1668A	73575-53-8	PCB-67	pg/L	T			78	U
E1668A	73575-52-7	PCB-68	pg/L	T			78	U
E1668A	33284-50-3	PCB-7	pg/L	T			39	U
E1668A	74338-23-1	PCB-73	pg/L	T			78	U
E1668A	32598-13-3	PCB-77	pg/L	T			78	U
E1668A	70362-49-1	PCB-78	pg/L	T			78	U

Method	Parameter Code	Parameter Name	Units	Fraction	QC		QC	
				Field Sample ID	OL-3731-14-R2		OL-3731-14-R2	
				Start Depth (ft)				
				End Depth (ft)				
				Sampled	11/17/2021		11/17/2021	
				SDG	1K00153		410-64096-1	
				Lab Sample ID	1K00153-27/ 1K00153-28		410-64096-14	
				Medium	Water		Water	
				Sample Type	FB		FB	
				Matrix	WQ		WQ	
E1668A	41464-48-6	PCB-79	pg/L	T			78	U
E1668A	34883-43-7	PCB-8	pg/L	T			39	U
E1668A	33284-52-5	PCB-80	pg/L	T			78	U
E1668A	70362-50-4	PCB-81	pg/L	T			78	U
E1668A	52663-62-4	PCB-82	pg/L	T			78	U
E1668A	60145-20-2	PCB-83	pg/L	T			78	U
E1668A	52663-60-2	PCB-84	pg/L	T			78	U
E1668A	PCB85+116+117	PCB85+116+117	pg/L	T			230	U
E1668A	PCB86+77091925	PCB86+77091925	pg/L	T			470	U
E1668A	55215-17-3	PCB-88	pg/L	T			78	U
E1668A	73575-57-2	PCB-89	pg/L	T			78	U
E1668A	34883-39-1	PCB-9	pg/L	T			39	U
E1668A	PCB90+101+113	PCB90+101+113	pg/L	T			230	U
E1668A	68194-05-8	PCB-91	pg/L	T			78	U
E1668A	52663-61-3	PCB-92	pg/L	T			78	U
E1668A	PCB93+100	PCB-93+100	pg/L	T			160	U
E1668A	73575-55-0	PCB-94	pg/L	T			78	U
E1668A	38379-99-6	PCB-95	pg/L	T			78	U
E1668A	73575-54-9	PCB-96	pg/L	T			78	U
E1668A	PCB98+102	PCB-98+102	pg/L	T			190	U
E1668A	38380-01-7	PCB-99	pg/L	T			78	U
SM2540D	TSS	Total Suspended Solids	mg/L	T			1.2	J

ATTACHMENT 1 – 2021 ANNUAL POST CLOSURE CARE SUMMARY REPORT FOR THE ONONDAGA LAKE SEDIMENT CONSOLIDATION AREA (SCA)

DRAFT

2021 ANNUAL POST CLOSURE CARE SUMMARY REPORT FOR THE ONONDAGA LAKE SEDIMENT CONSOLIDATION AREA (SCA) TOWN OF CAMILLUS ONONDAGA COUNTY, NEW YORK

Prepared For:

Honeywell

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APRIL 2022

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LIST OF ACRONYMS

GAC	granular activated carbon
IPC	inclined plate clarifiers
LGAC	liquid-phased granular activate carbon
LMS	liquid management system
LTS	liquid transmission system
Metro	Onondaga County Metropolitan Syracuse Wastewater Treatment Plant
NRD	Natural Resources Damages
NYSDEC	New York State Department of Environmental Conservation
PCCP	Post-Closure Care Plan
Q1, Q2, Q3, Q4	First, second, third and fourth quarters, respectively
RECP	Rolled Erosion Control Products
ROD	Record of Decision
SCA	Sediment Consolidation Area
SOW	Scope of work
SVOC	semivolatile organic compound
USDC	United States District Court
USFWS	United States Fish and Wildlife Service
VOC	volatile organic compound
WTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

The Sediment Consolidation Area (SCA) final cover system was completed in October 2017. The 2021 monitoring and maintenance activities were completed consistent with the SCA *Post-Closure Care Plan* (PCCP; Parsons and Beech and Bonaparte 2017), with the objective of maintaining and verifying the integrity and effectiveness of the cover system, surface water management system, liquid management system (LMS), and the SCA perimeter berm.

The monitoring activities in 2021 included:

- Quarterly visual inspections of the SCA final cover system and of the surface water management system
- Monthly inspections of the LMS system
- Monthly odor monitoring
- Additional inspections after major storm events and prior to mowing events

Maintenance activities included mowing, animal burrow repairs, and invasive species control, which were conducted as needed based on inspection findings.

Throughout the 2021 monitoring period, the systems were observed to be in good condition and were performing as intended. As recommended in the *2020 Annual Post-Closure Care Summary Report for the Onondaga Lake Sediment Consolidation Area (SCA)* (Parsons 2021a), the site was monitored during inspections for any needs of supplementary seeding; areas with sparse vegetation were very minor and field observations determined enhancement seeding was not warranted in 2021.

During this monitoring period, the PCCP implemented at the SCA has been effective, and the program will continue as planned in 2022. Additional recommendations for 2022 include:

- Repair the small area of Rolled Erosion Control Product (RECP) and install additional RECP over the small areas of erosion located at the northern edge of the site.
- During the spring of 2022, evaluate the need for further application of supplementary seed in areas identified as having sparse vegetation during the 2021 quarterly inspections.

1.0 INTRODUCTION

The Onondaga Lake Bottom Site, located near Syracuse in Central New York, is on the New York State Registry of Inactive Hazardous Waste Sites and is part of the Onondaga Lake National Priorities List. Honeywell entered into a Consent Decree 89-CV-815 (United States District Court [USDC] 2007) with the New York State Department of Environmental Conservation (NYSDEC) to implement the selected remedy for Onondaga Lake as outlined in the Record of Decision (ROD) issued on July 1, 2005 (NYSDEC 2005).

As specified in the ROD, a component of the selected lake remedy included dredging and on-site consolidation of sediments removed from the lake. Based on an evaluation of potential locations, the SCA was constructed on Wastebed 13 to contain sediment dredged from Onondaga Lake (Figure 1) in 2010, 2011, and 2012.

The approximately 55-acre SCA site was constructed in two phases. Two adjacent stormwater basins, the East Basin and the West Basin, occupy approximately 4 acres and 2.4 acres, respectively (Parsons and Anchor QEA 2017). The *Onondaga Lake SCA Civil and Geotechnical Final Design* (Parsons and Geosyntec 2011) describes the SCA linear system and perimeter berm design.

Dredging operations in Onondaga Lake and sediment transport to the SCA began in 2012 and were completed in November 2014. The *Onondaga Lake SCA Final Cover Design Report* (Parsons and Beech and Bonaparte 2016) describes the SCA final cover system design. Construction of the cover system began in 2015 and was completed in 2017. The final cover consisted of a leveling layer, a protective cover layer, and a vegetative layer for restoration of native grassland species. The existing leachate collection system was incorporated into the cover system construction by way of two vertical risers. The site layout is shown in Figure 2.

In addition to the above activities, the habitat quality of the vegetative cover of the SCA site was enhanced to meet the requirements set forth in paragraph 27 of the Natural Resource Damages (NRD) Consent Decree (USDC 2018). The scope of work (SOW) for this project (NRD SOW Project #6, "Native Grasslands Project") is defined in the NRD Consent Decree. The SOW is overseen by the Onondaga Lake NRD Trustees Council, which is comprised of the New York State Commissioner of Environmental Conservation and United States Department of the Interior, represented by the NYSDEC and the United States Fish and Wildlife Service (USFWS), respectively. As discussed in the *Onondaga Lake Natural Resource Restoration Projects 2021 Annual Report* (Parsons 2021b), activities performed at the site as part of the NRD Native Grasslands Project in 2021 included mowing of one-third of the site, as well as invasive species spot treatment (see Section 3).

This report consists of five sections. Following this introduction:

Section 2 describes the findings of the various inspections and monitoring events completed at the site during the 2021 monitoring period.

Section 3 summarizes maintenance and enhancement activities conducted at the site during the monitoring period.

Section 4 provides recommendations for continued post-closure care in 2022 and outstanding maintenance items noted during the 2021 quarterly inspections.

Section 5 lists references cited in the report.

2.0 SITE INSPECTIONS AND MONITORING

The following describes inspections and monitoring events conducted at the site during 2021 as required by and outlined in the PCCP. These include:

- Visual inspections of the SCA final cover system
- Visual inspections of the surface water management, soil erosion, sediment control structures
- Inspection of the LMS
- Environmental monitoring

Site features are depicted on Figure 2.

2.1 SCA Final Cover System

Quarterly visual inspections of the SCA final cover system were completed in March, June, September, and December 2021 (see Appendix A). The objective of the final cover system inspections was to verify that the final cover system was continuing to prevent direct contact with the underlying materials and off-site transport of contaminated media. The final cover system was visually examined for the following:

- Evidence of subsidence or settling that results in low points or depressions
- Evidence of burrowing animals

- Evidence of trespassing or unauthorized use of the final cover area
- Presence of erosion rills
- Condition of vegetation (e.g., grass)
- Observable irregularities such as bulges, bumps, slumps, or cracks
- Evidence of ponded water
- Condition of gas vents
- Condition of drainage pipe outlets
- Condition of access roads (i.e., erosion, aggregate washout, exposed geotextile, and debris on the road)
- Condition of SCA perimeter berm
- Condition of areas near anchor trenches
- Other irregularities

During quarterly inspections, vegetation throughout the cover area was observed with a good density and diversity of native grassland species, which have established a solid root structure that prevents erosion. Both cool weather and warm weather species were identified during the inspections. Common species included switchgrass (*Panicum virgatum*), Indiangrass (*Sorghastrum nutans),* and Virginia wildrye (*Elymus virginicus*). Signs of minor erosion rills and small areas of sparse vegetation were documented during the 2021 quarterly inspections. The erosion rills that were seeded during previous inspections were monitored throughout 2021 and remained stable and vegetated.

No sediment accumulation was observed within swales and downchutes during the 2021 inspections. Woody plants were identified in swales and downchutes and were removed throughout the year. No pooling was noted during inspections in 2021.

The access road remained in good condition. Woody plants and a small area of Phragmites (*Phragmites australis*) were noted along the northern access road during the third quarter (Q3) inspection, but were not noted in Q4, likely due to seasonal senescence. The gas vents (and their surroundings) showed no signs of debris or sediment accumulation.

In Q1, Q2, and Q3 of 2021, evidence of animal burrowing was noted in the proximity of several gas vents. Settling (possibly caused by burrow collapse) and vegetation growth were noted in Q3 and Q4, indicating no active animal burrows at the time of the final inspection of 2021. Monitoring of the locations will continue in 2022 with repairs conducted, as necessary. Appendix A includes maps summarizing findings for each quarterly inspection during the monitoring period.

The PCCP requires additional visual inspections be conducted as soon as practical after major storm events, possible flooding events, or other events that may result in damage to the final cover system. No additional inspections were required in 2021 as storm events coincided with scheduled quarterly inspections.

2.2 Surface Water Management, Soil Erosion, and Sediment Control Structures

Visual inspections of the surface water management systems, temporary soil erosion features, and sediment control structures were completed quarterly as specified by the PCCP. Permanent surface water management structures include diversion berms, interception berms, drainage channels, and the East and West basins (including temporary pumps and pipes). The purpose of these inspections was to visually examine and evaluate the integrity and proper function of these structures.

Throughout the 2021 monitoring period, surface water management and sediment control structures were found to be in good condition. Soil erosion structures were in good condition, however adjacent areas will require additional soil erosion structure installation. Stormwater basin levels were maintained to the extent practical to avoid water backing up onto the SCA cover. Table 1 includes monthly summaries of the West Basin and East Basin elevations and discharge volumes of stormwater pumped directly to Outfall 18 from the East Basin.

Appendix A also contains quarterly inspection report packages specific to the surface water management system.

2.3 Liquid Management System

The LMS includes a liquid transmission system (LTS) and two sumps for collecting and removing leachate through two vertical risers at each sump location. Liquid enters the risers via sumps by gravity flow. The riser pumps were designed either to turn on and off automatically based on the liquid levels within the risers or to be operated manually. However, the pumps are operated manually two to three times a week as discussed below.

The LTS transfers liquid to the SCA wastewater treatment plant (WTP) for pretreatment of the SCA effluent prior to discharge to the Onondaga County Metropolitan Syracuse Wastewater Treatment Plant (Metro). Pretreatment of the SCA effluent includes removal of metals, solids, and volatile and semi-volatile organic compounds (VOCs and SVOCs). The pretreated water receives enhanced ammonia removal at Metro.

The SCA WTP includes facilities for pH adjustment, chemical addition of a coagulant, clarification, carbon adsorption, and effluent monitoring. The multi-train system at the SCA WTP has been reduced to a single train after completion of dredging in 2015 with the reduced flow of water from the SCA. The treatment train includes metals precipitation through pH adjustment and addition of alum/polymers, sludge thickening and separation in inclined plate clarifiers (IPC), and removal of organics with liquid-phased granular activated carbon (LGAC) units. Thickened sludge from the clarifiers is discharged to a sludge holding tank within the SCA WTP and periodically shipped for off-site disposal. In 2021, influent was treated in batch mode, typically twice per week based on sump levels that are continuously monitored at Willis WTP.

Typical maintenance activities for the LMS include:

- Effluent flow meter calibration quarterly
- pH probe calibration twice per month with a third-party calibration completed quarterly
- Air compressor maintenance
- Periodic granular activated carbon (GAC) sampling to monitor for VOC breakthrough
- Clarifier plate cleaning
- Pump maintenance
- Heater maintenance

Continuing from previous years, LMS inspections were conducted monthly throughout 2021, and included the following elements:

- Verification that the automatic controls of the pumps are operational when the water treatment plant is ready to operate[1]
- Examination of the condition of instrumentation and/or valves (e.g., sticking or jammed devices, corrosion, leaks, and misalignments) and that the liquid removal process is functioning properly
- Verification that the operating conditions of the LMS are specified so that the liquid depth in the sump does not exceed 6 feet
- Verification that liquid is flowing from the sumps during pumping
- Recording of the flow rate and volume of liquids flowing from the sumps

---

1 With the reduced leachate flow, pumping and treatment operations are done in batch mode. Operations are short in duration and are conducted manually.

