Site Management Plan
Former Adirondack Steel Site (401039)
Operable Units 1, 2 and 3
Colonie, New York

Prepared for

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7017

Prepared by

EA Engineering, P.C. and Its Affiliate
EA Science and Technology
269 West Jefferson Street
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315-431-4610

August 2023

Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date
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Donald Conan, P.E., P.G., Program Manager
EA Engineering, P.C.
17 August 2023
Date

Lisa Gorton, P.E., Project Manager
New York State Department of Environmental Conservation
12-14-2023
Date

Timothy P. Alund, Property Owner
Melrose Group LLC
12-13-23
Date

August 2023
Version: FINAL
EA Project No. 16025.27

August 2023

CERTIFICATION

I, Donald Conan, certify that I am currently a New York State Registered Professional Engineer (P.E.), and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations in substantial conformance with the Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10).

17 August 2023

Donald Conan, P.E., P.G. Date
New York State Professional Engineer No. 75666

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LIST OF ACRONYMS AND ABBREVIATIONS

CPR	Canadian Pacific Railroad
CFR	Code of Federal Regulations
DER	Division of Environmental Remediation
EA	EA Engineering, P.C. and its affiliate EA Science and Technology
EC	Engineering control
ECL	Environmental Conservation Law
EEE	Ecology and Environment Engineering, P.C.
EWP	Excavation Work Plan
ft	Foot (feet)
HASP	Health and Safety Plan
in.	Inch(es)
IC	Institutional control
No.	Number
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules, and Regulations
OU	Operable unit
PCB	Polychlorinated biphenyl
P.E.	Professional Engineer
P.G.	Professional Geologist
ppm	Part(s) per million
PRR	Periodic Review Report
RA	Remedial action
RAO	Remedial action objectives
RI	Remedial investigation
ROD	Record of Decision
ROW	Right-of-way
RSO	Remedial Site Optimization
Site	Former Adirondack Steel Site
SMP	Site Management Plan
USACE	U.S. Army Corps of Engineers

EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Former Adirondack Steel Site (401039) (site) as well as the monitoring, maintenance, and reporting activities required by this Site Management Plan (SMP).

Site Identification: NYSDEC Site No. 401039
Former Adirondack Steel Site
Operable Units (OUs) 1, 2 and 3
191 Watervliet-Shaker Road
Colonie, New York 12189

Institutional Controls: • 2015 Environmental Easement	1. The Owner shall perform any excavation or ground disturbance in the remedial area in accordance with the Excavation Work Plan included in Appendix C.
	2. The Owner shall prohibit the property from use for purposes other than non-residential commercial or industrial uses as described in 6 New York Code of Rules and Regulations Part 375-1.8(g)(2)(iii and iv).
	3. The Owner shall prohibit the use of groundwater underlying the property without treatment as determined by the New York State Department of Health or Albany County Department of Health rendering it safe for drinking water or industrial purposes; and the Owner must first notify and obtain written approval from New York State Department of Environmental Conservation (NYSDEC).
	4. The Owner shall continue any required institutional and engineering controls unless expressed permission is obtained from the relevant agency.
	5. The Owner shall provide an annual certification that the institutional and engineering controls are still in place.
	6. The Owner shall provide access to the property for agents, employees, or other representatives of the State of New York to assume compliance with the 2015 Environmental Easement.
	7. Maintain site cover including structures such as buildings, pavement, sidewalks, concrete slabs, etc. These cover systems include portions of OU-3 where subsurface investigation was not possible due to site conditions. Demolition or disruption of these cover systems will require further characterization to refine the nature and extent of contamination including: • The Power House/North Pattern Storage Building if and when the building is demolished. • Storage Building 2 (Metal Building) if and when the building is demolished. • The existing concrete pad of the former furnaces and forge shop building if demolished.
Engineering Controls:	1. Backfill (OU-2 and OU-3) and cover systems
	2. All engineering controls must be inspected at the frequency and manner defined in the SMP.
Site Management Activities	**Frequency**
Monitoring	
1. Sitewide Inspection	Bi-annually, post major storm event as needed.

2. Gas House Creek corridor inspection	Bi-annually; post major storm event as needed.
3. OU-2 drainage channel corridor inspection	Bi-annually; post major storm event as needed.
4. Wetland monitoring	Bi-annually; post major storm even as needed.
Reporting	
1. Inspection Reports	Annually
2. Periodic Review Reports	Annually

Descriptions of the above requirements are provided in the latter sections of this SMP.

1. INTRODUCTION AND PROJECT OVERVIEW

The Site Management Plan (SMP) is a required element of the remedial program for the Former Adirondack Steel Site (Site) located in Colonie, New York, hereafter referred to as the site (**Figure 1-1**). The site is currently in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program (Site Number [No.] 401039), which is administered by the New York State Department of Environmental Conservation (NYSDEC).

A figure showing the site location and boundaries is provided in **Figure 1-1**. The boundaries of the operable unit (OU)-1 and OU-3 portion of the site are also described in the metes and bounds site description that is part of the Environmental Easement provided in **Appendix A**.

After completion of the remedial work, some contamination was left at this site, which is hereafter referred to as "remaining contamination." Institutional controls (ICs) and engineering controls (ECs) have been incorporated into the site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Albany County Clerk, requires compliance with this SMP and all ECs and ICs was placed on the Site.

This SMP was prepared to manage remaining contamination at the site and off-site areas until the Environmental Easement is extinguished in accordance with Environmental Conservation Law (ECL) Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement.

- Failure to comply with this SMP is also a violation of ECL, 6 New York Codes, Rules, and Regulations (NYCRR) Part 375 (NYSDEC 2006) and the Environmental Easement for the site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in NYS. A list of contacts for persons involved with the Site is provided in **Appendix B** of this SMP.

This SMP was prepared by NYSDEC in accordance with the requirements of the Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation (NYSDEC 2010a), and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the Site.

1.1 REVISIONS

Revisions to this plan will be proposed in writing to NYSDEC's Project Manager. NYSDEC can also make changes to the SMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shutdown of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the Site conditions. In accordance with the Environmental Easement for the Site, the NYSDEC Project Manager will provide a notice of any approved changes to the SMP and append these notices to the SMP that is retained in its files.

1.2 NOTIFICATIONS

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER–10 for the following reasons:

1. 60-day advance notice of any proposed changes in site use that are required under the terms of the Order on Consent, Index No. A4-0802-13-01, 6 NYCRR Part 375 and/or ECL.

2. 7-day advance notice of any field activity associated with the remedial program.

3. 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan (EWP). If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above mentioned 60-day advance notice is also required.

4. Notice within 5 business days of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.

5. Notice within 48 hours of any non-routine maintenance activities.

6. Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

7. Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

8. At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial

Party has been provided with a copy of the Order on Consent, Index No. A4-0802-13-01, and all approved work plans and reports, including this SMP.

9. Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1-1 includes contact information for the above notifications. The information in this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in **Appendix B.**

Table 1-1. Notifications*

Name	Contact Information	Required Notification**
Lisa Gorton, P.E.	518-402-9574 lisa.gorton@dec.ny.gov	All Notifications
Ben Rung, P.E.	518-402-9826 benjamin.rung@dec.ny.gov	All Notifications
Kristopher Keenan	518-402-9565 kristopher.keenan@dec.ny.gov	Notifications 1 and 8
Steven Berninger	518-402-0443 steven.berninger@health.ny.gov	Notifications 4, 6, and 7
Jack Melsom, SM Gallivan	518-525-5910 jmelsom@gallivan.com	

Notes:
* Notifications are subject to change and will be updated as necessary.
** Numbers in this column reference the numbered bullets in the notification list in this section.
P.E. = Professional Engineer

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2. SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 SITE LOCATION AND DESCRIPTION

The site is located at 191 Watervliet-Shaker Road in the town of Colonie, Albany County, New York, and is the location of an abandoned steel mill, the Adirondack Steel Casting Company, Inc. (**Figure 1-1**). The Former Adirondack Steel Site property is located on 39-acres in a mixed industrial-residential area bounded on the south by Watervliet-Shaker Road, on the east by Canadian Pacific Railroad (CPR); and on the north and west by undeveloped and residential properties (**Figure 2-1**). The site has been broken into three OUs. The boundaries of the OU-1 and OU-3 portion of the site are more fully described in **Appendix A** –Environmental Easement. The owner(s) of the site parcel(s) at the time of issuance of this SMP is/are the Melrose Group, LLC.

2.1.1 Site History

Adirondack Steel Casting Company, Inc., produced steel casting for various industrial customers. The site contained transformers associated with the steel mill that were the source of the known polychlorinated biphenyl (PCB) contamination at the Site. A variety of tenants also occupied the property while it was known as the Adirondack Industrial Park. PCBs are understood to have reached soil at the site through routine maintenance of transformers, poor handling of used fluids, and/or unauthorized scavenging. The property contained eight dilapidated, unoccupied buildings (two of which are on the Class 2 site), foundation slabs of the original production buildings, deteriorating access roads, and emerging tree growth (**Figure 2-1**). The northern end of the property also contained a 9-acre landfill that received spent foundry and core sands, furnace slag and refractories, and dust from collector furnace and slag.

The Former Adirondack Steel Site currently occupies 4.25 acres of the 38.5 former industrial property and includes three OUs: OU-1 (0.4 acres on-site), OU-2 (2.1 acres off-site), and OU-3 (3.8 acres on-site).

2.1.2 Operable Units

OU-1 is comprised of the soil in the vicinity of the North Power Station and South Power Station where electrical equipment containing PCBs and volatile organic compounds was maintained or damaged resulting in releases of fluid to the ground surface. These releases resulted in the contamination of the soil in three locations over a portion of the Former Adirondack Steel Site property. OU-1 included the former excavation areas near the former power station buildings and foundation slabs and was contained within the boundaries of OU-3. OU-1 remedial work was completed, and a No Further Action Record of Decision (ROD) was signed on 31 March 2010 (NYSDEC 2010b).

OU-2 contains the off-site channelized portion of Gas House Creek and a drainage ditch running south to north along the eastern boundary of the Adirondack Steel property. OU-2 is bordered to the west by the CPR right-of-way (ROW). The channelized stream and drainage ditch is a concrete- and rip-rap-lined swale extending the full length of the Site that conveys surface water runoff and discharge from OU-3. OU-2 begins at a point to the southeast of Lincoln

Avenue/Watervliet Shaker Road and extends north past a road crossing for Barker Lane. The water in the ditch is stagnant in some locations but generally flows north starting at the confluence of Gas House Creek with the railroad ditch. At a point east of a residential area near Early Drive the ditch turns east and crosses below the CPR ROW. OU-2 contained PCB-contaminated sediments, with higher levels of contamination occurring near the confluence of Gas House Creek.

OU-3 is comprised of the on-site stream (Gas House Creek) and adjacent uplands consisting primarily of fill material and associated surface debris piles as well as the area around the former power station. It contained portions of the site with PCB-contaminated soil not included in OU-1. OU-1 is within the boundary of OU-3. To the west and north, OU-3 borders a large foundation slab of the former furnace and forge shot and other unused buildings, and CPR is adjacent to OU-3 to the east.

2.2 PHYSICAL SETTING

2.2.1 Land Use

The Site consists of multiple structures as well as an active business. The Site is zoned industrial and was acquired by a private party. A composting facility has been constructed on the western portion of the property not impacted by PCBs. The area surrounding the Former Adirondack Steel Site property is a mix of industrial and residential use. A site layout map is provided on **Figure 2-1**.

2.2.2 Geology

In the former manufacturing area, the overburden thickness was found to be approximately 28 feet (ft) thick on the eastern side of the Site, while on the western side the overburden was found to be as little as 0.4 ft thick. Fill material thickness varied across the Site with the northeast corner having the most fill. The fill material was typically found to be dark brown or black sands with some tan and yellow fine sands and tan, orange, and yellow brick fragments mixed in. Native materials found below the fill consisted of gray or brown clays and fine sands. Bedrock was found to consist of dark gray shale. Bedrock depth varied from 57 ft to 17 ft below ground surface (Ecology and Environment Engineering, P.C. [EEE] 2014).

2.2.3 Hydrogeology

Groundwater flows in the east-northeast direction towards the Hudson River with the horizontal gradient being approximately 0.02 ft/ft. On the eastern side of the Site, vertical gradients were found to be downward at moderate to high gradients, indicating movement of groundwater from the overburden down into the bedrock. Vertical gradients on the western side of the Site are slightly upward, indicating upward flow at a very low gradient between the bedrock and overburden. Hydraulic conductivities ranged from 3.8×10^{-4} to 3.7×10^{-2} centimeters per second (EEE 2011).

2.3 INVESTIGATION AND REMEDIAL HISTORY

In 1992 the NYSDEC referred the Site to the U.S. Environmental Protection Agency for immediate action under the Emergency Response Program to alleviate surficial PCB contamination at and around the north transformer pad. The Emergency Removal Action was initiated in 1993 and contaminated soil was excavated and stored in a secured warehouse building on-site. The excavated material was disposed off-site by the U.S. Environmental Protection Agency in 1999. A second interim remedial measure was performed in OU-1 in 2009 by EEE and included the excavation and disposal of PCB and newly discovered volatile organic compound source areas from the Site in the immediate vicinity of the Former North Power Station and Metal Building. OU-1 remedial work was completed, and a No Further Action ROD was signed on 31 March 2010 (NYSDEC 2010b).

A remedial investigation (RI) was conducted for OU-3 between 2005 and 2008 by EEE. This included an assessment of the lateral extent of the PCB contamination in sediment within and surrounding the CPR ROW. A supplemental RI for OU-3 was performed in 2014 to further delineate the contamination and identify data gaps as well as to remove and dispose of debris piles located within OU-3. In 2011, additional PCB delineation sampling was conducted in OU-2 and included in a separate RI report by EEE. The report concluded that PCBs were pervasive throughout the stream in sediment and subsurface soil, with the highest concentrations near the confluence of the stream between OU-2 and OU-3.

