APPENDIX F

ONONDAGA LAKE WASTEBEDS 1-8 SHORELINE STABILIZATION MONITORING WORK PLAN

Prepared for:

Honeywell

301 Plainfield Road, Suite 330
Syracuse, NY 13212

Prepared by:

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

UFI UPSTATE FRESHWATER INSTITUTE
P.O. Box 506
Syracuse, New York 13214

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LIST OF ACRONYMS

AHA	activity hazard analyses
NYSDEC	New York State Department of Environmental Conservation
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
RA	Remediation Area
ROD	Record of Decision
SOP	Standard Operating Procedure
SSP	subcontractor safety plans
WB 1-8	Wastebeds 1-8

ONONDAGA LAKE POST-REMEDIATION WASTEBEDS 1-8 SHORELINE STABILIZATION MONITORING WORK PLAN

1.0 INTRODUCTION

This work plan describes the data to be collected beginning in 2017 for monitoring related to the Onondaga Lake Wastebeds 1-8 (WB 1-8) shoreline stabilization. Descriptions of the field and analytical methods and quality assurance program supporting the field work is provided in the Quality Assurance Project Plan (QAPP), which is presented separate from this work plan (Parsons et al., 2017).

1.1 Background and Objectives

The Record of Decision (ROD) for Onondaga Lake (NYSDEC and EPA, 2005) identified an estimated 1.5 miles (2.4 km) of lake shoreline adjacent to WB 1-8 where habitat enhancement activities would be applied to stabilize calcite deposits and reduce nearshore sediment resuspension and related turbidity. This enhancement was included in the Lake Final Design (Parsons and Anchor QEA, 2012) and integrated with the remedy for WB 1-8 as well as with the sediment capping in Remediation Areas (RAs) A and B. The objective of monitoring the WB 1-8 shoreline is to provide sufficient data to demonstrate the effectiveness of shoreline stabilization at decreasing wind driven near-shore turbidity.

In addition to the turbidity monitoring detailed in the Work Plan, an annual physical inspection and photo documentation of this area will be completed as part of the long-term cap physical monitoring program, as detailed in Appendix D. Any signs of potential erosion will be photographed and noted during the inspection. Any other signs of potential impacts, such as seeps or disturbances, will also be noted. Physical inspections will occur annually for a minimum of five years. Additional physical monitoring may be appropriate based on the results of the first five years of monitoring. In addition, physical inspection and photo documentation will be completed after the first 10-year wind-generated wave event occurs, which was the basis for determining size of the substrate used for the shoreline stabilization. If significant loss of stabilization material is noted as part of the physical inspection, additional turbidity monitoring may be appropriate and will be evaluated in consultation with New York State Department of Environmental Conservation (NYSDEC).

2.0 HEALTH AND SAFETY

The Honeywell Project Safety, Health, and Environmental Plan (Parsons, 2017) and subcontractor safety plans (SSPs) will be used for this investigation and will be strictly followed by all personnel. Safety plans will be updated annually. Job safety/activity hazard analyses (AHA) will be reviewed and made more specific for this work as appropriate before beginning field efforts. Any task outside of the previous field efforts will require a new AHA be completed before the task begins.

3.0 DATA COLLECTION

The collection of continuous, high frequency (15 min.) turbidity measurements will be completed through deployment of three data sondes equipped with turbidity sensors in 2017. Sondes will be placed at three stations consistent with baseline monitoring locations (Parsons and UFI, 2014). These locations were selected to be spatially diverse, to experience turbidity impacts associated with resuspension of near shore material, and such that they are not within the boundaries of dredging and/or capping areas (e.g., not within RAs A, B, or C). Each sonde will be located in approximately 2.5 ft. of water with the probe approximately 1.2 ft. above the sediment. Figure F-1 depicts the location of the three proposed monitoring stations. Prior to the deployment of the sondes, macrophyte coverage will be visually assessed and documented along the Wastebeds 1-8 Shoreline Stabilization Area to ensure that the locations used during baseline (shown on Figure F-1) are representative of the condition of the shoreline. Results of the survey will be discussed with NYSDEC to determine if any of the locations need to be adjusted.