- Confirmation that the pumps are operating and that high-level alarm conditions have not been reached
- Examination of the condition of the aboveground piping (including pipes at the top of the riser as well as the LTS piping) and the insulation around the pipes while pumping activities are occurring
- Verification that appropriate warning signage is clearly visible on-site (e.g., buried live electric line, liquid transmission pipe)
- Examination of the condition of mechanical and electrical instrumentation devices in winter prior to system startup in automatic mode (including verification that device heaters are in working order and the drains of the sump pump discharge piping are closed)
- Examination of the condition of the sump riser covers

The PCCP requires additional inspections to be conducted should a remote monitoring system become inoperable. No additional inspections were required in 2021.

All LMS inspections conducted during 2021 found the equipment to be in working order. Appendix A includes the inspection forms for each LMS inspection conducted by Jacobs during 2021. Table 2 includes monthly summaries of sump elevation and leachate volume pumped associated with each LMS inspection during the monitoring period.

The LMS system continues to function without issue, therefore the LMS monitoring will be reduced from monthly to quarterly for future monitoring periods, as approved by the NYSDEC on December 13, 2021,

2.4 Environmental Monitoring

Vent odor monitoring was conducted once per month in 2021, as approved by the NYSDEC on September 27, 2018. Monitoring consisted of odor observations at eight air monitoring stations, located along the SCA work zone perimeter road (Figure 1). Monitoring was completed by a qualified individual who has experience with site-related odors. As summarized on Table 3, no site-related odors were detected during the 2021 monitoring period inspections.

As approved by the NYSDEC on December 13, 2021, vent odor monitoring will be reduced from monthly to quarterly for future monitoring periods.

3.0 MAINTENANCE AND ENHANCEMENTS

The following summarizes maintenance and enhancement efforts conducted at the site during 2021, as required in the PCCP and the NRD SOW.

Enhancement Seeding

In 2021, only small pockets of sparse vegetation were observed during the quarterly inspections of the final cover area, requiring no additional seeding at this time. Site condition observations and field notes were recorded in the quarterly inspections (see Appendix A) and will be used as a reference for future enhancement seeding or repair recommendations.

Gas Vent Animal Burrow Repair

In the 2020 *Post Closure Care Summary Report* (Parsons 2021a) repairs on small animal burrows at the base of several gas vents were recommended. However, based on the soil settling and vegetation growth around the gas vents, repairs were deemed unnecessary at this time. The locations will be monitored in future inspections.

Invasive Species Management

The entire site was monitored for invasive species presence throughout 2021. On October 8, 2021, the site was swept for invasive species and herbicide was applied as necessary. Phragmites was noted sporadically on-site but densities were notable lower than in previous years.

Mowing

Following the PCCP guidelines, a cover inspection was performed in early April 2021, which determined that soft and muddy conditions were not ideal for mowing and spring mowing was cancelled. As described in the PCCP, the site will be mowed on a three-year rotating cycle with one-third of the vegetative cover area mowed once per year after October 1st.

Mowing activities were completed in one-third of the vegetative cover area — including diversion/interception berms — in the week of October 4 following PCCP requirements, with the mower blade height set to 10 inches. Following the PCCP requirements, areas within a 10-foot radius around each gas vent were not mowed. Mowed areas surrounding vents were inspected following the completion of mowing and no impacts to the gas vents were noted.

Given no woody plants were identified adjacent to the gas vents during the quarterly inspections, no hand trimming was needed around the vents. Woody plants identified in the downchutes during quarterly inspections were hand pulled.

The mowing area and schedule for future mowing are shown in Figure 3.

4.0 SUMMARY AND RECOMMENDATIONS

Conditions and operation of the SCA site during the 2021 monitoring period were satisfactory. Results from PCCP monitoring implemented at the SCA site verify the remedy remains effective.

The following monitoring activities are recommended for 2022:

- Continue SCA site monitoring and maintenance activities as described in the PCCP.

- Evaluate the need for additional invasive species maintenance (Appendix A).
- Evaluate the need for supplementary seed dispersal in small areas with sparse cover identified during the 2021 quarterly inspections (Appendix A).
- Evaluate the need for repairs in erosion rills identified during the 2021 quarterly inspections (Appendix A).
- Continue LMS inspections and odor monitoring at the reduced frequency (quarterly) as approved by the NYSDEC.

5.0 REFERENCES

NYSDEC, 2005. *Record of Decision Onondaga Lake Bottom Subsite of the Onondaga Lake Superfund Site.* Prepared by the New York State Department of Environmental Conservation and the United States Environmental Protection Agency. July 2005.

Parsons. 2021a. *Draft 2020 Annual Post-Closure Care Summary Report for the Onondaga Lake Sediment Consolidation Area (SCA)*. Prepared for Honeywell International Inc. December 2021.

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Parsons and Beech and Bonaparte. 2017. *Post-Closure Care Plan - Onondaga Lake Sediment Consolidation Area (SCA) Final Cover Design Submittal*. Prepared for Honeywell International Inc. April 2017.

Parsons and Geosyntec. 2011. *Onondaga Lake Sediment Consolidation Area (SCA) Civil and Geotechnical Final Design*. Prepared for Honeywell International Inc. April 2011.

USDC. 2007. *State of New York and Denise M. Sheehan against Honeywell International, Inc. Consent Decree Between the State of New York and Honeywell International, Inc.* Senior Judge Scullin. United States District Court, Northern District of New York. Dated October 11, 2006. File January 4, 2007.

USDC. 2018. *United States of America and State of New York vs. Honeywell International Inc. and Onondaga County, New York, Consent Decree*. Senior Judge Scullin. United States District Court, Northern District of New York. Entered March 14, 2018. Case 5:17-cv-01364-FJS-DEP.

TABLES

TABLE 1 STORMWATER MANAGEMENT SUMMARY

Month	West Basin Elevation (inches) [1] Max. Elev. 72in.	East Basin Elevation (inches) [1] Max. Elev. 85.2in.	Average Stormwater Discharge to Outfall 18 (average gal/day)[3]	Total Stormwater Discharge to Outfall 18 (gal/month)
2021				
January	46.0	69.5	49,891	1,546,609
February	77.7	72.6	-[2]	-[2]
March	80.5	74.9	109,686	3,400,256
April	46.1	71.0	34,745	1,042,362
May	47.5	57.4	50,283	1,558,785
June	41.7	63.7	14,034	421,019
July	80.5	82.9	-[2]	-[2]
August	114.4	93.0	143,178	4,438,504
September	64.2	75.0	68,080	2,042,392
October	87.6	86.0	106,752	3,309,297
November	69.2	78.2	111,703	3,351,077
December	49.5	69.2	55,179	1,710,562

[1] Values are reported as monthly average. Maximum elevation limit is set to reduce risk of stormwater backing onto cover.

[2] During these months, no stormwater discharge to OF 18 occurred.

[3] Values calculated by summing volume pumped and dividing by number of days in the given month

TABLE 2 LEACHATE MANAGEMENT SUMMARY

Month	West Sump			East Sump		
	Sump Elevation (inches)[1] Max. Elev. 72in.	Average Discharge pumped to WTP (average gal/day)	Total Discharge pumped to WTP (gal/month)	Sump Elevation (inches)[1] Max. Elev. 72in.	Average Discharge pumped to WTP (average gal/day)	Total Discharge pumped to WTP (gal/month)
2021						
January	44.6	3,320	39,842	41.3	2,063	24,754
February	42.4	4,653	37,226	39.8	2,871	22,964
March	44.1	2,701	45,921	39.7	1,621	27,552
April	44.4	3,557	35,573	36.8	2,176	21,756
May	44.0	2,702	37,823	41.3	1,621	34,050
June	43.8	3,143	37,711	39.1	1,884	22,606
July	45.0	4,269	38,420	40.1	2,657	23,910
August	45.9	3,123	43,720	39.8	1,890	26,453
September	43.3	2,650	34,454	39.0	1,695	22,030
October	43.4	2,179	37,044	39.9	1,464	24,882
November	43.7	2,399	40,786	39.4	1,547	26,305
December	44.7	2,640	34,317	38.6	1,537	19,984

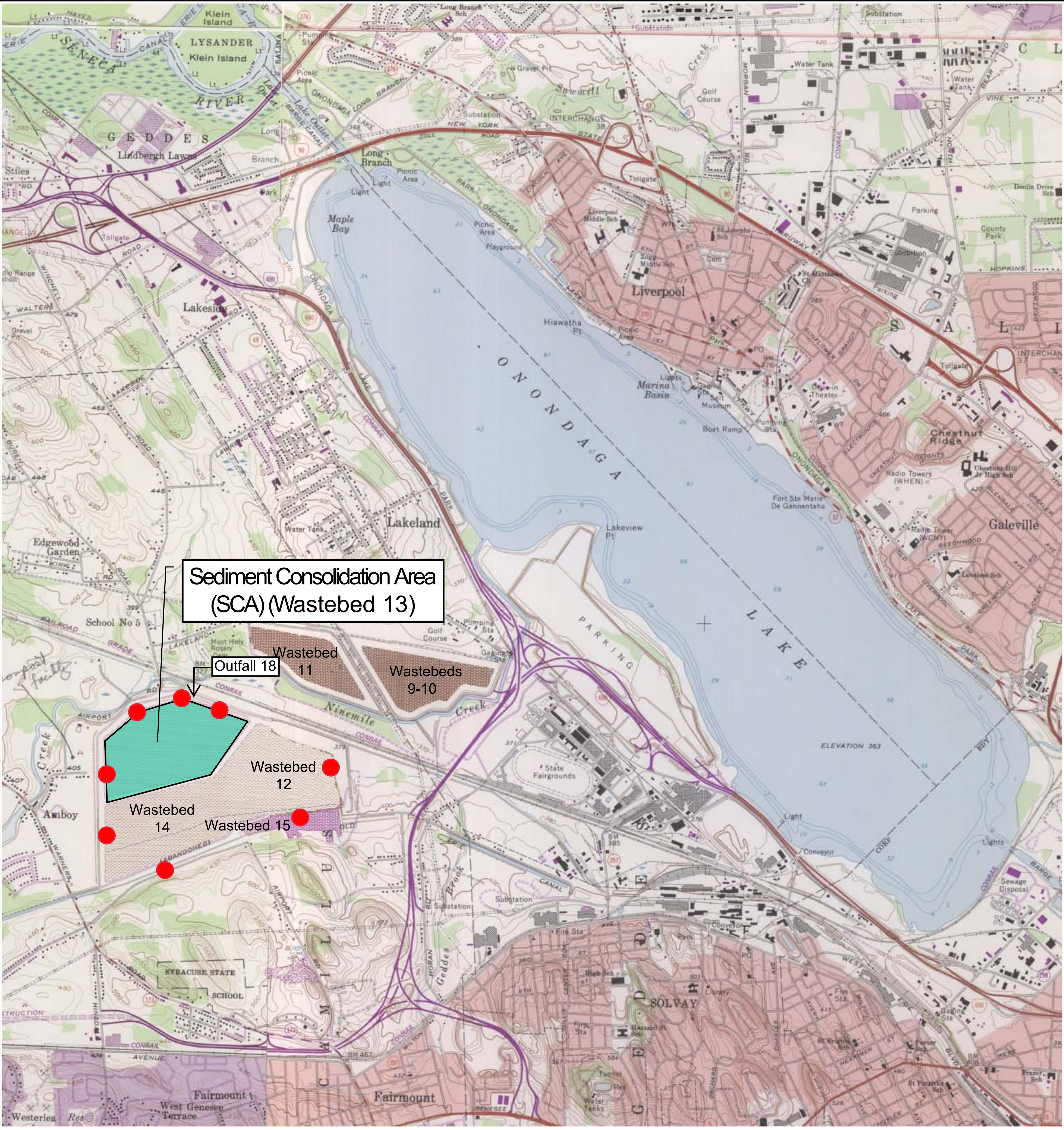
[1] Values are reported as monthly average. Maximum elevation limit is set for the liquid depth in the sump to not exceed 6 feet (as stated in the PCCP).