The ROD for OU-3 and OU-2 were both issued in 2016 with the selected remedy being excavation and off-site disposal of PCB contaminated soil, sediment, and fill from both OUs followed by the backfilling of the excavation with clean fill, abandonment of on-site groundwater monitoring wells, imposition of institutional controls, and the development of an SMP. A Pre-Design Investigation was conducted in 2016 and 2017 with additional samples collected in 2020 to delineate the contamination in OU-3 and OU-2 prior to the start of the remedial action (EA Engineering, P.C. and its affiliate EA Science and Technology [EA] 2020a).

2.4 REMEDIAL ACTION OBJECTIVES

The ROD for OU-3 included the following remedial action objectives (RAOs) (NYSDEC 2015):

- Prevent ingestion/direct contact with contaminated soil, surface water, and sediment
- Prevent migration of contaminants that would result in groundwater or surface water contamination
- Prevent impacts of biota from ingestion/direct contact with soil, surface water, and sediment causing toxicity or impacts from bioaccumulation through the terrestrial food chain
- Restore surface water to ambient water quality criteria for the contaminant of concern

- Prevent releases of contaminants from sediments that would result in surface water levels in excess of ambient water quality criteria

- Restore sediments to pre-release conditions to the extent feasible.

The ROD for OU-2 included the following RAOs (NYSDEC 2016):

- Prevent ingestion/direct contact with contaminated soil, surface water, and sediment

- Prevent impacts of biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain

- Prevent migration of contaminants that would result in groundwater or surface water contamination

- Restore surface water to ambient water quality criteria for the contaminant of concern

- Prevent releases of contaminants from sediments that would result in surface water levels in excess of ambient water quality criteria

- Restore sediments to pre-release conditions to the extent feasible.

- Prevent contact or inhalation of contaminants from impacted water bodies.

2.5 REMEDIAL ACTION

Remedial and restoration activities were completed for OU-2 and OU-3 by LRI under Contract No. D010731. The remedial action (RA) was completed between January 2022 and June 2023. Surface debris piles containing building debris and PCBs were first removed and disposed off-site as asbestos-containing material. Excavation work to remove PCB impacted sediment and soil from OU-2 and OU-3 was performed. Excavation areas were separated into four phases, and excavations were sequenced from upstream to downstream to prevent possible re-contamination. The surface water in Gas House Creek was re-routed around the work area and active excavations were dewatered to allow the work to be performed in the dry. PCB-impacted soil, sediment, and debris removal at the site began in May 2022, and the last of the impacted material was transported off-site for disposal on 15 November 2022. During the RA, 19,632 tons of impacted material were removed from the Site.

Confirmation samples were collected from OU-2 and OU-3 following excavation. LRI collected soil and sediment confirmation samples from excavation side walls and bottoms. Additional material was excavated in areas where confirmations samples did not meet soil cleanup goals.

Restoration work followed the remedial excavation and included the placement of clean backfill materials, restoration of the OU-2 and OU-3 channels, casting seed grass mixes, and planting riparian and upland species of trees and shrubs. Additionally, a fence was installed along the

eastern property boundary of OU-3 and along the eastern property boundary of 1024 Barker Lane. Further details on the RA are presented in the Final Engineering Report (EA 2023).

2.6 REMAINING CONTAMINATION

Residual contamination is defined as PCB concentrations not meeting soil cleanup objectives outlined in the RODs for OU-2 and OU-3. For surface soil, sediment, and off-site areas, this is where concentrations exceed 1 part per million (ppm). In on-site, upland subsurface soil, residual contamination consists of PCB concentrations exceeding 10 ppm at depth beyond 1 ft below ground surface. Residual contamination following completion of remedial work remains in select areas in OU-2 shown on **Figure 2-2** because of the proximity of the excavation to the railroad. Further excavation in these areas was impracticable. Despite not meeting the ROD defined soil cleanup objectives of 1 ppm in OU-2, PCBs were generally below 25 ppm, meeting the concentration requirements for a low occupancy use area defined in 40 Code of Federal Regulations (CFR) 761.61(a)(4)(i)(B). The only remaining area of PCBs greater than 25 ppm is in grid space C-72 where a sample collected from the west side of the rail ballast had a concentration of 82 ppm. Since this area could not be excavated, it was capped with 10 inches (in.) of concrete, compliant with 40 CFR 761.61(a)(7). PCBs remain in OU-3 subsurface soil at concentrations below 10 ppm meeting the cleanup goals of the ROD.

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3. INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 GENERAL

Since PCBs remain in subsurface soils at the Site, ICs/ECs are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the Site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC Project Manager.

This plan provides:

- A description of all IC/ECs on the Site
- The basic implementation and intended role of each IC/EC
- A description of the key components of the ICs set forth in the Environmental Easement
- A description of the controls to be evaluated during each required inspection and periodic review
- A description of plans and procedures to be followed for implementation of ICs/ECs, such as the implementation of the EWP (as provided in **Appendix C**) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site
- Any other provisions necessary to identify or establish methods for implementing the ICs/ECs required by the site remedy, as determined by the NYSDEC Project Manager.

3.2 INSTITUTIONAL CONTROLS

A series of ICs is required by the RODs to: (1) implement, maintain and monitor EC systems; (2) prevent future exposure to remaining contamination; and (3) limit the use and development of the site to commercial or industrial uses only. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC boundaries are shown on **Figure 2-1**. These ICs are:

- The Owner shall perform excavation or ground disturbance in the remedial area in accordance with the EWP in **Appendix C**.
- The Owner shall prohibit the property from use for purposes other than non-residential commercial or industrial uses as described in 6 NYCRR Part 375-1.8(g)(2)(iii and iv).
- The Owner shall prohibit the use of groundwater underlying the property without treatment as determined by the New York State Department of Health (NYSDOH) or Albany County

Department of Health rendering it safe for drinking water or industrial purposes; and the Owner must first notify and obtain written approval from NYSDEC.

- The Owner shall protect wetland mitigation areas to prohibit activities including construction, grading, filling, excavating, ditching, and draining, as well as the removal, cutting, mowing, burning, or harming of vegetation unless otherwise approved by both U.S. Army Corps of Engineers (USACE) and NYSDEC.

- The Owner shall continue any required institutional and engineering controls unless expressed permission is obtained from the relevant agency.

- The Owner shall provide an annual certification that the institutional and engineering controls are still in place.

- The Owner shall provide access to the property for agents, employees, or other representatives of the State of New York to assume compliance with the 2015 Environmental Easement.

3.3 ENGINEERING CONTROLS

3.3.1 Backfill and Cover

Exposure to PCBs in soil/fill at the site is prevented by existing buildings, concrete, asphalt, and soil cover systems. A site cover currently exists and will be maintained to allow for commercial/industrial use of the site and prevent exposure to any remaining contamination. Site cover was implemented in several forms as follows:

- Buildings, pavement, and concrete slabs of former site operations. In locations of the existing building footprints (Metal Building, Block Building, and Forge Shop slab) the existing foundation slab serves as cover. Demolition or disruption of these cover systems will require further characterization to refine the nature and extent of contamination.