Because deployment locations will be in shallow water (e.g., less than 3 ft.), the sondes will likely be affixed to stakes rather than buoys. Sondes will be replaced at a minimum of every two weeks to allow for downloading of data, calibration of sensors, and necessary maintenance. The maintenance frequency may be increased to weekly if the bi-weekly schedule results in fouling of the probes and issues with data quality. This will be assessed through inspection of the turbidity data and collection of water samples that will be analyzed for turbidity in the laboratory. Sondes will be deployed continuously from September through November consistent with the baseline turbidity monitoring deployment period to ensure that turbidity measurements reflect a wide range of driving conditions. Data from the robotic monitoring buoy at the South Deep station will serve as a control for lake wide variations in turbidity caused by algal blooms, clear water phases, and major runoff events.

3.1 Data Analysis

Data from periods of elevated turbidity that result from resuspension of near-shore wastebed sediments will be compared to meteorological data collected by a robotic monitoring buoy at South Deep as well as other remote meteorological stations located near the lake, and to data obtained from the National Weather Service Station located at the nearby Syracuse Hancock International Airport. These comparisons will be used to categorize turbidity events based on wind velocity and direction so that data from pre-stabilization turbidity events can be directly compared to wind events of similar magnitude and direction to help ascertain the relative improvement associated with stabilization efforts (i.e., reductions in frequency, magnitude, and/or duration of turbidity impacts). A statistically based approach will be used to assess and interpret data to verify that reductions in turbidity from baseline levels have been achieved. In addition, the data set will be examined and recommendations made regarding the need for any subsequent data collection, if necessary.

3.2 Quality Assurance/Quality Control (QA/QC)

Quality Assurance/Quality Control (QA/QC) procedures are presented in the QAPP (Parsons et al., 2017). Standard operating procedures (SOP) for data collection and sonde

maintenance will also be included in the QAPP. Following review of the data, data will be provided to NYSDEC in the preferred electronic data deliverable format.

4.0 REFERENCES

New York State Department of Environmental Conservation and United States Environmental Protection Agency Region 2. 2005. Record of Decision. *Onondaga Lake Bottom Subsite of the Onondaga Lake Superfund Site*. July 2005.