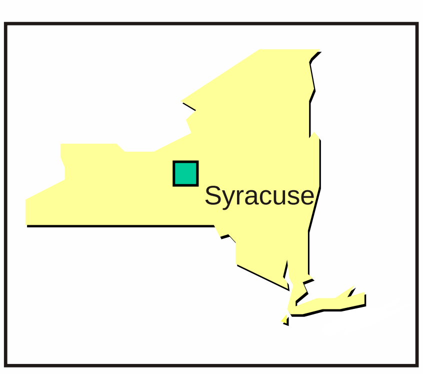
Honeywell PARSONS

TABLE 3 ENVIRONMENTAL MONITORING SUMMARY - ODOR OBSERVATIONS

2021	
Date	Odors Y/N
1/15/2021	N
2/19/2021	N
3/23/2021	N
4/20/2021	N
5/21/2021	N
6/15/2021	N
7/23/2021	N
8/16/2021	N
9/28/2021	N
10/29/2021	N
11/19/2021	N
12/17/2021	N

FIGURES





New York
Quadrangle

LATITUDE: N 43° 5' 57"
LONGITUDE: W 76° 10' 41"

SOURCE: U.S.G.S.
SYRACUSE WEST
QUADRANGLE

N

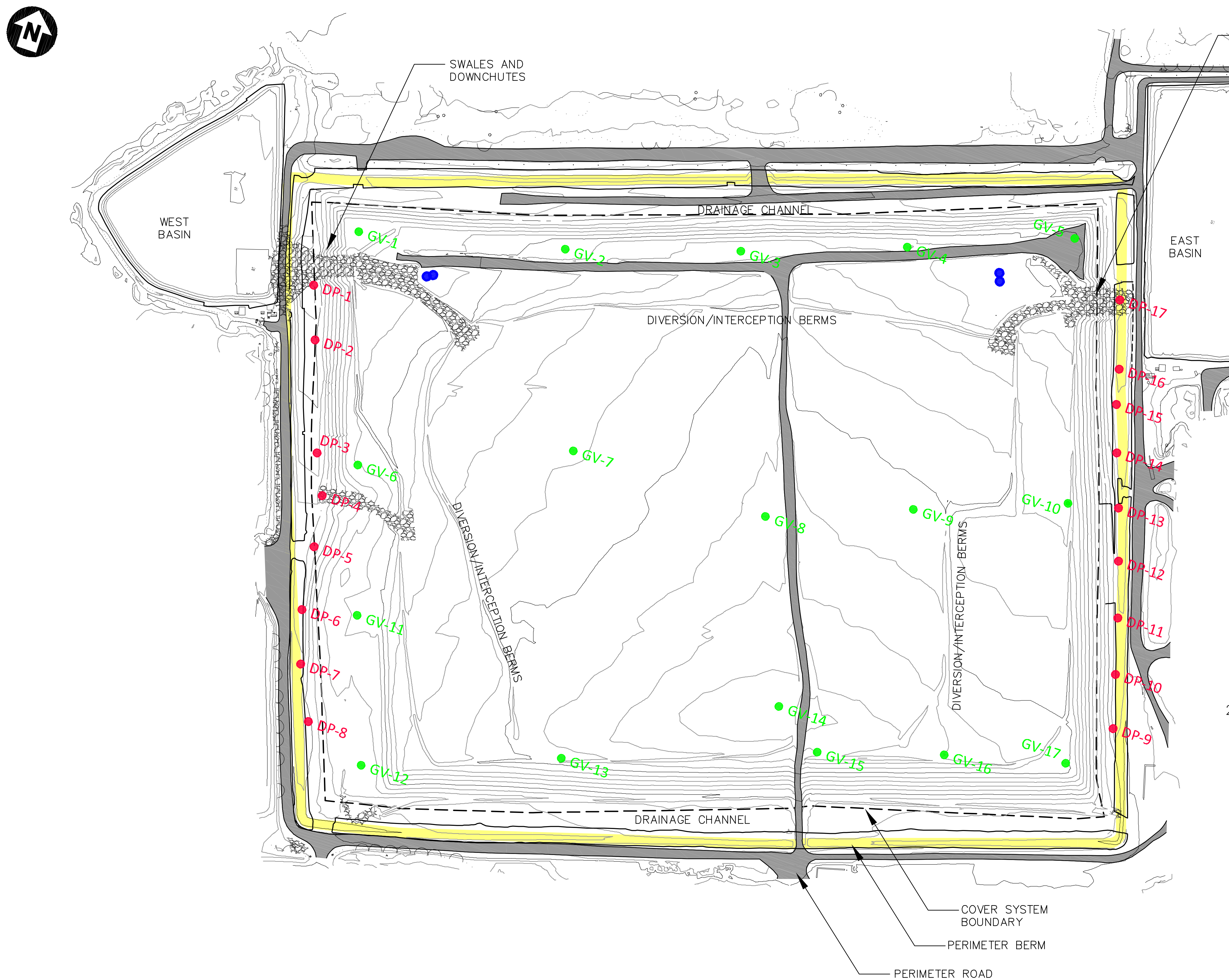
● Odor Monitoring Locations

FIGURE 1

Honeywell

SITE LOCATION MAP
ANNUAL POST-CLOSURE CARE SUMMARY REPORT

PARSONS
301 Plainfield Rd, Ste 350, Syracuse, NY, Ph: 315-451-9560



LEGEND:

- DRAINAGE PIPE OUTLET
- GAS VENT
- SUMP/RISERS
- PERIMETER BERM
- ROAD

NOTE:
ANCHOR TRENCH LOCATION APPROXIMATELY FOLLOWS PERIMETER ROAD.

200 100 0 200 400

SCALE: 1"=200'

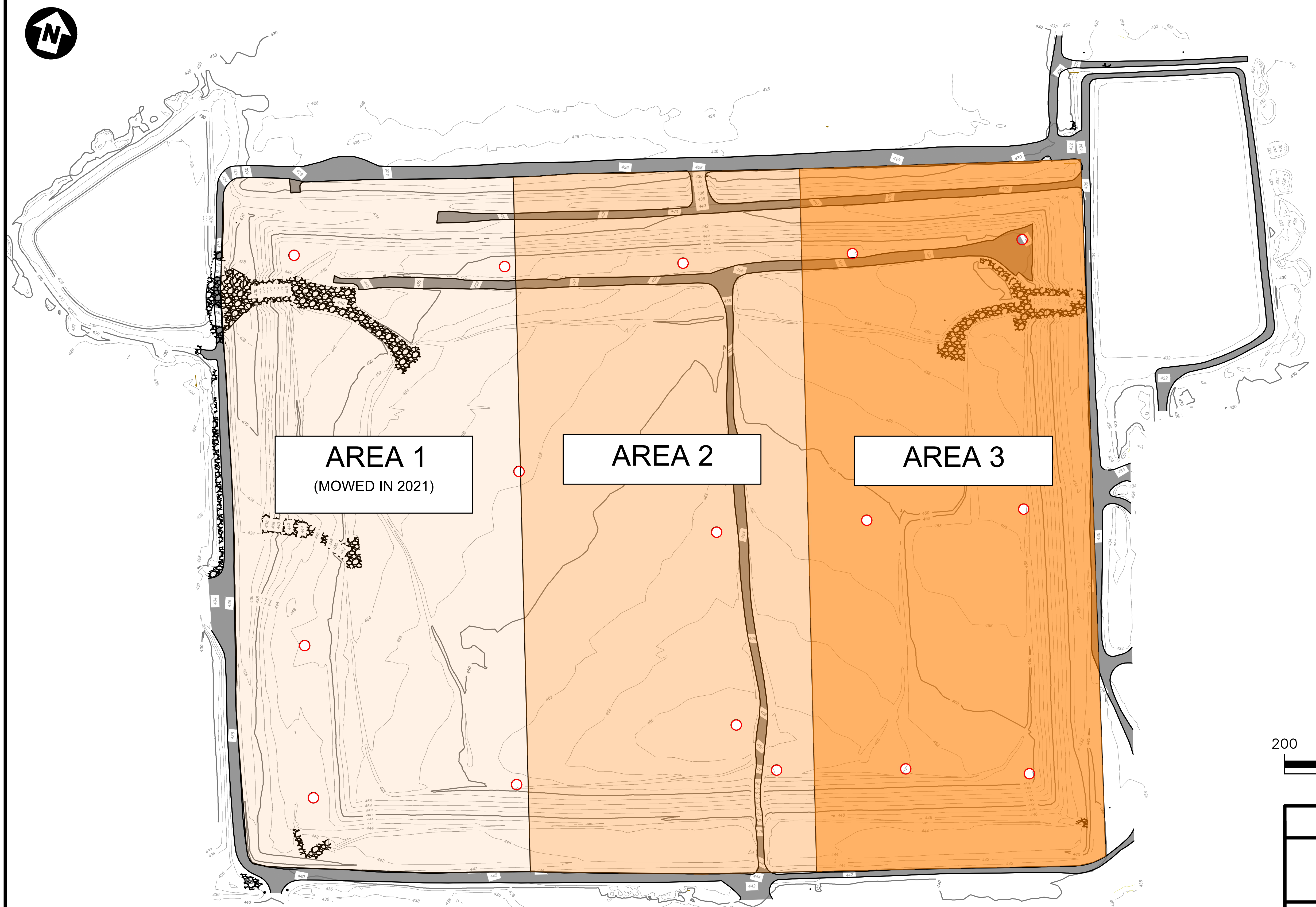
FIGURE 2

Honeywell

SITE LAYOUT MAP
ANNUAL POST-CLOSURE CARE SUMMARY REPORT

PARSONS
301 Plainfield Rd, Ste 350, Syracuse, NY, Ph: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450600 SCA OM&M\10.0 TECHNICAL CATAGORIES\10.3-QUARTERLY INSPECTIONS\450600-SITELAYOUTMAP.DWG
PLOT DATE: 4/11/2022 1:51 PM PLOTTED BY: MORANZ, KAITLYN [US-US]



LEGEND

- AREA 1 TO BE MOWED ACCORDING TO SCA MOWING YEARS TABLE (SEE NOTE 1)
- AREA 2 TO BE MOWED ACCORDING TO SCA MOWING YEARS TABLE (SEE NOTE 1)
- AREA 3 TO BE MOWED ACCORDING TO SCA MOWING YEARS TABLE (SEE NOTE 1)
- 10 FT RADIUS NOT TO BE MOWED (SEE NOTE 2)

NOTES

1. MOWING WILL OCCUR ON A THREE–YEAR ROTATING CYCLE WITH ONE–THIRD OF THE VEGETATIVE COVER AREA MOWED ONCE EACH YEAR AFTER OCTOBER 1ST TO A HEIGHT OF 10 TO 15 INCHES.
2. THE HERBACEOUS VEGETATIVE COVER WILL BE MAINTAINED BY MOWING EXCEPT FOR THE AREA WITHIN A 10–FT RADIUS OF THE GAS VENTS THAT WILL NOT BE MOWED.

SCA MOWING YEARS		
AREA 1	AREA 2	AREA 3
2018	2018	2018
2019	2019	2019
2020	2020	2020
2021	2022	2023
2024	2025	2026
2027	2028	2029
2030	2031	2032
2033	2034	2035
2036	2037	2038
2039	2040	2041
2042	2043	2044
2045	2046	2047

200 100 0 200 400

SCALE: 1"=200'

FIGURE 3

Honeywell

SCA NATIVE GRASSLANDS MAINTENANCE ANNUAL POST–CLOSURE CARE SUMMARY REPORT

PARSONS
301 Plainfield Rd, Ste 350, Syracuse, NY, Ph: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450600 SCA OM&M\10.0 TECHNICAL CATAGORIES\10.5 CAD\GEN\450600-SCAMOWING.DWG
PLOT DATE: 4/11/2022 1:44 PM PLOTTED BY: MORANZ, KAITLYN [US-US]

APPENDIX A INSPECTION, OPERATION, AND MAINTENANCE FORMS – QUARTERLY INSPECTION PACKAGES

2021 Q1 SCA Quarterly Inspection Package
Inspection, Operation, and Maintenance Forms

The 2021 Quarter 1 SCA inspection was completed on March 11, 2021. During the inspection the following items were evaluated:

- evidence of trespassing or unauthorized use of the final cover area
- evidence of subsidence or settling that results in low spots, or presence of erosion rills
- evidence of burrowing animals
- condition of vegetation
- observable irregularities such as bulges, bumps, slumps, or cracks
- evidence of ponded water
- condition of gas vents and drainage pipe outlets
- condition of access roads (i.e., erosion, aggregate washout, exposed geotextile, and debris on the road)
- condition of SCA perimeter berm
- condition of areas near anchor trenches, storm water control berms, and drainage channels

Overall, the site was found in good condition and there were no major irregularities to note. Ground cover and tall grasses remain in seasonal senescence due to snow and cold temperatures, and dried cover remains present around the vents. The area repaired with topsoil and RECP in 2019 presented small erosion rills beginning to form at the toe of the RECP (to be monitored in following quarterly inspections). Only a few small, isolated locations along berms remain with sparse vegetation. Since mowing in the fall of 2020, no significant woody vegetation has returned.

The gas vents and drainage pipes were in good condition, as were the berms and drainage channels around the perimeter of the landfill. Evidence of small animal burrows were noted near gas vents GV-4, GV-7, GV-14, GV-15, and GV-16. Several burrows noted in Q4 of 2020 were no longer visible, likely due to settling. Wildlife management will be performed prior to the repair of these small burrows (to be completed in 2021). No cap irregularities were observed.

Attachments to this package include completed field forms associated with this quarterly inspection, a photo log documenting the general condition of the gas vents cover, and monthly LMS inspection forms completed by Jacobs during this quarter. A figure with site condition observations and field notes has been included and will be used as reference for potential future enhancement seeding and RECP recommendations.

QUARTERLY FORMS & SITE RECON FIGURE

3-11-21 Drainage Pipe Daylight Locations			
#	COORDINATES		COMMENTS
DP-1	1120202.677	905912.700	Under chute riprap, not visible
DP-2	1120100.239	905948.459	Unable to find
DP-3	1119888.374	906021.590	Unable to find. Likely under water
DP-4	1119811.170	906056.949	Under drainage downchute riprap, not visible
DP-5	1119709.306	906072.849	Unable to find
DP-6	1119583.469	906088.100	Good condition, partly visible
DP-7	1119479.886	906118.916	Good condition, visible, small vegetation surrounding drainage pipe
DP-8	1119376.185	906168.548	GPS coordinates ~10 ft. upslope of toe, could not find
DP-9	1119852.555	907690.460	3 ft. off from GPS coordinates; Good condition, visible, moderate vegetation surrounding drainage pipe
DP-10	1119956.045	907661.695	Good condition, slightly visible, covered with water and moss
DP-11	1120063.765	907631.793	Good condition, visible, moderate vegetation surrounding drainage pipe
DP-12	1120171.762	907598.511	Good condition, slightly visible, moderate vegetation surrounding drainage pipe, covered with moss, water flowing out from pipe
DP-13	1120271.798	907566.212	Good condition, slightly visible, thick vegetation surrounding drainage pipe, water flowing out from pipe
DP-14	1120374.991	907529.601	Good condition, visible, moderate vegetation surrounding drainage pipe, water flowing out from pipe
DP-15	1120466.426	907499.452	Good condition, slightly visible, covered with water
DP-16	1120534.579	907482.788	Good condition, slightly visible, thick vegetation surrounding drainage pipe
DP-17	1120665.489	907442.420	Under drainage downchute riprap, not visible

NOTE: All drainage pipes inspected did not have any obstruction and were functioning as intended

3-11-21 GAS VENT LOCATIONS	
#	CONDITION (Gas vent structural integrity, plantings, cap irregularities)
GV-1	Vent straight and in good condition. Cap intact. Dormant grasses present.
GV-2	Vent straight and in good condition. Cap intact. Dormant grasses present.
GV-3	Vent straight and in good condition. Cap intact. Dormant grasses present.
GV-4	Vent straight and in good condition. Cap intact. Dormant grasses present. Small animal burrows present.
GV-5	Vent in good condition with slight tilt. Cap intact. Dormant grasses present.
GV-6	Vent in good condition with a slight lean. Cap intact. Dormant grass present.
GV-7	Vent straight and in good condition. Cap intact. Dormant grasses present. Small animal burrows present.
GV-8	Vent straight and in good condition. Cap intact. Dormant grasses present.
GV-9	Vent slightly tilted and in good condition. Cap intact. Tall grasses present.
GV-10	Vent straight and in good condition. Cap intact. Dormant grasses present.
GV-11	Vent straight and in good condition. Cap intact. Dormant grasses present.
GV-12	Vent in good condition with a slight lean (consistent with previous recon)* Cap intact. Dormant grasses present.
GV-13	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Dormant grasses present.
GV-14	Vent straight and in good condition. Cap intact. Dormant grasses present. Small animal burrows present.
GV-15	Vent in good condition with a very slight lean (consistent with previous recon)*. Cap intact. Dormant grasses present. Small animal burrows present.
GV-16	Vent with slight tilt and in good condition. Cap intact. Dormant grasses present. Small animal burrows present.
GV-17	Vent in good condition with a very slight lean (consistent with previous recon)*. Cap intact. Dormant grasses present. No burrows.