- A minimum of 2 ft of clean backfill/restoration materials was placed over PCBs remaining in subsurface soils in OU-3. As noted, PCBs in subsurface soil met the soil cleanup objectives defined in the ROD.

- Remaining contamination in OU-2 was either covered with 2 ft of clean fill material or by a cover system. A 10-in. concrete cap complaint with 40 CFR 761.61(a)(7) was installed in Grid C-72 where PCBs remain above 25 ppm.

Figure 2-2 presents the location of the cover system. The cover system is a semi-permanent control and the quality and integrity of the systems or systems installed to replace it will be inspected at defined, regular intervals in accordance with this SMP in perpetuity. As described in the ICs, this cover system will not be disturbed unless a design is submitted and approved by NYSDEC that will continue to prevent exposure to contamination remaining in site soils.

The EWP provided in **Appendix C** outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed. Procedures for the inspection of this cover are provided in the Monitoring and Sampling Plan included in Section 4 of this SMP and should be conducted at the frequency specified. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) prepared for the Site and provided in **Appendix D**, and the associated Community Air Monitoring Plan (included as part of the EWP). Any disturbance of the Site's cover system must be overseen by a qualified environmental professional as defined in 6 NYCRR Part 375, a P.E., who is licensed and registered in NYS, or a qualified person who directly reports to a P.E. who is licensed and registered in NYS.

3.3.2 Access Control

The site is partially fenced with a 6-ft chain link fence to restrict Site access. Access gates are locked, and keys are possessed by the property owner, NYSDEC and its representatives. The Site access shall remain controlled and restricted to the property owner and its tenants, NYSDEC, and NYSDEC representatives.

3.3.3 Criteria for Completion of Remediation

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10. Unless waived by the NYSDEC, confirmation samples of applicable environmental media are required before terminating any remedial actions at the Site. Confirmation samples require Category B deliverables and a Data Usability Summary Report.

Confirmation samples were collected during performance of the remedial action and indicate that the remedy meets the ROD defined soil cleanup objectives in all areas except for those identified as areas of remaining contamination detailed in Section 2.5 of this report. Further details regarding the confirmation sampling scheme and results can be found in the Final Engineering Report (EA 2023).

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4. MONITORING AND SAMPLING PLAN

4.1 GENERAL

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC Project Manager. A summary of the monitoring and sampling required is provided in **Table 4-1.**

This Monitoring and Sampling Plan describes the methods to be used for sampling and analysis of all appropriate media (sediment, surface water, and groundwater), assessing compliance of appropriate and applicable NYSDEC Standards, Criteria and Guidelines, and periodically evaluating site information to confirm that the remedy continues to be effective in protecting public health and the environment. Details regarding health and safety procedures for all fieldwork conducted as part of site management are included in the HASP (**Appendix D**).

Table 4-1. Monitoring and Sampling Schedule

Site Management Activity	Frequency
Monitoring	
Sitewide Inspections	Bi-annually, post major storm event as needed.
Gas House Creek Corridor Inspection	Bi-annually, post major storm event as needed.
OU-2 Drainage Channel Corridor Inspection	Bi-annually; post major storm event as needed.

4.2 SITEWIDE INSPECTION

Site wide inspections will be performed at a minimum twice per year, occurring in the second and fourth quarters. These periodic inspections must be conducted when the ground surface is visible (i.e., no snow cover). Site inspections will be performed by a qualified environmental professional as defined in 6 NYCRR Part 375; a P.E. who is licensed and registered in NYS, or a qualified person who directly reports to a P.E. licensed and registered in NYS. Modifications to the frequency or duration of the inspections will require approval from the NYSDEC Project Manager. Site inspection forms (**Appendix E**) will be completed during the inspections and submitted to NYSDEC within 30 days of the completion of the site inspection. Inspections will also be performed in the event of an emergency (e.g., major storm events, natural disaster, failure of any of the ECs). Major storm events are defined as follows:

- On an annual basis, 3 storm events equal to or exceeding the current 10-year recurrence interval event (3.77 in. of precipitation in a 24-hour period), or 1 storm event equal to or exceeding the current 100-year recurrence interval event (6.39 in. of precipitation in a 24-hour period) (**Appendix F**).

If an emergency occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the site, verbal notice will be provided to NYSDEC as soon as possible. In addition, an inspection of the site will be conducted by a qualified environmental professional within 5 days of the event to verify the effectiveness of the ICs/ECs. Written confirmation must be provided to the

NYSDEC within 7 days of the event that includes a summary of actions taken, or proposed to be taken, and the potential impact to the environment and the public.

Observations and site evaluation will include:

- Ensuring that no mowing or clearing of the wetland and riparian buffer areas has occurred and that the property owner is appropriately maintaining these areas.
- Inspecting integrity of the cover systems.
- Inspecting the area for any vandalism or unauthorized access.

The site inspections will determine and document the following:

- Compliance with all ICs, including site usage.
- An evaluation of the condition and continued effectiveness of ECs.
- General site condition at the time of inspection.
- If these controls continue to be protective of human health and the environment
- Compliance with requirements of this SMP and the Environmental Easement
- Achievement of remedial performance criteria
- If site records are complete and up-to-date
- Reporting requirements are outlined in Section 7 of this SMP.

The condition of the cover systems, planting and wetland areas will be documented to ensure the property owner is appropriately maintaining these areas.

4.2.1 Stream and Wetland Mitigation Monitoring

Wetland mitigation monitoring will also be conducted for Gas House Creek, OU-2 and OU-3 wetland areas to meet the conditions of USACE Nationwide Permit 38 and NYSDEC 401 Water Quality Certification Permit (EA 2020b). The success criteria for the monitoring program will include, at a minimum, the success of the planted vegetation as measured through survivorship counts and observations of vitality and growth, and the existence of wetland hydrology for the created wetlands. Plot vegetation density measurement techniques will be utilized and conducted each year. A 5-year monitoring program will be performed in accordance with the guidance provided in Regulatory Guidance Letter No. 08-03 (USACE 2008).

According to Nationwide Permit No. 98 and Section 401 Water Quality Certification, the first year of monitoring will be considered the baseline monitoring year that is conducted immediately following construction and restoration activities. Following the completion of the baseline monitoring, a 5-year monitoring schedule will be conducted. The first year of monitoring will be conducted during the fall following the completion of mitigation planting. Each monitoring event will be followed by an annual monitoring report. Annual monitoring will be conducted between May and September of each year to effectively measure vegetation. The success criteria for the monitoring program includes the success of the planted vegetation (as measured through survivorship counts), and the existence of wetland hydrology for the created wetlands. Plot vegetation density measurements shall be conducted each monitoring year.