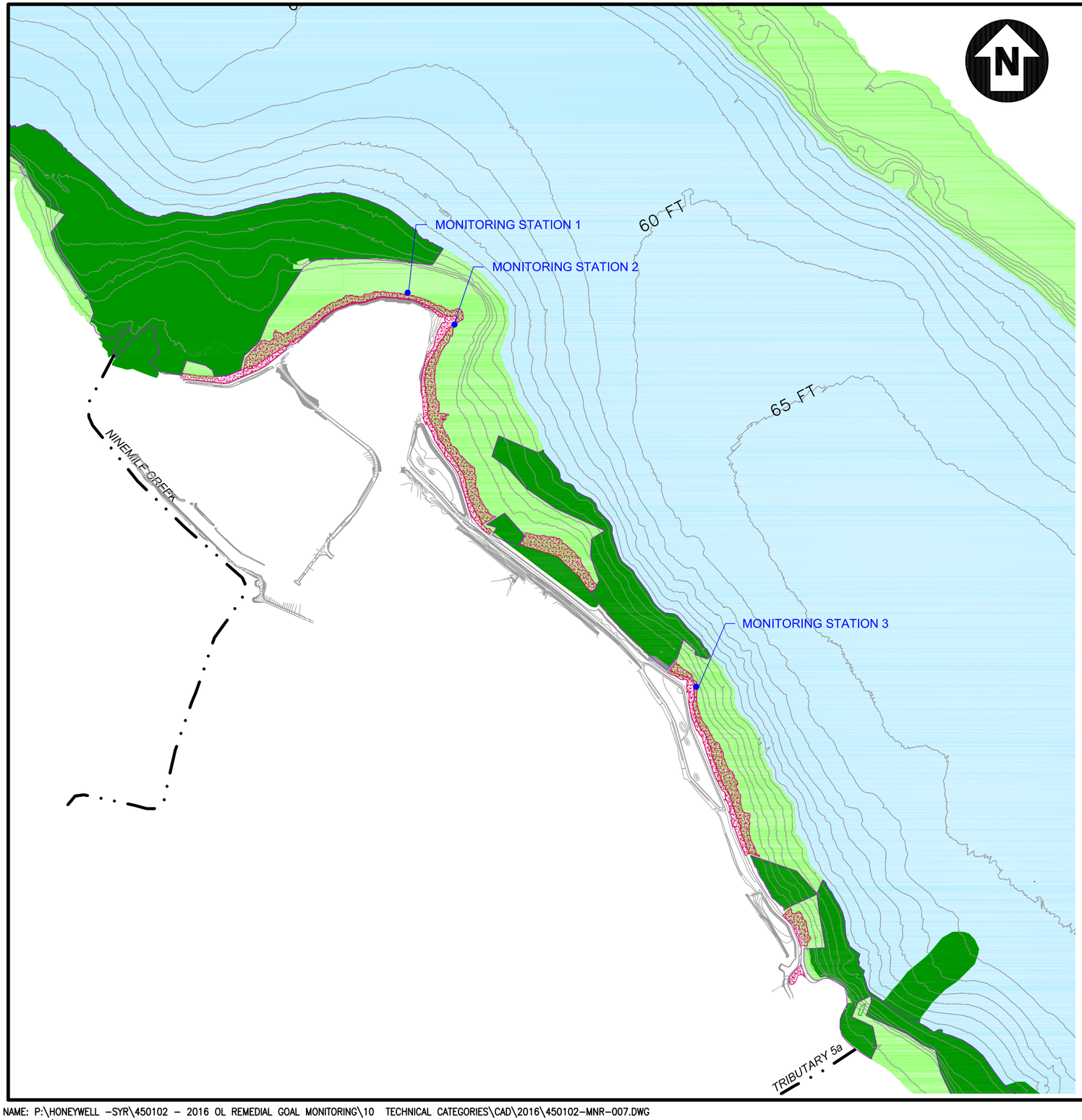
Parsons, 2017. *2017 Honeywell – Syracuse Operation, Maintenance, and Monitoring Project Safety, Health, and Environmental Plan*. Prepared for Honeywell. Onondaga County, Syracuse, NY.

Parsons and Anchor QEA, 2012. *Onondaga Lake Capping, Dredging, Habitat and Profundal Zone (Sediment Management Unit 8) Final Design.* Prepared for Honeywell. Morristown, NJ. March 2012.

Parsons and Upstate Freshwater Institute. 2014. *Onondaga Lake Baseline Monitoring Report of Sediment Resuspension Along the Wastebeds 1-8 Shoreline.* Prepared for Honeywell. Morristown, NJ. October 2014.

Parsons, Anchor QEA, and Upstate Freshwater Institute, 2017. *Quality Assurance Project Plan for Onondaga Lake Construction and Post-Construction Media Monitoring.* Prepared for Honeywell. Syracuse, NY.

FIGURES



LEGEND:

- SHORELINE STABILIZATION
- MONITORING STATION
- REMEDIATION AREA BOUNDARY
- SMU BOUNDARY
- CAPPED AREAS (INCLUDES ALL ISOLATION, THIN LAYER, AND MODIFIED PROTECTIVE CAPS)
- SMU 8
- LITTORAL ZONE

NOTES:

1. WATER DEPTH CONTOUR INTERVAL IS 5 FT (PRE-REMEDIATION).
2. THE 30' WATER DEPTH CONTOUR IS THE BOUNDARY BETWEEN THE LITTORAL ZONE (SMUs 1-7) AND SMU 8.
3. MONITORING STATION LOCATIONS MAY BE SHIFTED SLIGHTLY DEPENDENT UPON MACROPHYTE COVERAGE.

1000 500 0 1000 2000

SCALE: 1"=1000'

FIGURE F-1

Honeywell

ONONDAGA LAKE
SYRACUSE, NEW YORK

LOCATIONS OF TURBIDITY MONITORING STATIONS ALONG WASTEBEDS 1-8 SHORELINE

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

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