* Vents noted with a tilt/lean are consistent with previous monitoring observations and do not require any improvements or changes. All vents are functioning as intended.

3-11-2021 GENERAL RECON

ITEM	Y/N	COMMENT
Evidence of Tresspassing/ Unauthorized use of final cover area	N	n/a
Evidence of subsidence or settling/ low points/ depressions	N	n/a
Evidence of Burrowing animals	Y	Small animal burrows noted at the bases of GV-4, GV-7, GV-14, GV-15, GV-16.
Presence of Erosion Rills	Y	Small rills have started to form near RECP placed in 2019 on the northern edge of the site.
Vegetation performing as intended	Y	Grasses have excellent cover. A few small bare spots were noted near GV-6. Grasses are still dormant from winter.
Irregularities such as bulges, bumps, slumps or cracks observed	N	n/a
Evidence of ponded water	N	Good condition. Landfill is draining well, no pools at the top of the site.
Condition of access roads good (no aggregate washout, exposed geotextile, etc)	Y	Good condition
Perimeter berm in good condition	Y	Good Condition
Proper function and integrity of diversion berms	Y	
Proper function and integrity of interception berms	Y	
Proper function and integrity of drainage channels	Y	n/a
Proper function and integrity of East & West Basin	Y	n/a

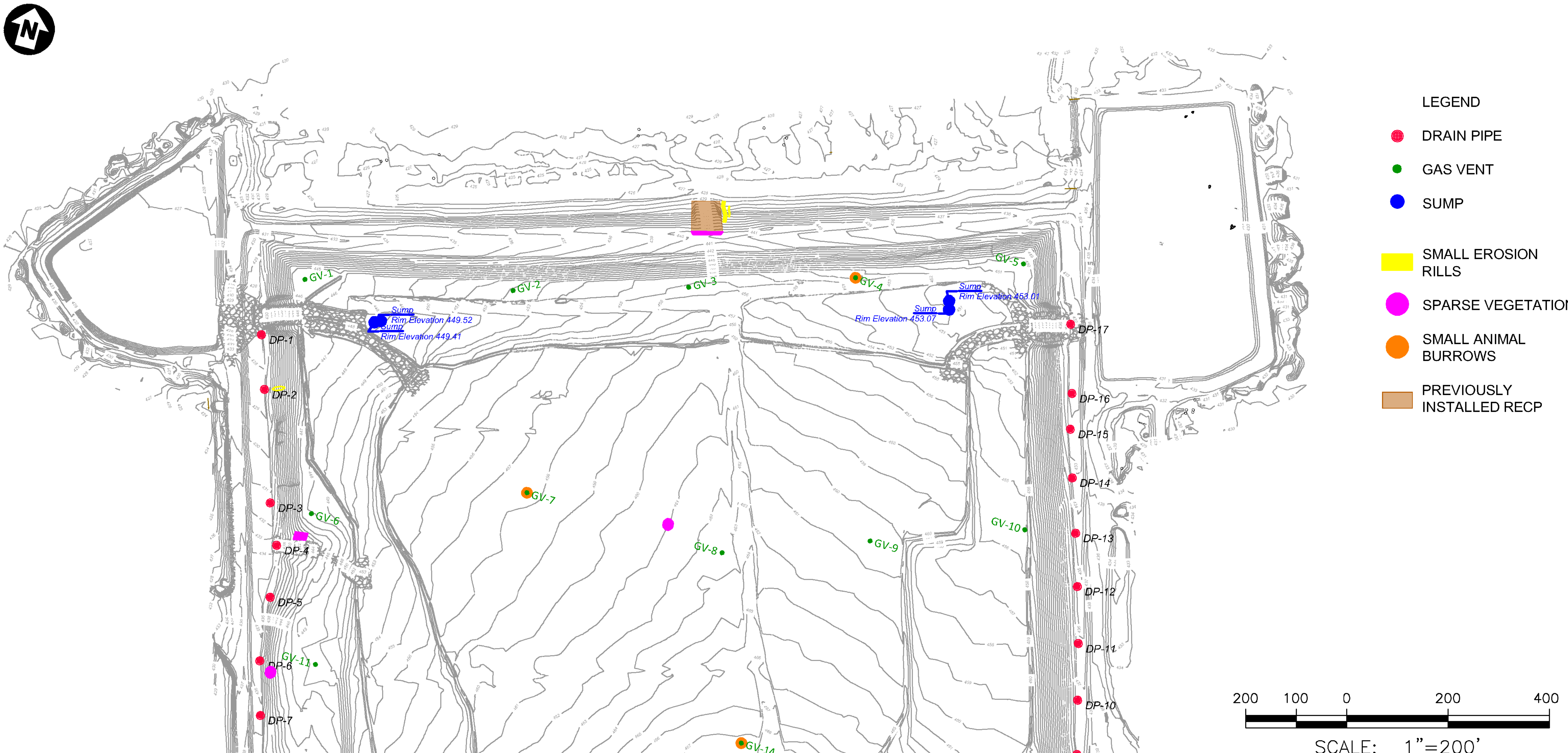


FIGURE 1

Honeywell

SCA
SYRACUSE, NEW YORK

SCA
QUARTERLY REPORT
1ST QUARTER – 2021

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450600 SCA OM&M\10.0 TECHNICAL CATAGORIES\10.3-QUARTERLY INSPECTIONS\2021\SCA-Q1-2021.DWG
PLOT DATE: 4/7/2021 1:46 PM PLOTTED BY: MORANZ, KAITLYN

LMS INSPECTION FORMS

INSPECTION FORM HONEYWELL – SCA POST CLOSURE CARE PLAN LIQUID MANAGEMENT SYSTEM SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

DATE/TIME: January 2021	WEATHER: 27.44˚ F avg. .08" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS:
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed monthly the first year. Form to be completed as appropriate for inspections done during active pumping (first item is mandatory) and if repairs or maintenance are conducted.
2. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Sump high level alarms and flow gauges are operational (and flow data is being recorded)	
		X	System automatic controls are operational.	Automated system is operational, but not used due to low volumes and systems run in batch mode. The system is run manually, and the operator remains on site while pumping to monitor the system.
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	Sumps are ran together to prevent backflow.
		X	Sump operational controls are set to prevent sump liquid depth from exceeding 6 feet. Confirm pumps and flow gauges are operational.	Sump levels are checked daily and are pumped to bottom when WTP discharge is permitted. Automated system is operational, but not used due to low levels and systems run in batch mode. Alarm system is active to alert for high levels.
X			Aboveground piping and insulation are in good condition. Inspect during active pumping.	
X			Underground utility markings/signs are in good condition.	
X			Riser covers are intact and secured.	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Repair of signage or markers	
Cleaning of/maintenance on system piping	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
LIQUID MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

DATE/TIME: February 2021	WEATHER: 25.50˚ F avg. .07" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS:
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed monthly the first year. Form to be completed as appropriate for inspections done during active pumping (first item is mandatory) and if repairs or maintenance are conducted.
2. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Sump high level alarms and flow gauges are operational (and flow data is being recorded)	
		X	System automatic controls are operational.	Automated system is operational, but not used due to low volumes and systems run in batch mode. The system is run manually, and the operator remains on site while pumping to monitor the system.
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	Sumps are ran together to prevent backflow.
		X	Sump operational controls are set to prevent sump liquid depth from exceeding 6 feet. Confirm pumps and flow gauges are operational.	Sump levels are checked daily and are pumped to bottom when WTP discharge is permitted. Automated system is operational, but not used due to low levels and systems run in batch mode. Alarm system is active to alert for high levels.
X			Aboveground piping and insulation are in good condition. Inspect during active pumping.	
X			Underground utility markings/signs are in good condition.	
X			Riser covers are intact and secured.	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Repair of signage or markers	
Cleaning of/maintenance on system piping	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
LIQUID MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

DATE/TIME: March 2021	WEATHER: 39.23° F avg. .04" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS:
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed monthly the first year. Form to be completed as appropriate for inspections done during active pumping (first item is mandatory) and if repairs or maintenance are conducted.
2. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Sump high level alarms and flow gauges are operational (and flow data is being recorded)	
		X	System automatic controls are operational.	Automated system is operational, but not used due to low volumes and systems run in batch mode. The system is run manually, and the operator remains on site while pumping to monitor the system.
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	Sumps are ran together to prevent backflow.
		X	Sump operational controls are set to prevent sump liquid depth from exceeding 6 feet. Confirm pumps and flow gauges are operational.	Sump levels are checked daily and are pumped to bottom when WTP discharge is permitted. Automated system is operational, but not used due to low levels and systems run in batch mode. Alarm system is active to alert for high levels.
X			Aboveground piping and insulation are in good condition. Inspect during active pumping.	
X			Underground utility markings/signs are in good condition.	
X			Riser covers are intact and secured.	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Repair of signage or markers	
Cleaning of/maintenance on system piping	
Other repairs	

INSPECTION FORM HONEYWELL – SCA POST CLOSURE CARE PLAN STORM WATER MANAGEMENT SYSTEM SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

January 2021	WEATHER: 27.44° F avg. .08" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS: West Basin: 1/4 and 1/19. East Basin: 1/4-1/8 and 1/19-1/20.
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed quarterly. Form to be completed as appropriate for inspections done during active pumping and if repairs or maintenance are conducted.
2. Pumping from east basin to outfall 18 only occurs when TSS < 50 mg/l and with notification/approval from OBG (now Ramboll)
3. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Are the East and West basin pumps operating properly	East basin pumped to outfall using 3" godwin diesel pump.
X			Aboveground piping is in good condition. Inspect during active pumping	
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	
X			Are the level indicators in the East and West basin operational	West Basin transducer reads 25" high. (accounted for during monitoring).
X			Diversion berms, interception berms and drainage channels functioning properly	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Cleaning of/maintenance on system piping	
Removal of debris or any other objects obstructing flow in drainage channels	No issues with drainage channels observed.
Cleaning of clogged riprap and East and West basins	
Repair of damaged storm water, erosion, and sediment control structures	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
STORM WATER MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

February 2021	WEATHER: 25.50° F avg. .07” precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS: No transfers or discharges.
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed quarterly. Form to be completed as appropriate for inspections done during active pumping and if repairs or maintenance are conducted.
2. Pumping from east basin to outfall 18 only occurs when TSS < 50 mg/l and with notification/approval from OBG (now Ramboll)
3. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Are the East and West basin pumps operating properly	East basin pumped to outfall using 3” godwin diesel pump.
X			Aboveground piping is in good condition. Inspect during active pumping	
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	
X			Are the level indicators in the East and West basin operational	West Basin transducer reads 25” high. (accounted for during monitoring).
X			Diversion berms, interception berms and drainage channels functioning properly	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Cleaning of/maintenance on system piping	
Removal of debris or any other objects obstructing flow in drainage channels	No issues with drainage channels observed.
Cleaning of clogged riprap and East and West basins	
Repair of damaged storm water, erosion, and sediment control structures	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
STORM WATER MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

March 2021	WEATHER: 39.23° F avg. .04” precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS: East basin transfers 3/1-3/8 and 3/10-3/19. West basin to East 3/10.
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed quarterly. Form to be completed as appropriate for inspections done during active pumping and if repairs or maintenance are conducted.
2. Pumping from east basin to outfall 18 only occurs when TSS < 50 mg/l and with notification/approval from OBG (now Ramboll)
3. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Are the East and West basin pumps operating properly	East basin pumped to outfall using 3” godwin diesel pump.
X			Aboveground piping is in good condition. Inspect during active pumping	
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	
X			Are the level indicators in the East and West basin operational	West Basin transducer reads 25” high. (accounted for during monitoring).
X			Diversion berms, interception berms and drainage channels functioning properly	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Cleaning of/maintenance on system piping	
Removal of debris or any other objects obstructing flow in drainage channels	No issues with drainage channels observed.
Cleaning of clogged riprap and East and West basins	
Repair of damaged storm water, erosion, and sediment control structures	
Other repairs	

PHOTO LOG

2021 Q1 INSPECTION PHOTOGRAPH LOG

Observations:
Photos below include gas vents 1 to 6 monitored on 3/11/21. All vents were in good condition with tall grasses surrounding them. Additional details found on quarterly forms.

GV-1

GV-2

GV-3

GV-4

GV-5

GV-6

2021 Q1 INSPECTION PHOTOGRAPH LOG

Observations:
Photos below include gas vents 7 to 12 monitored on 3/11/21. All vents were in good condition with tall grasses surrounding them. Additional details found on quarterly forms.

GV-7

GV-8

GV-9

GV-10

GV-11

GV-12

2021 Q1 INSPECTION PHOTOGRAPH LOG

Observations:
Photos below include gas vents 13 to 17 monitored on 3/11/21. All vents were in good condition with tall grasses surrounding them. GV-13 continues to demonstrate a slight lean, and GV-16 has a very slight lean. Additional details found on quarterly forms.


GV-13


GV-14


GV-15


GV-16


GV-17

2021 Q1 INSPECTION PHOTOGRAPH LOG

Observations:
Small animal burrows were noted at GV-4, GV-7, GV-14, GV-15, GV-16. Ground cover was good site-wide despite seasonal senescence, with few areas of patchy vegetation on berms. Additional details found on quarterly forms.