Once success criteria have been satisfied at the completion of the 5-year monitoring plan, a request for release from monitoring will be made to NYSDEC and USACE. Additional monitoring may be required as a special condition if the issued permits or after review of the success of the mitigation sites during the initial monitoring period. If at any time the compensatory mitigation project cannot be maintained in accordance with the approved restoration plan, it is the responsibility of NYSDEC as the permittee to notify USACE.

Observations and site evaluation will include:

- Ensuring the riparian planting zone and the upland buffer area are maintained including documentation of the following:
  - The growth and vitality of the planted hydrophytic species
  - Current site conditions at fixed photographic points
  - Species composition of recruited, desirable plant species
  - Species composition and areal cover of nuisance/non-native plant species
  - Wildlife utilization and depredation
  - Descriptions of hydrology indicators observed and hydric soils development.
- Ensuring that no mowing of the mitigation areas has occurred in wetland and riparian areas and that the property owner is appropriately maintaining these areas
- Monitoring for erosion in the upland areas of the stream bank
- Ensuring the stream is clear of any inorganic debris to maintain a free-flowing stream that is unobstructed by waste
- Inspecting culvert integrity.

4.2.2 Monitoring and Sampling Protocol

All monitoring activities will be recorded in a field book and associated inspection form as provided in **Appendix E** – Site Management Forms. Other observations will be noted on the inspection form.

4.3 POST-REMEDIATION SAMPLING

There is no need for further sediment, surface water, or groundwater sampling. Regular site inspections will occur to evaluate the integrity of the implemented ECs within OU-2 and OU-3 as outlined in **Table 4-1**. Bi-annual monitoring will also be performed to evaluate the wetland mitigation effort for 5 years as described above.

5. OPERATION AND MAINTENANCE PLAN

5.1 GENERAL

The site remedy does not rely on any mechanical systems, such as groundwater treatment systems, sub-slab depressurization systems or air sparge/soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP. The remedy does, however, rely upon successful maintenance of cover systems and vegetative systems.

5.2 COVER SYSTEM

The Owner will also conduct any needed site restoration activities, such as concrete/asphalt patching of the cover system. In addition, the Owner will ensure that no ongoing erosion is occurring on-site. Repairs will be made to stream banks, slope, and surfaces exhibiting erosion.

5.3 PHRAGMITIES MANAGEMENT PLAN

The Owner will conduct any necessary restoration of vegetative coverage, trees, and wetland and will comply with NYSDEC and USACE regulations and guidance. Phragmites is a large, coarse, perennial grass that usually forms large, dense stands reducing the diversity of plant and wildlife species. Flowering and seeding generally occurs between July and September, with germination occurring in spring on exposed moist soils.

Phragmites and associated belowground rhizomes were removed as part of excavations associated with remedial activities. However, Phragmites could continue to re-establish from the existing seed bank and neighboring populations without annual maintenance. Follow-up spot treatments will be conducted as a part of site maintenance in order to control Phragmites reestablishment and allow new plants and native seed stock to successfully populate the wetland area (EA 2020b).

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6. PERIODIC ASSESSMENTS AND EVALUATIONS

6.1 CLIMATE CHANGE VULNERABILITY ASSESSMENT AND ADAPTATION PLAN

6.1.1 Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding. The full Climate Resiliency Report can be found in **Appendix G**.

This section provides a summary of vulnerability assessments that will be conducted for the Site during periodic assessments, and briefly summarizes the vulnerability of the Site and/or ECs to severe storms/weather events and associated flooding.

Flood Plain: The Site is susceptible to flooding. Downstream flooding is a known concern, concentrated off-site at an abandoned parking lot, just upstream of a culvert in OU-3. Flooding is also a concern at the very end of OU-3 where the culvert beneath Barker Lane ends.

Site Drainage and Storm Water Management*:* The Site is susceptible to an increased rate of precipitation and heavy rainfall events. This will increase the rate of surface water and stormwater runoff. Contaminated sediment has either been removed from the site or capped with concrete, therefore vulnerability to climate change is low.

Erosion*:* This Site is susceptible to an increased rate of precipitation and heavy rainfall events. Impacts include increased scour and surface water flow velocity, which can act to mobilize contaminated sediment. Contaminated sediment has either been removed from the Site or capped with concrete, therefore vulnerability to climate change is low.

High Wind: The Site is susceptible to high wind which could lead to potential damage of Site integrity and cover systems.

Extreme Weather: The Site is susceptible to extreme temperatures. High temperatures can increase the mobilization of contaminants through soil, while freezing conditions may cause damage to the cover system, potentially exposing the remaining contamination on-site.

Electricity: The Site is not susceptible to power loss or surges in voltage during severe weather events.

6.1.2 Adaptive Management Plan

Climate adaptation planning for the Former Adirondack Steel Site focuses on impacts from larger and more frequent rainfall events will have on residual PCBs covered by clean fill and a cap along OU-3, Gas House Creek, and OU-2 drainage ditch. As previously stated, all excavated areas and areas with residual contamination are capped with clean fill material and/or concrete cap meeting the requirements of 40 CFR 761.61 for low occupancy areas.

As storm events grow larger and/or more frequent, floods are also likely to increase in frequency and magnitude. These events will increase scour and erosion of stream beds and banks at the Site. To adapt to this, stone in the creek bed and drainage ditch were sized to prevent erosion from design flood events. The completed restoration was designed to withstand the high estimate rainfall from the 2050 25-year flood event and associated flow rates. A cap meeting the requirements of 40 CFR 761.61(a)(7) was installed in grids C-71 through C-73 to cover remaining PCB concentrations in grid C-72 that exceeded 25 ppm.

The Site will be monitored for signs of erosion and degradation. Local precipitation gages should be reviewed periodically to assess if precipitation events exceed the 2050 25-year threshold event. Should this threshold be surpassed, site inspections will be conducted to evaluate potential degradation and damage to the Site. If damage is observed, repair to the Site cover and ECs will be performed. Primary adaptation measures for impacts to the Site will include repair of damaged areas, regrading, recapping, and/or replacement of channel stones. Should more significant measures be deemed necessary, sizing of channel stone within the stream channel and drainage ditch should be increased to withstand higher flows.

6.2 GREEN REMEDIATION EVALUATION

NYSDEC's DER-31 Green Remediation (NYSDEC 2010c) requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations to be completed for the Site during site management, and as reported in the Periodic Review Report (PRR).

6.2.1 Timing of Green Remediation Evaluations

For major remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of a formal Remedial System Optimization (RSO), or at any time that the NYSDEC Project Manager feels appropriate, e.g., during significant maintenance events or in conjunction with storm recovery activities.