Typical condition of vegetation

Minor erosion rills forming at toe of previously installed RECP

Vegetation surrounding DP-13

Example of typical animal burrow (near GV-6)

2021 Q2 SCA Quarterly Inspection Package
Inspection, Operation, and Maintenance Forms

The 2021 Quarter 2 SCA inspection was completed on June 2, 2021. During the inspection the following items were evaluated:

- evidence of trespassing or unauthorized use of the final cover area
- evidence of subsidence or settling that results in low spots, or presence of erosion rills
- evidence of burrowing animals
- condition of vegetation
- observable irregularities such as bulges, bumps, slumps, or cracks
- evidence of ponded water
- condition of gas vents and drainage pipe outlets
- condition of access roads (i.e., erosion, aggregate washout, exposed geotextile, and debris on the road)
- condition of SCA perimeter berm
- condition of areas near anchor trenches, storm water control berms, and drainage channels

Overall, the site was found in good condition and there were no major irregularities to note. Ground cover and tall grasses have emerged from seasonal senescence, with only small areas of dried vegetation cover. Small erosion rills previously noted at the northern end of the site remain present, however vegetation growth was noted. An additional small erosion rill was noted near GV-11. Rills will be monitored during future inspections. Only a few small, isolated locations along berms and near a small number of gas vents remain with sparse vegetation. No significant woody vegetation regrowth has been noted.

The gas vents and drainage pipes were in good condition, as were the berms and drainage channels around the perimeter of the landfill. Evidence of small animal burrows were noted near gas vents GV-2, GV-4, GV-7, GV-8, GV-12, GV-14 and GV-17. Wildlife management will be performed prior to the repair of these small burrows as necessary. No cap irregularities were observed.

Attachments to this package include completed field forms associated with this quarterly inspection, a photo log documenting the general condition of the gas vents cover, and monthly LMS inspection forms completed by Jacobs during this quarter. A figure with site condition observations and field notes has been included and will be used as reference for potential future enhancement seeding and RECP recommendations.

QUARTERLY FORMS & SITE RECON FIGURE

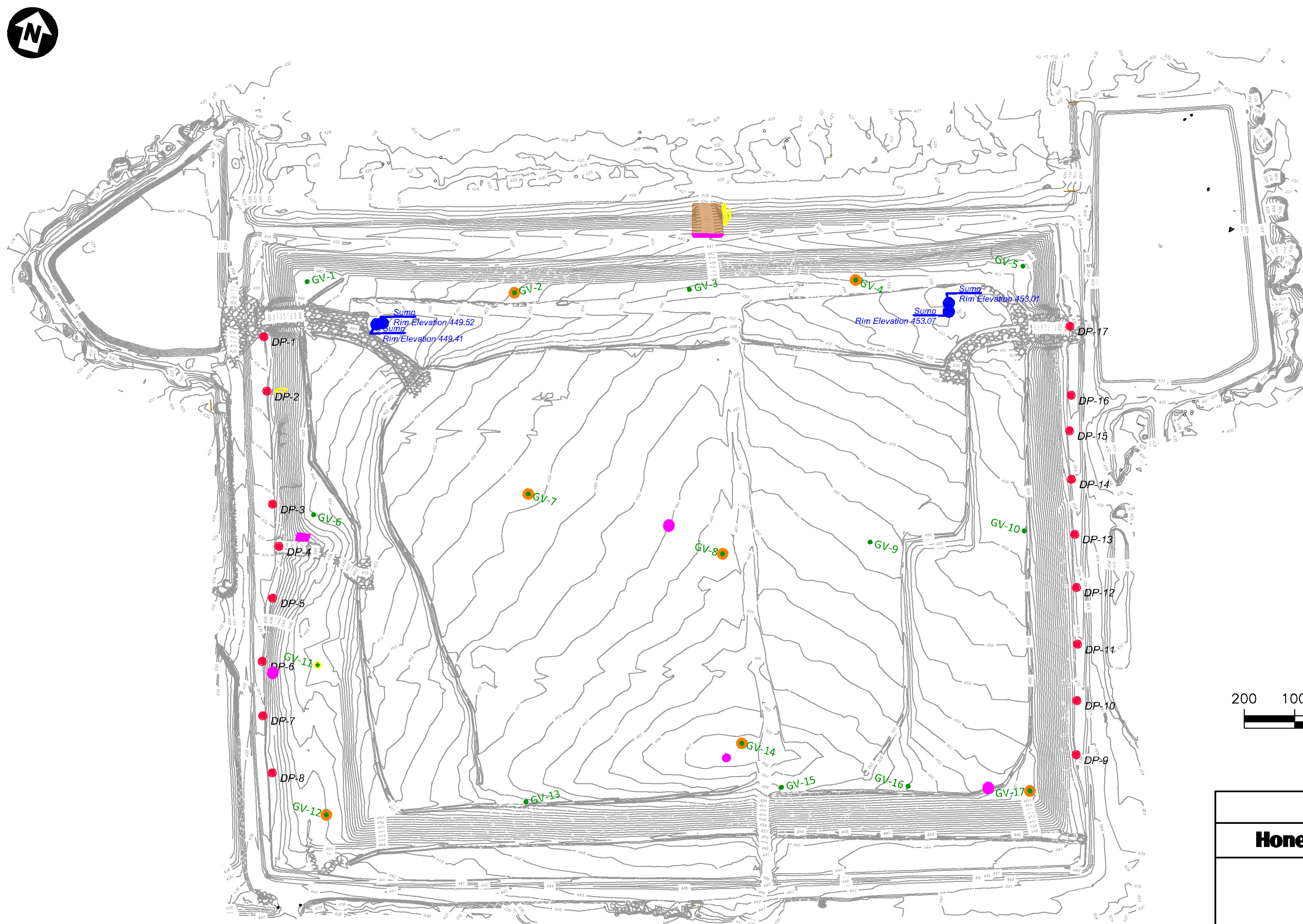
6-2-21 Drainage Pipe Daylight Locations			
#	COORDINATES		COMMENTS
DP-1	1120202.677	905912.700	Under chute riprap, not visible
DP-2	1120100.239	905948.459	Unable to find
DP-3	1119888.374	906021.590	Unable to find
DP-4	1119811.170	906056.949	Under drainage downchute riprap, not visible
DP-5	1119709.306	906072.849	Unable to find
DP-6	1119583.469	906088.100	Good condition, partly visible, vegetation on top of drainage pipe
DP-7	1119479.886	906118.916	Good condition, visible, vegetation in front of drainage pipe
DP-8	1119376.185	906168.548	GPS coordinates ~10 ft. upslope of toe, could not find
DP-9	1119852.555	907690.460	3 ft. off from GPS coordinates; Good condition, visible, vegetation surrounding drainage pipe
DP-10	1119956.045	907661.695	Good condition, visible, vegetation in front and on top of drainage pipe
DP-11	1120063.765	907631.793	Good condition, visible, vegetation in front and on top of drainage pipe
DP-12	1120171.762	907598.511	Good condition, visible, vegetation in front of drainage pipe, moss on top of drainage pipe
DP-13	1120271.798	907566.212	Good condition, slightly visible, vegetation surrounding drainage pipe, moss on top of drainage pipe
DP-14	1120374.991	907529.601	Good condition, visible, vegetation in front and on sides of drainage pipe
DP-15	1120466.426	907499.452	Good condition, visible, vegetation in front of drainage pipe
DP-16	1120534.579	907482.788	Good condition, visible, vegetation surrounding drainage pipe
DP-17	1120665.489	907442.420	Under drainage downchute riprap, not visible

NOTE: All drainage pipes inspected did not have any obstruction and were functioning as intended

6-2-21 GAS VENT LOCATIONS	
#	CONDITION (Gas vent structural integrity, plantings, cap irregularities)
GV-1	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-2	Vent straight and in good condition. Cap intact. Medium height grasses present. Small animal burrows present.
GV-3	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-4	Vent straight and in good condition. Cap intact. Tall grasses present. Small animal burrows present.
GV-5	Vent in good condition. Cap intact. Tall grasses present.
GV-6	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grass present. Sparse vegetation nearby.
GV-7	Vent straight and in good condition. Cap intact. Tall grasses present. Sparse vegetation nearby. Small animal burrows present.
GV-8	Vent straight and in good condition. Cap intact. Tall grasses present. Sparse vegetation nearby. Small animal burrows present.
GV-9	Vent slightly tilted and in good condition. Cap intact. Medium height grasses present.
GV-10	Vent straight and in good condition. Cap intact. Medium height grasses present.
GV-11	Vent straight and in good condition. Cap intact. Medium height grasses present. Small erosion rill present.
GV-12	Vent in good condition with a slight lean (consistent with previous recon)* Cap intact. Tall grasses present. Small animal burrows present.
GV-13	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Medium height grasses present.
GV-14	Vent straight and in good condition. Cap intact. Tall grasses present. Sparse vegetation nearby. Small animal burrow present.
GV-15	Vent in good condition with a very slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-16	Vent in good condition with slight lean. Cap intact. Medium height grasses present.
GV-17	Vent in good condition with a very slight lean (consistent with previous recon)*. Cap intact. Medium height grasses present. Small animal burrow present.

* Vents noted with a tilt/lean are consistent with previous monitoring observations and do not require any improvements or changes. All vents are functioning as intended.

6-2-2021 GENERAL RECON		
ITEM	Y/N	COMMENT
Evidence of Tresspassing/ Unauthorized use of final cover area	N	n/a
Evidence of subsidence or settling/ low points/ depressions	N	n/a
Evidence of Burrowing animals	Y	Animal burrows noted at the bases of GV-2, GV-4, GV-7, GV-8, GV-12, GV-14, and GV-17.
Presence of Erosion Rills	Y	Vegetation growth was seen in small rills previously noted on northern edge of the site. A small erosion rill was noted near GV-11.
Vegetation performing as intended	Y	Grasses have good cover. Few small areas of bare ground were noted near burrows.
Irregularities such as bulges, bumps, slumps or cracks observed	N	n/a
Evidence of ponded water	N	Good condition. Landfill is draining well, no pools at the top of the site.
Condition of access roads good (no aggregate washout, exposed geotextile, etc)	Y	Good condition
Perimeter berm in good condition	Y	Good Condition
Proper function and integrity of diversion berms	Y	
Proper function and integrity of interception berms	Y	
Proper function and integrity of drainage channels	Y	n/a
Proper function and integrity of East & West Basin	Y	n/a



LEGEND

- DRAIN PIPE
- GAS VENT
- SUMP
- SMALL EROSION RILLS
- SPARSE VEGETATION
- SMALL ANIMAL BURROWS
- PREVIOUSLY INSTALLED RECP

200 100 0 200 400

SCALE: 1"=200'

FIGURE 1

Honeywell

SCA
SYRACUSE, NEW YORK

SCA
QUARTERLY REPORT
2ND QUARTER – 2021

PARSONS

301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450600 SCA OM&M\10.0 TECHNICAL CATAGORIES\10.3-QUARTERLY INSPECTIONS\2021\SCA-Q2-2021.DWG
PLOT DATE: 3/28/2022 4:37 PM PLOTTED BY: MORANZ, KAITLYN [US-US]

LMS INSPECTION FORMS

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
LIQUID MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

DATE/TIME: April 2021	WEATHER: 49.09˚ F avg. .09" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS:
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed monthly the first year. Form to be completed as appropriate for inspections done during active pumping (first item is mandatory) and if repairs or maintenance are conducted.
2. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Sump high level alarms and flow gauges are operational (and flow data is being recorded)	
		X	System automatic controls are operational.	Automated system is operational, but not used due to low volumes and systems run in batch mode. The system is run manually, and the operator remains on site while pumping to monitor the system.
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	Sumps are ran together to prevent backflow.
		X	Sump operational controls are set to prevent sump liquid depth from exceeding 6 feet. Confirm pumps and flow gauges are operational.	Sump levels are checked daily and are pumped to bottom when WTP discharge is permitted. Automated system is operational, but not used due to low levels and systems run in batch mode. Alarm system is active to alert for high levels.
X			Aboveground piping and insulation are in good condition. Inspect during active pumping.	
X			Underground utility markings/signs are in good condition.	
X			Riser covers are intact and secured.	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Repair of signage or markers	
Cleaning of/maintenance on system piping	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
LIQUID MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

DATE/TIME: May 2021	WEATHER: 58.83° F avg. .08” precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS:
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed monthly the first year. Form to be completed as appropriate for inspections done during active pumping (first item is mandatory) and if repairs or maintenance are conducted.
2. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Sump high level alarms and flow gauges are operational (and flow data is being recorded)	
		X	System automatic controls are operational.	Automated system is operational, but not used due to low volumes and systems run in batch mode. The system is run manually, and the operator remains on site while pumping to monitor the system.
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	Sumps are ran together to prevent backflow.
		X	Sump operational controls are set to prevent sump liquid depth from exceeding 6 feet. Confirm pumps and flow gauges are operational.	Sump levels are checked daily and are pumped to bottom when WTP discharge is permitted. Automated system is operational, but not used due to low levels and systems run in batch mode. Alarm system is active to alert for high levels.
X			Aboveground piping and insulation are in good condition. Inspect during active pumping.	
X			Underground utility markings/signs are in good condition.	
X			Riser covers are intact and secured.	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Repair of signage or markers	
Cleaning of/maintenance on system piping	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
LIQUID MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

DATE/TIME: June 2021	WEATHER: 71.27° F avg. .14" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS:
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed monthly the first year. Form to be completed as appropriate for inspections done during active pumping (first item is mandatory) and if repairs or maintenance are conducted.
2. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Sump high level alarms and flow gauges are operational (and flow data is being recorded)	
		X	System automatic controls are operational.	Automated system is operational, but not used due to low volumes and systems run in batch mode. The system is run manually, and the operator remains on site while pumping to monitor the system.
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	Sumps are ran together to prevent backflow.
		X	Sump operational controls are set to prevent sump liquid depth from exceeding 6 feet. Confirm pumps and flow gauges are operational.	Sump levels are checked daily and are pumped to bottom when WTP discharge is permitted. Automated system is operational, but not used due to low levels and systems run in batch mode. Alarm system is active to alert for high levels.
X			Aboveground piping and insulation are in good condition. Inspect during active pumping.	
X			Underground utility markings/signs are in good condition.	
X			Riser covers are intact and secured.	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Repair of signage or markers	
Cleaning of/maintenance on system piping	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
STORM WATER MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

April 2021	WEATHER: 49.09° F avg. .09” precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS: East basin transfers 4/12-4/13 and 4/27-4/28. West basin to East 4/12 and 4/27.
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed quarterly. Form to be completed as appropriate for inspections done during active pumping and if repairs or maintenance are conducted.
2. Pumping from east basin to outfall 18 only occurs when TSS < 50 mg/l and with notification/approval from OBG (now Ramboll)
3. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Are the East and West basin pumps operating properly	East basin pumped to outfall using 3” godwin diesel pump.
X			Aboveground piping is in good condition. Inspect during active pumping	
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	
X			Are the level indicators in the East and West basin operational	West Basin transducer reads 25” high. (accounted for during monitoring).
X			Diversion berms, interception berms and drainage channels functioning properly	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Cleaning of/maintenance on system piping	
Removal of debris or any other objects obstructing flow in drainage channels	No issues with drainage channels observed.
Cleaning of clogged riprap and East and West basins	
Repair of damaged storm water, erosion, and sediment control structures	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
STORM WATER MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

May 2021	WEATHER: 58.83° F avg. .08" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS: East basin transfers 5/4-4/6 and 5/10-5/13. West basin to East 5/4 and 5/10.
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed quarterly. Form to be completed as appropriate for inspections done during active pumping and if repairs or maintenance are conducted.
2. Pumping from east basin to outfall 18 only occurs when TSS < 50 mg/l and with notification/approval from OBG (now Ramboll)
3. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Are the East and West basin pumps operating properly	East basin pumped to outfall using 3" godwin diesel pump.
X			Aboveground piping is in good condition. Inspect during active pumping	
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	
X			Are the level indicators in the East and West basin operational	West Basin transducer reads 25" high. (accounted for during monitoring).
X			Diversion berms, interception berms and drainage channels functioning properly	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Cleaning of/maintenance on system piping	
Removal of debris or any other objects obstructing flow in drainage channels	No issues with drainage channels observed.
Cleaning of clogged riprap and East and West basins	
Repair of damaged storm water, erosion, and sediment control structures	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
STORM WATER MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

June 2021	WEATHER: 71.27° F avg. .14" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS: East basin 6/15-6/17. West basin transfer to East 6/15.
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed quarterly. Form to be completed as appropriate for inspections done during active pumping and if repairs or maintenance are conducted.
2. Pumping from east basin to outfall 18 only occurs when TSS < 50 mg/l and with notification/approval from OBG (now Ramboll)
3. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Are the East and West basin pumps operating properly	East basin pumped to outfall using 3" godwin diesel pump.
X			Aboveground piping is in good condition. Inspect during active pumping	
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	
X			Are the level indicators in the East and West basin operational	West Basin transducer reads 25" high. (accounted for during monitoring).
X			Diversion berms, interception berms and drainage channels functioning properly	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Cleaning of/maintenance on system piping	
Removal of debris or any other objects obstructing flow in drainage channels	No issues with drainage channels observed.
Cleaning of clogged riprap and East and West basins	
Repair of damaged storm water, erosion, and sediment control structures	
Other repairs	

PHOTO LOG

2021 Q2 INSPECTION PHOTOGRAPH LOG

Observations:
Photos below include gas vents 1 to 6 monitored on 6/2/21. All vents were in good condition with tall grasses surrounding them. Additional details found on quarterly forms.


GV-1


GV-2


GV-3


GV-4


GV-5


GV-6

2021 Q2 INSPECTION PHOTOGRAPH LOG

Observations:
Photos below include gas vents 7 to 12 monitored on 6/2/21. All vents were in good condition with tall grasses surrounding them. Additional details found on quarterly forms.


GV-7


GV-8


GV-9


GV-10


GV-11


GV-12

2021 Q2 INSPECTION PHOTOGRAPH LOG

Observations:
Photos below include gas vents 13 to 17 monitored on 6/2/21. All vents were in good condition with tall grasses surrounding them. GV-13 continues to demonstrate a slight lean, and GV-16 has a very slight lean. Additional details found on quarterly forms.

GV-13

GV-14

GV-15

GV-16

GV-17

2021 Q2 INSPECTION PHOTOGRAPH LOG

Observations:
Small animal burrows were noted at GV-2, GV-4, GV-7, GV-8, GV-14, and GV-17. Ground cover was good site-wide, with very few areas of patchy vegetation on berms. Additional details found on quarterly forms.


Typical condition of vegetation


Minor erosion rills noted at toe of RECP at the northern edge of the site


Vegetation surrounding DP-13


Minor erosion rill noted near GV-11


Example of small animal burrow near GV-14

2021 Q3 SCA Quarterly Inspection Package
Inspection, Operation, and Maintenance Forms

The 2021 Quarter 3 SCA inspection was completed on September 24, 2021. During the inspection the following items were evaluated:

- evidence of trespassing or unauthorized use of the final cover area
- evidence of subsidence or settling that results in low spots, or presence of erosion rills
- evidence of burrowing animals
- condition of vegetation
- observable irregularities such as bulges, bumps, slumps, or cracks
- evidence of ponded water
- condition of gas vents and drainage pipe outlets
- condition of access roads (i.e., erosion, aggregate washout, exposed geotextile, and debris on the road)
- condition of SCA perimeter berm
- condition of areas near anchor trenches, storm water control berms, and drainage channels

Overall, the site was found in good condition and there were no major irregularities to note. Tall grasses were present and ground cover was good, with only small areas of sparse vegetation cover. Small erosion rills previously noted at the northern end of the site remain present, however vegetation growth has continued on and around the rills. The additional small erosion rill noted near GV-11 in the Q2 inspection has remained stable. Rills will be monitored during future inspections. Only a few small, isolated locations along berms and on the top of the site remain with sparse vegetation. Sparse small stems of Phragmites australis were noted in the northwest corner of the site and will be monitored in future inspections. Small woody plants were noted sporadically along the edge of the northern access road and will be removed in further inspections.

The gas vents and drainage pipes were in good condition, as were the berms and drainage channels around the perimeter of the landfill. Evidence of small animal burrows were noted near gas vents GV-4, GV-7, and GV-14. Burrows noted in the Q2 inspection were no longer visible, likely due to settling or vegetation growth. Wildlife management will be performed prior to the repair of current small burrows as necessary. No cap irregularities were observed.

Attachments to this package include completed field forms associated with this quarterly inspection, a photo log documenting the general condition of the gas vents cover, and monthly LMS inspection forms completed by Jacobs during this quarter. A figure with site condition observations and field notes has been included and will be used as reference for potential future enhancement seeding and RECP recommendations.

QUARTERLY FORMS & SITE RECON FIGURE

PARSONS

9-30-21 Drainage Pipe Daylight Locations

#	COORDINATES		COMMENTS
DP-1	1120202.677	905912.700	Under chute riprap, not visible
DP-2	1120100.239	905948.459	Unable to find
DP-3	1119888.374	906021.590	Unable to find
DP-4	1119811.170	906056.949	Under drainage downchute riprap, not visible
DP-5	1119709.306	906072.849	GPS coordinates ~10 ft. upslope of toe, could not find
DP-6	1119583.469	906088.100	Good condition, visible, vegetation on sides of drainage pipe
DP-7	1119479.886	906118.916	Good condition, visible, vegetation surrounding drainage pipe
DP-8	1119376.185	906168.548	GPS coordinates ~10 ft. upslope of toe, could not find
DP-9	1119852.555	907690.460	3 ft. off from GPS coordinates; Good condition, visible, vegetation surrounding drainage pipe
DP-10	1119956.045	907661.695	Good condition, partly visible, vegetation surrounding drainage pipe, moss on top of drainage pipe
DP-11	1120063.765	907631.793	Good condition, visible, vegetation surrounding drainage pipe
DP-12	1120171.762	907598.511	Good condition, visible, vegetation on sides of drainage pipe, moss on top of drainage pipe
DP-13	1120271.798	907566.212	Good condition, visible, vegetation surrounding drainage pipe, moss on top of drainage pipe
DP-14	1120374.991	907529.601	Good condition, visible, vegetation on sides of drainage pipe
DP-15	1120466.426	907499.452	Good condition, visible, sparse vegetation on top of drainage pipe
DP-16	1120534.579	907482.788	Good condition, visible, vegetation surrounding drainage pipe
DP-17	1120665.489	907442.420	Under drainage downchute riprap, not visible

NOTE: All drainage pipes inspected did not have any obstruction and were functioning as intended

PARSONS

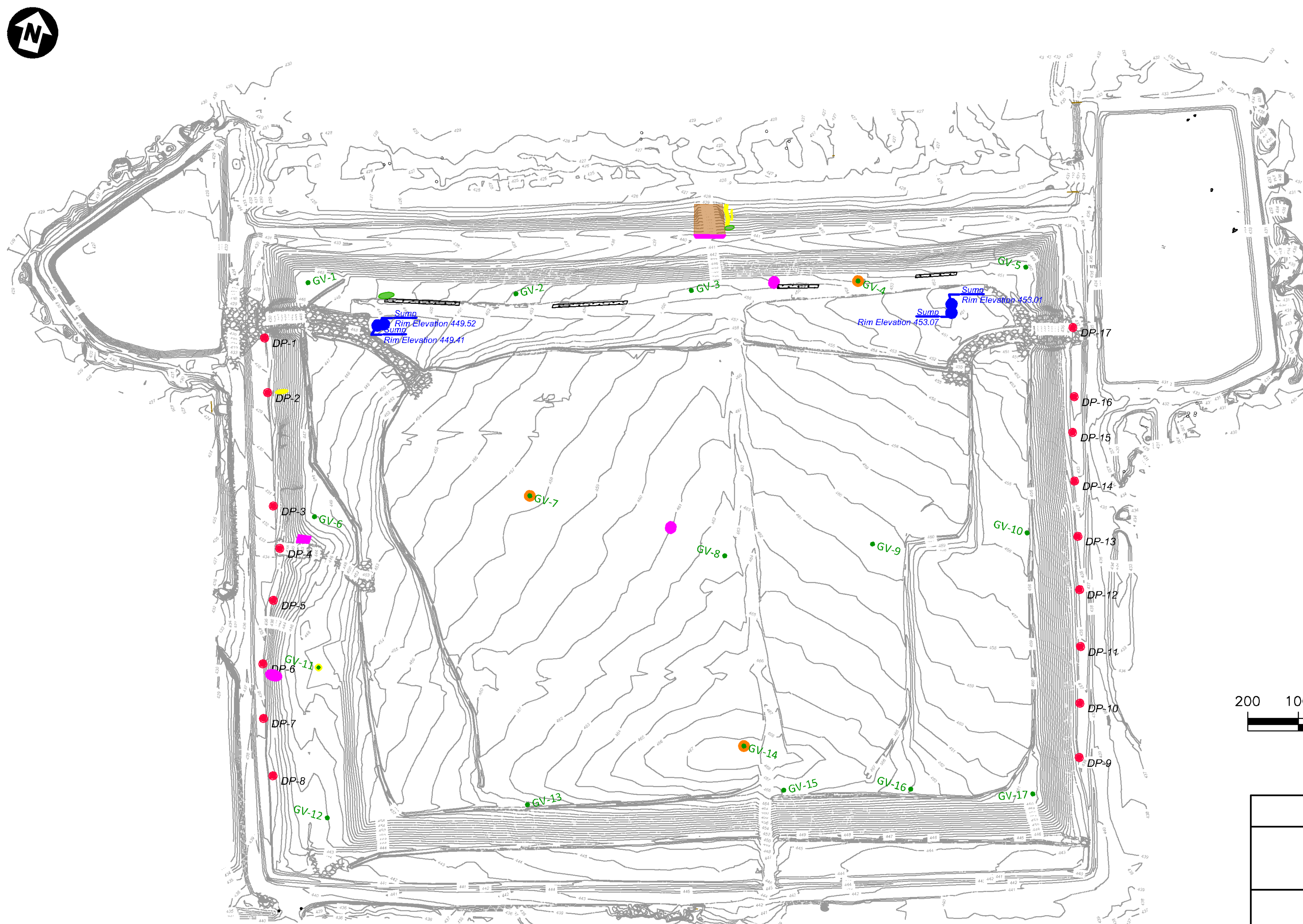
9-24-21 GAS VENT LOCATIONS	
#	CONDITION (Gas vent structural integrity, plantings, cap irregularities)
GV-1	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-2	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-3	Vent straight and in good condition. Cap intact. Tall grasses present. Minor settling around pipe.
GV-4	Vent straight and in good condition. Cap intact. Tall grasses present. Small animal burrows present.
GV-5	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-6	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-7	Vent straight and in good condition. Cap intact. Tall grasses present. Small animal burrows present.
GV-8	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-9	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-10	Vent straight and in good condition. Cap intact. Medium height grasses present.
GV-11	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-12	Vent in good condition with a slight lean (consistent with previous recon)* Cap intact. Tall grasses present.
GV-13	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-14	Vent straight and in good condition. Cap intact. Tall grasses present. Small animal burrows present.
GV-15	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-16	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-17	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.

* Vents noted with a tilt/lean are consistent with previous monitoring observations and do not require any improvements or changes. All vents are functioning as intended.

PARSONS

9-24-21 GAS VENT LOCATIONS	
#	CONDITION (Gas vent structural integrity, plantings, cap irregularities)
GV-1	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-2	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-3	Vent straight and in good condition. Cap intact. Tall grasses present. Minor settling around pipe.
GV-4	Vent straight and in good condition. Cap intact. Tall grasses present. Small animal burrows present.
GV-5	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-6	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-7	Vent straight and in good condition. Cap intact. Tall grasses present. Small animal burrows present.
GV-8	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-9	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-10	Vent straight and in good condition. Cap intact. Medium height grasses present.
GV-11	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-12	Vent in good condition with a slight lean (consistent with previous recon)* Cap intact. Tall grasses present.
GV-13	Vent in good condition although tilted (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-14	Vent straight and in good condition. Cap intact. Tall grasses present. Small animal burrows present.
GV-15	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-16	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-17	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.