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

6.2.2 Frequency of System Checks and Other Periodic Activities

Transportation to and from the Site, use of consumables in relation to visiting the Site in order to conduct site inspections have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

Green remediation evaluations and corresponding modifications will be undertaken any time that the Project Manager feels appropriate. Consideration shall be given to:

- Reduced Site visits and inspection frequencies
- Coordination of activities to maximize labor time
- Use fuel efficient vehicles
- Combined travel to Site with other nearby sites, where applicable, to reduce number of single Site trips
- Use of locally sourced materials in the event repairs and/or modifications need to be made to Site cover system or Site restoration components (ASTM International 2014)
- Use of mass transit for Site visits, where available
- Minimize unnecessary soil and habitat disturbance or destruction (Interstate Technology & Regulatory Council 2011).

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

6.2.3 Metrics and Reporting

For sites whose remedial programs are state-funded, a quantitative and qualitative overview of the site's environmental impacts must be proposed through the completion of the Summary of Green Remediation Metrics (**Appendix E** – Site Management Forms), information on energy usage, solid waste generation, transportation and shipping, water usage and land use and ecosystems will be recorded to facilitate and document consistent implementation of green remediation during site management and to identify corresponding benefits.

6.3 REMEDIAL SITE OPTIMIZATION

An RSO study will be conducted any time that the NYSDEC Project Manager or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial system is not performing as expected or as designed
- Previously unidentified source material may be suspected
- The management and operation of the remedial system is exceeding the estimated costs
- Site conditions change due to development, change of use, change in groundwater use, etc.
- There is an anticipated transfer of the site management to another remedial party or agency
- A new and applicable remedial technology becomes available.

A RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the Site's cleanup goals, gather additional performance or media specific data and information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

7. REPORTING REQUIREMENTS

7.1 SITE MANAGEMENT REPORTS

All site management inspection, maintenance and monitoring events will be recorded on the appropriate site management forms provided in **Appendix E**. These forms are subject to NYSDEC revision. All site management inspection, maintenance, and monitoring events will be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375, a P.E. who is licensed and registered in NYS, or a qualified person who directly reports to a P.E. who is licensed and registered in NYS.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of **Table 7-1** and summarized in the PRR.

Table 7-1. Reporting Schedule

Task/Report	Reporting Frequency
Inspection Report	Annually
Periodic Review Report	Annually

Notes:
*The frequency of events will be conducted as specified until otherwise approved by the NYSDEC Project Manager.

All routine, interim, and non-routine monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period
- Name, company, and position of person(s) conducting monitoring/inspection activities
- Description of the activities performed
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet)
- Copies of all field forms completed (e.g., site inspection forms)
- Any observations or recommendations
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

7.2 PERIODIC REVIEW REPORT

A PRR will be submitted to the NYSDEC Project Manager beginning sixteen (16) months after the Certificate of Completion is issued. After submittal of the initial PRR, the next PRR shall be submitted once every year for five years to the NYSDEC Project Manager, and once every 5 years following that, or at another frequency as may be required by the NYSDEC Project Manager. In

the event that the Site is subdivided into separate parcels with different ownership, a single PRR will be prepared that addresses the Site described in **Appendix A** – Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the PRR. The report will include:

- Identification, assessment, and certification of all ECs/ICs required by the remedy for the Site
- Results of the required annual site inspections, fire inspections and severe condition inspections, if applicable
- All applicable site management forms and other records generated for the Site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted
- Identification of any wastes generated during the reporting period, along with waste characterization data, manifests, and disposal documentation
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions
- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific ROD
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored
  - Observations on the condition of the remedy in place including identification of any repairs of modifications
  - The overall performance and effectiveness of the remedy
  - A summary of the completed Green Remediation evaluation (**Appendix E**).

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a qualified environmental professional as defined in 6 NYCRR Part 375 will prepare, and include in the PRR, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the site, I certify that all of the following statements are true:*

- *The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*

- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;*

- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*

- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*

- *Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*

- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;*

- *Use of the site is compliant with the environmental easement;*

- *The engineering control systems are performing as designed and are effective;*

- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program; and*

- *The information presented in this report is accurate and complete.*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner/Remedial Party or Owner's/Remedial Party's Designated Site Representative].

I certify that the New York State Education Department has granted a Certificate of Authorization to provide Professional Engineering services to the firm that prepared this Periodic Review Report."

The signed certification will be included in the PRR. The PRR will be submitted, in electronic format, to the NYSDEC Project Manager and the NYSDOH Project Manager. The PRR may also need to be submitted in hard-copy format if requested by the NYSDEC Project Manager.

7.3 CORRECTIVE MEASURES WORK PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an IC or EC, or failure to conduct site management activities, a Corrective Measures Work Plan will be submitted to the NYSDEC Project Manager for approval. This plan will explain the failure and provide the details and schedule for performing work

necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC Project Manager.

7.4 REMEDIAL SITE OPTIMIZATION REPORT

If an RSO is to be performed (see Section 6.3), upon completion of an RSO, an RSO report must be submitted to the NYSDEC Project Manager for approval. The RSO report will document the research/investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual site model, and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, HASPs, etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required. The RSO report will be submitted, in electronic format, to the NYSDEC Project Manager and the NYSDOH Project Manager.

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Figures

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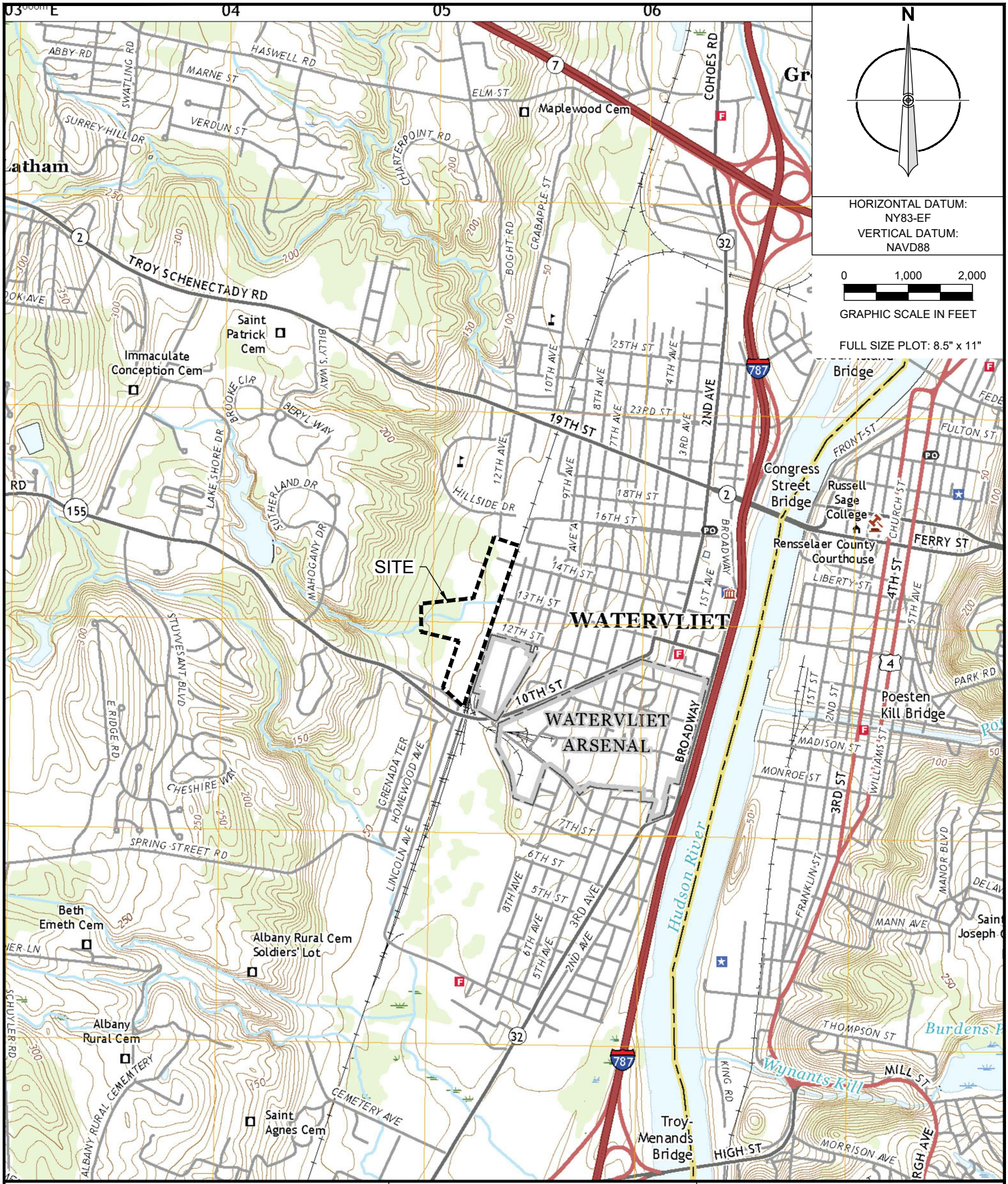

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EA Engineering, P.C. and Its Affiliate
EA Science and Technology
269 W Jefferson Street
Syracuse, New York 13202
(315) 431-4610
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FORMER ADIRONDACK STEEL SITE REMEDIATION PROJECT SITE MANAGEMENT PLAN

WATERVLIET, NEW YORK

SITE LOCATION MAP

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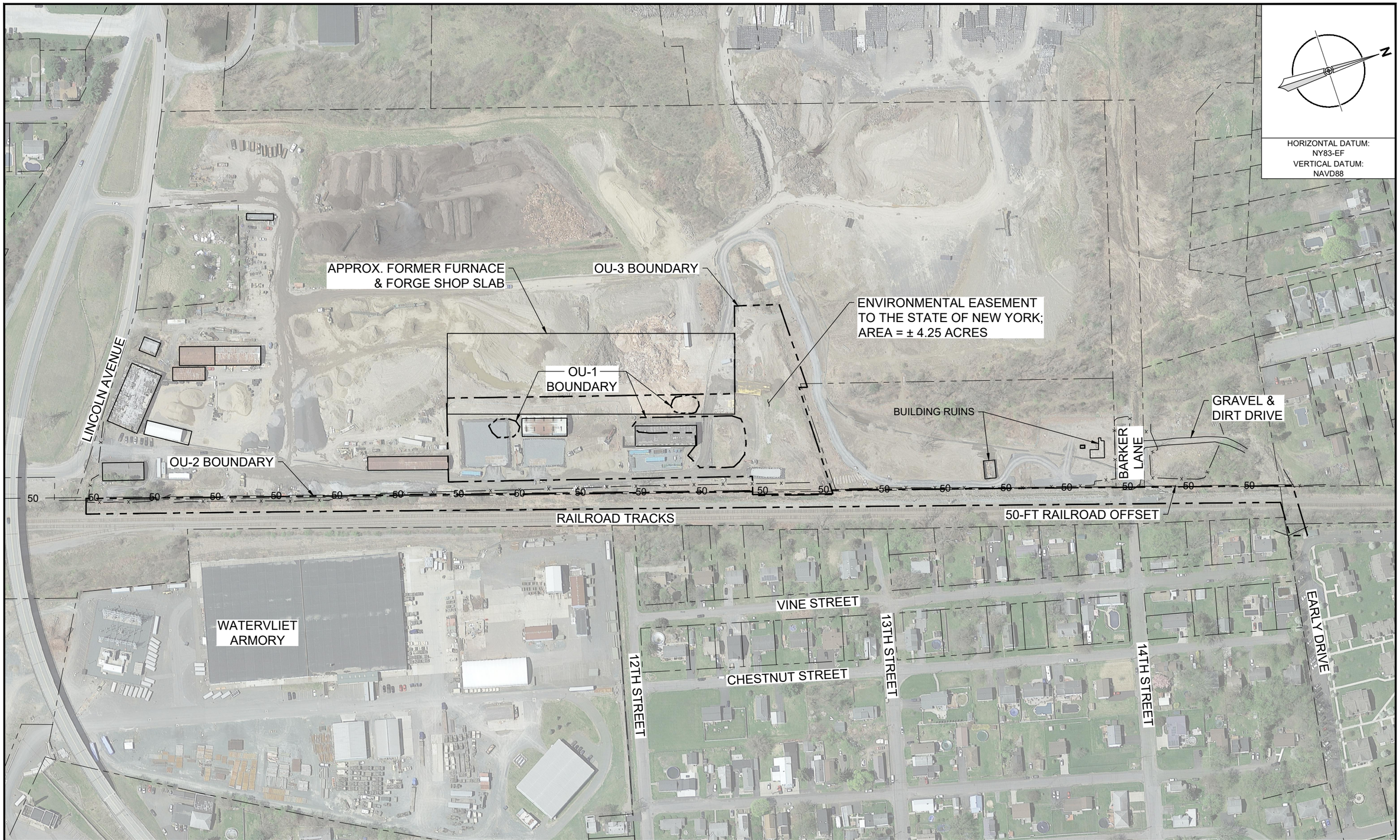