* Vents noted with a tilt/lean are consistent with previous monitoring observations and do not require any improvements or changes. All vents are functioning as intended.



LEGEND

- DRAIN PIPE
- GAS VENT
- SUMP
- WOODY PLANTS
- SMALL EROSION RILLS
- SPARSE PHRAGMITES STEMS
- SPARSE VEGETATION
- SMALL ANIMAL BURROWS
- PREVIOUSLY INSTALLED RECP

200 100 0 200 400

SCALE: 1"=200'

FIGURE 1

Honeywell

SCA
QUARTERLY REPORT
3RD QUARTER – 2021

PARSONS
301 Plairfield Rd, Ste 350, Syracuse, NY, Ph: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450600 SCA OM&M\10.0 TECHNICAL CATAGORIES\10.3-QUARTERLY INSPECTIONS\2021\SCA-Q3-2021.DWG
PLOT DATE: 3/14/2022 10:05 AM PLOTTED BY: MORANZ, KAITLYN [US-US]

LMS INSPECTION FORMS

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
LIQUID MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

DATE/TIME: July 2021	WEATHER: 71.79˚ F avg. .29” precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS:
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed monthly the first year. Form to be completed as appropriate for inspections done during active pumping (first item is mandatory) and if repairs or maintenance are conducted.
2. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Sump high level alarms and flow gauges are operational (and flow data is being recorded)	
		X	System automatic controls are operational.	Automated system is operational, but not used due to low volumes and systems run in batch mode. The system is run manually, and the operator remains on site while pumping to monitor the system.
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	Sumps are ran together to prevent backflow.
		X	Sump operational controls are set to prevent sump liquid depth from exceeding 6 feet. Confirm pumps and flow gauges are operational.	Sump levels are checked daily and are pumped to bottom when WTP discharge is permitted. Automated system is operational, but not used due to low levels and systems run in batch mode. Alarm system is active to alert for high levels.
X			Aboveground piping and insulation are in good condition. Inspect during active pumping.	
X			Underground utility markings/signs are in good condition.	
X			Riser covers are intact and secured.	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Repair of signage or markers	
Cleaning of/maintenance on system piping	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
LIQUID MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

DATE/TIME: August 2021	WEATHER: 75.15° F avg. .21” precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS:
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed monthly the first year. Form to be completed as appropriate for inspections done during active pumping (first item is mandatory) and if repairs or maintenance are conducted.
2. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Sump high level alarms and flow gauges are operational (and flow data is being recorded)	
		X	System automatic controls are operational.	Automated system is operational, but not used due to low volumes and systems run in batch mode. The system is run manually, and the operator remains on site while pumping to monitor the system.
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	Sumps are ran together to prevent backflow.
		X	Sump operational controls are set to prevent sump liquid depth from exceeding 6 feet. Confirm pumps and flow gauges are operational.	Sump levels are checked daily and are pumped to bottom when WTP discharge is permitted. Automated system is operational, but not used due to low levels and systems run in batch mode. Alarm system is active to alert for high levels.
X			Aboveground piping and insulation are in good condition. Inspect during active pumping.	
X			Underground utility markings/signs are in good condition.	
X			Riser covers are intact and secured.	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Repair of signage or markers	
Cleaning of/maintenance on system piping	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
LIQUID MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

DATE/TIME: September 2021	WEATHER: 65.78° F avg. .07" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS:
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed monthly the first year. Form to be completed as appropriate for inspections done during active pumping (first item is mandatory) and if repairs or maintenance are conducted.
2. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Sump high level alarms and flow gauges are operational (and flow data is being recorded)	
		X	System automatic controls are operational.	Automated system is operational, but not used due to low volumes and systems run in batch mode. The system is run manually, and the operator remains on site while pumping to monitor the system.
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	Sumps are ran together to prevent backflow.
		X	Sump operational controls are set to prevent sump liquid depth from exceeding 6 feet. Confirm pumps and flow gauges are operational.	Sump levels are checked daily and are pumped to bottom when WTP discharge is permitted. Automated system is operational, but not used due to low levels and systems run in batch mode. Alarm system is active to alert for high levels.
X			Aboveground piping and insulation are in good condition. Inspect during active pumping.	
X			Underground utility markings/signs are in good condition.	
X			Riser covers are intact and secured.	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Repair of signage or markers	
Cleaning of/maintenance on system piping	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
STORM WATER MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

July 2021	WEATHER: 71.79° F avg. .29" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS: No transfers from the basins.
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed quarterly. Form to be completed as appropriate for inspections done during active pumping and if repairs or maintenance are conducted.
2. Pumping from east basin to outfall 18 only occurs when TSS < 50 mg/l and with notification/approval from OBG (now Ramboll)
3. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Are the East and West basin pumps operating properly	East basin pumped to outfall using 3" godwin diesel pump.
X			Aboveground piping is in good condition. Inspect during active pumping	
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	
X			Are the level indicators in the East and West basin operational	West Basin transducer reads 25" high. (accounted for during monitoring).
X			Diversion berms, interception berms and drainage channels functioning properly	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Cleaning of/maintenance on system piping	
Removal of debris or any other objects obstructing flow in drainage channels	No issues with drainage channels observed.
Cleaning of clogged riprap and East and West basins	
Repair of damaged storm water, erosion, and sediment control structures	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
STORM WATER MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

August 2021	WEATHER: 75.15° F avg. .21" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS: East basin to outfall 18: 8/19-8/27 and 8/30-8/31. West basin transfer to East basin: 8/27 and 8/31.
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed quarterly. Form to be completed as appropriate for inspections done during active pumping and if repairs or maintenance are conducted.
2. Pumping from east basin to outfall 18 only occurs when TSS < 50 mg/l and with notification/approval from OBG (now Ramboll)
3. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Are the East and West basin pumps operating properly	East basin pumped to outfall using 3" godwin diesel pump.
X			Aboveground piping is in good condition. Inspect during active pumping	
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	
X			Are the level indicators in the East and West basin operational	West Basin transducer reads 25" high. (accounted for during monitoring).
X			Diversion berms, interception berms and drainage channels functioning properly	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Cleaning of/maintenance on system piping	
Removal of debris or any other objects obstructing flow in drainage channels	No issues with drainage channels observed.
Cleaning of clogged riprap and East and West basins	
Repair of damaged storm water, erosion, and sediment control structures	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
STORM WATER MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

September 2021	WEATHER: 65.78° F avg. .07” precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS: East basin to outfall 18: 9/1-9/2, 9/7-9/9, and 9/13-9/14. West basin transfer to East basin: 9/3.
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed quarterly. Form to be completed as appropriate for inspections done during active pumping and if repairs or maintenance are conducted.
2. Pumping from east basin to outfall 18 only occurs when TSS < 50 mg/l and with notification/approval from OBG (now Ramboll)
3. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Are the East and West basin pumps operating properly	East basin pumped to outfall using 3” godwin diesel pump.
X			Aboveground piping is in good condition. Inspect during active pumping	
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	
X			Are the level indicators in the East and West basin operational	West Basin transducer reads 25” high. (accounted for during monitoring).
X			Diversion berms, interception berms and drainage channels functioning properly	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Cleaning of/maintenance on system piping	
Removal of debris or any other objects obstructing flow in drainage channels	No issues with drainage channels observed.
Cleaning of clogged riprap and East and West basins	
Repair of damaged storm water, erosion, and sediment control structures	
Other repairs	

PHOTO LOG

2021 Q3 INSPECTION PHOTOGRAPH LOG

Observations:
Photos below include gas vents 1 to 6 monitored on 9/24/21. All vents were in good condition with tall grasses surrounding them. Additional details found on quarterly forms.

GV-1

GV-2

GV-3

GV-4

GV-5

GV-6

2021 Q3 INSPECTION PHOTOGRAPH LOG

Observations:
Photos below include gas vents 7 to 12 monitored on 9/24/21. All vents were in good condition with tall grasses surrounding them. Additional details found on quarterly forms.

GV-7

GV-8

GV-9

GV-10

GV-11

GV-12

2021 Q3 INSPECTION PHOTOGRAPH LOG

Observations:
Photos below include gas vents 13 to 17 monitored on 9/24/21. All vents were in good condition with tall grasses surrounding them. GV-13 continues to demonstrate a slight lean, and GV-16 has a very slight lean. Additional details found on quarterly forms.

GV-13

GV-14

GV-15

GV-16

GV-17

Honeywell

PARSONS

2021 Q3 INSPECTION PHOTOGRAPH LOG

Observations:
Small animal burrows were noted at GV-4, GV-7, and GV-14. Ground cover was good site-wide, with few areas of patchy vegetation on berms. Additional details found on quarterly forms.

Typical condition of vegetation on slopes

Vegetation growth near RECP

Vegetation on sides of DP-14

Sparse vegetation noted near GV-11

Sparse vegetation located on eastern berm near groundwater swale

Example of cottonwood noted along northern access road

2021 Q4 SCA Quarterly Inspection Package
Inspection, Operation, and Maintenance Forms

The 2021 Quarter 4 SCA inspection was completed on December 22, 2021. During the inspection the following items were evaluated:

- evidence of trespassing or unauthorized use of the final cover area
- evidence of subsidence or settling that results in low spots, or presence of erosion rills
- evidence of burrowing animals
- condition of vegetation
- observable irregularities such as bulges, bumps, slumps, or cracks
- evidence of ponded water
- condition of gas vents and drainage pipe outlets
- condition of access roads (i.e., erosion, aggregate washout, exposed geotextile, and debris on the road)
- condition of SCA perimeter berm
- condition of areas near anchor trenches, storm water control berms, and drainage channels

Overall, the site was found in good condition and there were no major irregularities to note. Tall grasses were present and ground cover was good, with only small areas of sparse vegetation cover. Small erosion rills previously noted at the northern end of the site remain present, however vegetation growth has continued on and around the rills. The additional small erosion rill noted near GV-11 in the Q2 inspection has remained stable. Vegetation was noted in an area of erosion seen prior to the inspection on the western slope. Rills will be monitored during future inspections. Only a few small, isolated locations along berms and on the top of the site remain with sparse vegetation. Sparse small stems of Phragmites australis and small woody plants noted in Q3 along the edge of the northern access road were not apparent during the inspection, possibly due to seasonal dormancy. The locations previously noted will be monitored in future inspections.

The gas vents and drainage pipes were in good condition, as were the berms and drainage channels around the perimeter of the landfill. No evidence of small animal burrows was noted around gas vents during this inspection. Burrows noted in the Q3 inspection were no longer visible, likely due to settling or vegetation growth. No cap irregularities were observed.

Attachments to this package include completed field forms associated with this quarterly inspection, a photo log documenting the general condition of the gas vents cover, and monthly LMS inspection forms completed by Jacobs during this quarter. A figure with site condition observations and field notes has been included and will be used as reference for potential future enhancement seeding and RECP recommendations.

QUARTERLY FORMS & SITE RECON FIGURE

12-22-21 Drainage Pipe Daylight Locations			
#	COORDINATES		COMMENTS
DP-1	1120202.677	905912.700	Under chute riprap, not visible
DP-2	1120100.239	905948.459	Unable to find
DP-3	1119888.374	906021.590	Unable to find
DP-4	1119811.170	906056.949	Under drainage downchute riprap, not visible
DP-5	1119709.306	906072.849	GPS coordinates ~10 ft. upslope of toe, could not find
DP-6	1119583.469	906088.100	Good condition, partly visible, covered with water
DP-7	1119479.886	906118.916	Good condition, visible, vegetation surrounding drainage pipe
DP-8	1119376.185	906168.548	GPS coordinates ~10 ft. upslope of toe, could not find
DP-9	1119852.555	907690.460	3 ft. off from GPS coordinates; Good condition, visible, vegetation surrounding drainage pipe
DP-10	1119956.045	907661.695	Good condition, visible, vegetation surrounding drainage pipe, moss on top of drainage pipe
DP-11	1120063.765	907631.793	Good condition, visible, vegetation surrounding drainage pipe
DP-12	1120171.762	907598.511	Good condition, visible, vegetation on sides of drainage pipe, water draining
DP-13	1120271.798	907566.212	Good condition, visible, vegetation surrounding drainage pipe
DP-14	1120374.991	907529.601	Good condition, visible, vegetation surrounding drainage pipe, water draining
DP-15	1120466.426	907499.452	Good condition, visible, vegetation on sides of drainage pipe
DP-16	1120534.579	907482.788	Good condition, visible, vegetation on sides of drainage pipe
DP-17	1120665.489	907442.420	Under drainage downchute riprap, not visible

NOTE: All drainage pipes inspected did not have any obstruction and were functioning as intended

12-22-21 GAS VENT LOCATIONS	
#	CONDITION (Gas vent structural integrity, plantings, cap irregularities)
GV-1	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-2	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-3	Vent straight and in good condition. Cap intact. Tall grasses present. Minor settling around pipe.
GV-4	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-5	Vent straight and in good condition. Cap intact. Medium-height grasses present.
GV-6	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-7	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-8	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-9	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-10	Vent straight and in good condition. Cap intact. Medium-height grasses present.
GV-11	Vent straight and in good condition. Cap intact. Tall grasses present.
GV-12	Vent in good condition with a slight lean (consistent with previous recon)* Cap intact. Tall grasses present.
GV-13	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Medium-height grasses present.
GV-14	Vent straight and in good condition. Cap intact. Tall grasses present. Minor settling around pipe.
GV-15	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-16	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.
GV-17	Vent in good condition with a slight lean (consistent with previous recon)*. Cap intact. Tall grasses present.

* Vents noted with a tilt/lean are consistent with previous monitoring observations and do not require any improvements or changes. All vents are functioning as intended.

12-22-2021 GENERAL RECON		
ITEM	Y/N	COMMENT
Evidence of Tresspassing/ Unauthorized use of final cover area	N	n/a
Evidence of subsidence or settling/ low points/ depressions	N	n/a
Evidence of Burrowing animals	N	No animal burrows were noted.
Presence of Erosion Rills	Y	Vegetation growth was seen in small rills previously noted on northern edge of the site.
Vegetation performing as intended	Y	Grasses have good cover. Few small areas of bare ground were noted.
Irregularities such as bulges, bumps, slumps or cracks observed	N	n/a
Evidence of ponded water	N	Good condition. Landfill is draining well, no pools at the top of the site.
Condition of access roads good (no aggregate washout, exposed geotextile, etc)	Y	Good condition
Perimeter berm in good condition	Y	Good Condition
Proper function and integrity of diversion berms	Y	
Proper function and integrity of interception berms	Y	
Proper function and integrity of drainage channels	Y	n/a
Proper function and integrity of East & West Basin	Y	n/a

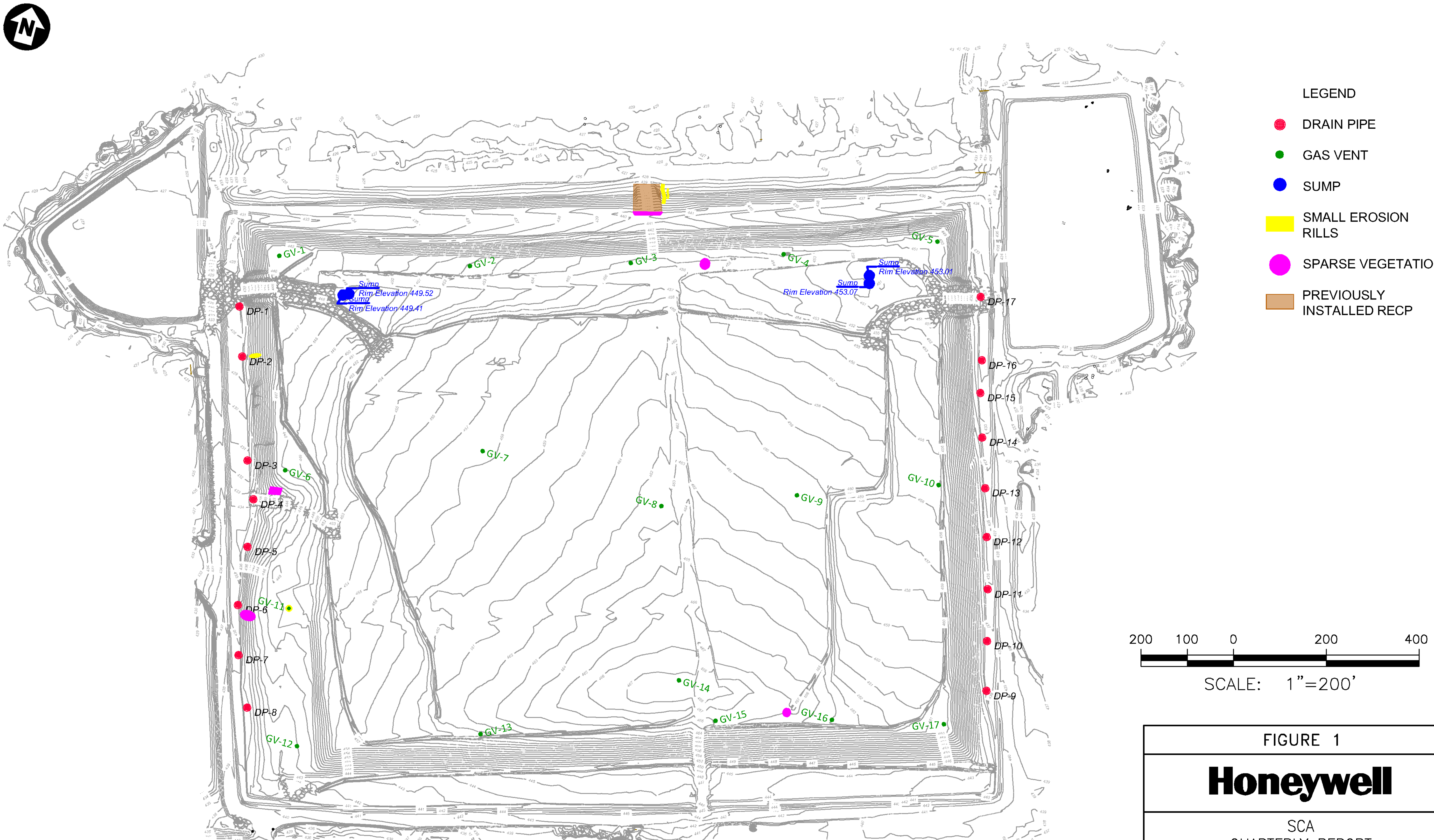


FIGURE 1

Honeywell

SCA
QUARTERLY REPORT
4TH QUARTER – 2021

PARSONS
301 Plainfield Rd, Ste 350, Syracuse, NY, Ph: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\450600 SCA OM&M\10.0 TECHNICAL CATAGORIES\10.3-QUARTERLY INSPECTIONS\2021\SCA-Q4-2021.DWG
PLOT DATE: 3/22/2022 11:26 AM PLOTTED BY: MORANZ, KAITLYN [US-US]

LMS INSPECTION FORMS

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
LIQUID MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

DATE/TIME: October 2021	WEATHER: 58.28° F avg. .24" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS: Carbon removed from Lag Gac 2200A on 10/1.
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed monthly the first year. Form to be completed as appropriate for inspections done during active pumping (first item is mandatory) and if repairs or maintenance are conducted.
2. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Sump high level alarms and flow gauges are operational (and flow data is being recorded)	
		X	System automatic controls are operational.	Automated system is operational, but not used due to low volumes and systems run in batch mode. The system is run manually, and the operator remains on site while pumping to monitor the system.
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	Sumps are ran together to prevent backflow.
		X	Sump operational controls are set to prevent sump liquid depth from exceeding 6 feet. Confirm pumps and flow gauges are operational.	Sump levels are checked daily and are pumped to bottom when WTP discharge is permitted. Automated system is operational, but not used due to low levels and systems run in batch mode. Alarm system is active to alert for high levels.
X			Aboveground piping and insulation are in good condition. Inspect during active pumping.	
X			Underground utility markings/signs are in good condition.	
X			Riser covers are intact and secured.	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Repair of signage or markers	
Cleaning of/maintenance on system piping	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
LIQUID MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

DATE/TIME: November 2021	WEATHER: 40.97˚ F avg. .11" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS:
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed monthly the first year. Form to be completed as appropriate for inspections done during active pumping (first item is mandatory) and if repairs or maintenance are conducted.
2. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Sump high level alarms and flow gauges are operational (and flow data is being recorded)	
		X	System automatic controls are operational.	Automated system is operational, but not used due to low volumes and systems run in batch mode. The system is run manually, and the operator remains on site while pumping to monitor the system.
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	Sumps are ran together to prevent backflow.
		X	Sump operational controls are set to prevent sump liquid depth from exceeding 6 feet. Confirm pumps and flow gauges are operational.	Sump levels are checked daily and are pumped to bottom when WTP discharge is permitted. Automated system is operational, but not used due to low levels and systems run in batch mode. Alarm system is active to alert for high levels.
X			Aboveground piping and insulation are in good condition. Inspect during active pumping.	
X			Underground utility markings/signs are in good condition.	
X			Riser covers are intact and secured.	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Repair of signage or markers	
Cleaning of/maintenance on system piping	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
LIQUID MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

DATE/TIME: December 2021	WEATHER: 37.51° F avg. .07" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS:
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed monthly the first year. Form to be completed as appropriate for inspections done during active pumping (first item is mandatory) and if repairs or maintenance are conducted.
2. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Sump high level alarms and flow gauges are operational (and flow data is being recorded)	
		X	System automatic controls are operational.	Automated system is operational, but not used due to low volumes and systems run in batch mode. The system is run manually, and the operator remains on site while pumping to monitor the system.
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	Sumps are ran together to prevent backflow.
		X	Sump operational controls are set to prevent sump liquid depth from exceeding 6 feet. Confirm pumps and flow gauges are operational.	Sump levels are checked daily and are pumped to bottom when WTP discharge is permitted. Automated system is operational, but not used due to low levels and systems run in batch mode. Alarm system is active to alert for high levels.
X			Aboveground piping and insulation are in good condition. Inspect during active pumping.	
X			Underground utility markings/signs are in good condition.	
X			Riser covers are intact and secured.	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Repair of signage or markers	
Cleaning of/maintenance on system piping	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
STORM WATER MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

October 2021	WEATHER: 58.28° F avg. .24" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS: East basin to outfall 18: 10/18-10/21 and 10/25-10/31. West basin transfer to East basin: 10/26.
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed quarterly. Form to be completed as appropriate for inspections done during active pumping and if repairs or maintenance are conducted.
2. Pumping from east basin to outfall 18 only occurs when TSS < 50 mg/l and with notification/approval from OBG (now Ramboll)
3. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Are the East and West basin pumps operating properly	East basin pumped to outfall using 3" godwin diesel pump.
X			Aboveground piping is in good condition. Inspect during active pumping	
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	
X			Are the level indicators in the East and West basin operational	West Basin transducer reads 25" high. (accounted for during monitoring).
X			Diversion berms, interception berms and drainage channels functioning properly	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Cleaning of/maintenance on system piping	
Removal of debris or any other objects obstructing flow in drainage channels	No issues with drainage channels observed.
Cleaning of clogged riprap and East and West basins	
Repair of damaged storm water, erosion, and sediment control structures	
Other repairs	

INSPECTION FORM **HONEYWELL – SCA POST CLOSURE CARE PLAN** **STORM WATER MANAGEMENT SYSTEM** **SYRACUSE, NEW YORK**

GENERAL SITE INFORMATION

November 2021	WEATHER: 40.97° F avg. .11" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS: East basin to outfall 18: 11/1-11/10 and 11/16-11/22. West basin transfer to East basin: 11/2 and 11/19.
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed quarterly. Form to be completed as appropriate for inspections done during active pumping and if repairs or maintenance are conducted.
2. Pumping from east basin to outfall 18 only occurs when TSS < 50 mg/l and with notification/approval from OBG (now Ramboll)
3. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Are the East and West basin pumps operating properly	East basin pumped to outfall using 3" godwin diesel pump.
X			Aboveground piping is in good condition. Inspect during active pumping	
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	
X			Are the level indicators in the East and West basin operational	
X			Diversion berms, interception berms and drainage channels functioning properly	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Cleaning of/maintenance on system piping	
Removal of debris or any other objects obstructing flow in drainage channels	No issues with drainage channels observed.
Cleaning of clogged riprap and East and West basins	
Repair of damaged storm water, erosion, and sediment control structures	
Other repairs	

INSPECTION FORM
HONEYWELL – SCA POST CLOSURE CARE PLAN
STORM WATER MANAGEMENT SYSTEM
SYRACUSE, NEW YORK

GENERAL SITE INFORMATION

December 2021	WEATHER: 37.51° F avg. .07" precipitation
INSPECTOR/OPERATOR NAME: Robert Davies	COMMENTS: East basin to outfall 18: 12/6-12/9, 12/20-12/22 and 12/28-12/29. West basin transfer to East basin: 12/6, 12/20 and 12/28.
OM&M CONTRACTOR: Jacobs	

Notes:

1. Inspection form to be fully completed quarterly. Form to be completed as appropriate for inspections done during active pumping and if repairs or maintenance are conducted.
2. Pumping from east basin to outfall 18 only occurs when TSS < 50 mg/l and with notification/approval from OBG (now Ramboll)
3. Attach additional documentation and photographs as appropriate. Note locations for issues identified below.

Inspection

Yes	No	N/A	Item	Notes
X			Are the East and West basin pumps operating properly	East basin pumped to outfall using 3" godwin diesel pump.
X			Aboveground piping is in good condition. Inspect during active pumping	
X			Instrumentation and valves are in good condition. Note sticking or jammed devices, corrosion, leaks, and misalignments.	
X			Are the level indicators in the East and West basin operational	
X			Diversion berms, interception berms and drainage channels functioning properly	

Repair/Maintenance Activities

Item	Notes
Calibration, operations, maintenance of mechanical and electrical equipment including pumps and flow meters	
Cleaning of/maintenance on system piping	
Removal of debris or any other objects obstructing flow in drainage channels	No issues with drainage channels observed.
Cleaning of clogged riprap and East and West basins	
Repair of damaged storm water, erosion, and sediment control structures	
Other repairs	

PHOTO LOG

2021 Q4 INSPECTION PHOTOGRAPH LOG

Observations:
Photos below include gas vents 1 to 6 monitored on 12/22/21. All vents were in good condition with tall grasses surrounding them. Additional details found on quarterly forms.

GV-1

GV-2

GV-3

GV-4

GV-5

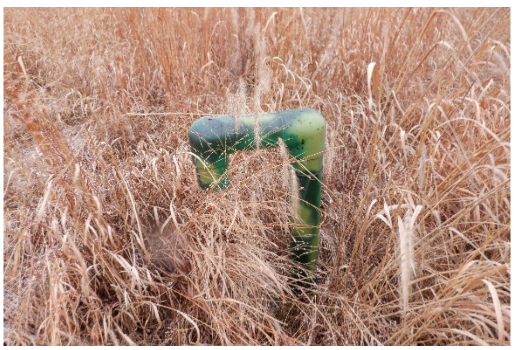
GV-6

2021 Q4 INSPECTION PHOTOGRAPH LOG

Observations:
Photos below include gas vents 7 to 12 monitored on 12/22/21. All vents were in good condition with tall grasses surrounding them. Additional details found on quarterly forms.


GV-7


GV-8


GV-9


GV-10


GV-11


GV-12

2021 Q4 INSPECTION PHOTOGRAPH LOG

Observations:
Photos below include gas vents 13 to 17 monitored on 12/22/21. All vents were in good condition with tall grasses surrounding them. GV-13 continues to demonstrate a slight lean, and GV-16 has a very slight lean. Additional details found on quarterly forms.

GV-13

GV-14

GV-15

GV-16

GV-17

2021 Q4 INSPECTION PHOTOGRAPH LOG

Observations:
No small animal burrows were noted. Ground cover was good site-wide, with very few areas of patchy vegetation on berms. Additional details found on quarterly forms.

Condition of mowed vegetation

Vegetation covering location of previous animal burrows

Water draining from DP-12

10-foot un-mowed gas vent buffer area

Erosion rill noted on western slope