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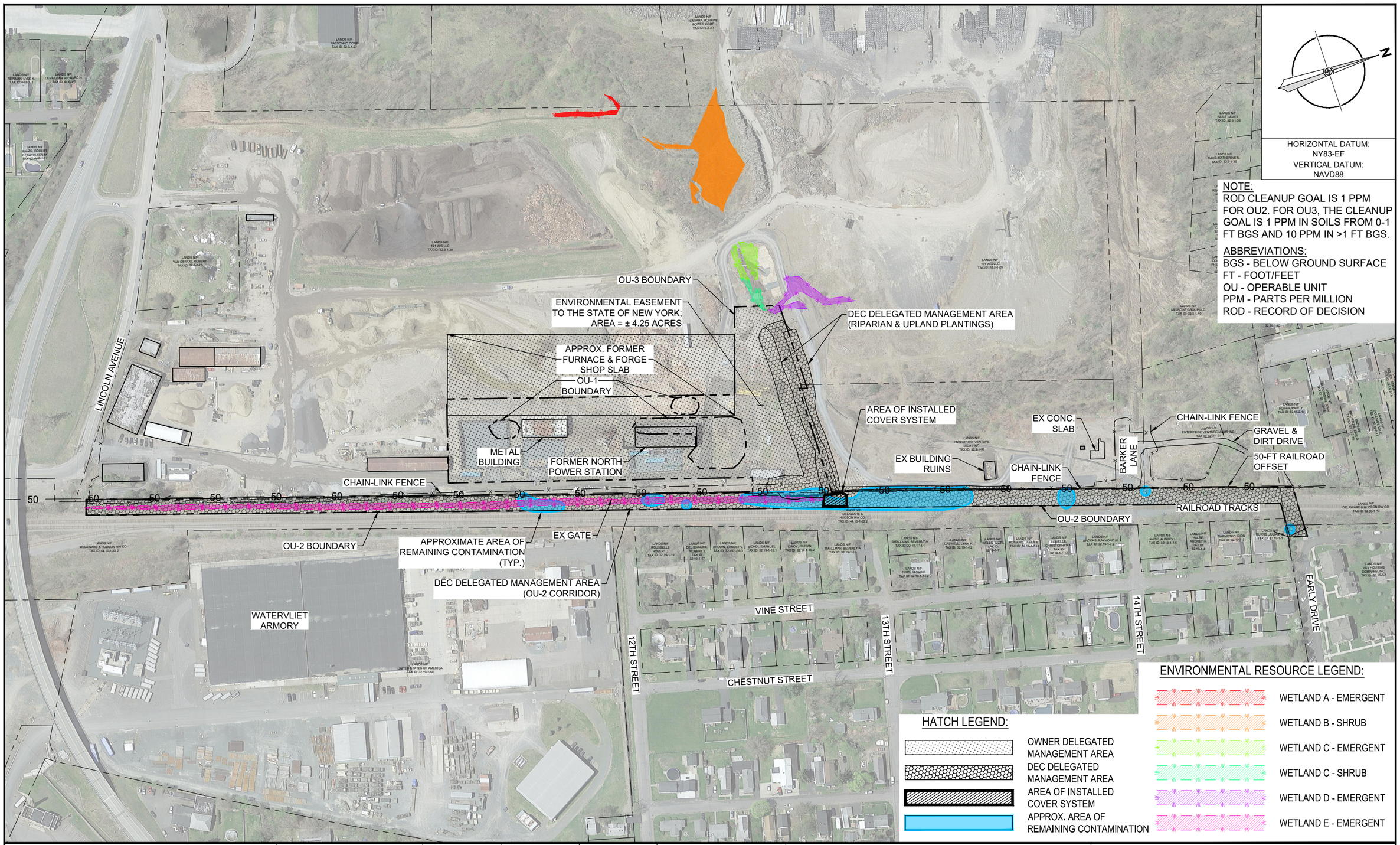
FORMER ADIRONDACK STEEL SITE REMEDIATION PROJECT
SITE MANAGEMENT PLAN
WATERVLIET, NEW YORK

SITE LAYOUT AND INSTITUTIONAL CONTROL BOUNDARIES MAP



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FORMER ADIRONDACK STEEL SITE REMEDIATION PROJECT SITE MANAGEMENT PLAN

WATERVLIET, NEW YORK

REMAINING CONTAMINATION AND COVER SYSTEM

Appendix A

Environmental Easement

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ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 14th day of SEPTEMBER 2015 between Owner(s) Melrose Group, LLC, having an office at 11 Herbert Drive, Latham NY 12110, County of Albany, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 191 Watervliet Shaker Road in the Town of Colonie, County of Albany and State of New York, known and designated on the tax map of the County Clerk of Albany as tax map parcel numbers: Section 32.3 Block 1 Lot 29, being the same as that property conveyed to Grantor by deed dated August 29, 2013 and recorded in the Albany County Clerk's Office in Book 3079 of Deeds at Page 209. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 4.25 +/- acres, and is hereinafter more fully described in the Land Title Survey dated January 19, 2015 prepared by Advance Engineering & Surveying, PLLC, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is

extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Order on Consent Index Number: A4-0802-13-01, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement")

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Albany County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential or Restricted Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i) and (ii), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation

Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by

Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: 401039
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of

this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

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IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Melrose Group, LLC:

By: Timothy P. Alund

Print Name: Timothy P. Alund

Title: MEMBER Date: 6-15-15

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF Albany)

On the 15th day of June, in the year 2015, before me, the undersigned, personally appeared Timothy P. Alund, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Notary Public - State of New York

NIA C. CHOLAKIS
Notary Public, State of New York
Qualified in Rensselaer County
No. 02CH6018618
My Commission Expires 03/20/20 19

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____
Robert W. Schick, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 14th day of September, in the year 2015, before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2018

SCHEDULE "A" PROPERTY DESCRIPTION

Description of
Environmental Easement
over lands of
Melrose Group, LLC
to be conveyed to
The State of New York
Town of Colonie, N.Y.

All that piece or parcel of land situate, lying and being located in the Town of Colonie, County of Albany and State of New York, being shown on a map titled "Environmental Easement to The State of New York over lands of Melrose Group, LLC, 191 Watervliet-Shaker Road, County of Albany, State of New York,'' dated January 19 2015, prepared by Advance Engineering & Surveying, PLLC, and being more particularly bounded and described as follows:

Beginning at point in the division line between lands of D & H Corporation (c/o Canadian Pacific Limited) as described in Liber 2432 of deeds at page 1 on the east and lands of Melrose Group, LLC as described in Liber 3079 of deeds at page 209 on the west; said point of beginning being located North 30°-57'-25" East, 1436.34 feet from the northerly highway boundary of Watervliet-Shaker Road (N.Y.S. Route 155) at its intersection with lands of D & H Corporation on the east and lands of Melrose Group, LLC on the west; thence from said point of beginning through lands of Melrose Group, LLC the following seven (7) courses and distances:
1) North 59°-02'-35" West, 42.00 feet to a point; thence
2) South 30°-57'-25" West, 688.00 feet to a point; thence
3) North 59°-02'-35" West, 183.00 feet to a point; thence
4) North 30°-57'-25" East, 652.00 feet to a point; thence
5) North 59°-02'-35" West, 198.00 feet to a point; thence
6) North 30°-57'-25" East, 105.00 feet to a point; thence
7) South 76°-45'-20" East, 196.68 feet to a point in the division line between lands of Enterprise Venture Management, Inc. as described in Liber 2459 of deeds at page 457 on the east and north and lands of Melrose Group, LLC on the west and south; thence along said division line the following two (2) courses and distances:
1) South 30°-35'-45"West, 24.05 feet to a point; thence
2) South 76°-45'-20" East, 247.21 feet to a point in the above referenced division line between lands of D & H Corporation on the east and lands of Melrose Group, LLC on the west; thence along said division line, South 30°-57'-25" West, 180.00 feet to the point and place of beginning and containing 4.25 acres, more or less.

Subject to all rights, easements, covenants and restrictions of record.

Subject to any state of facts an up to date Title Abstract of the subject premises would disclose.

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Appendix B

List of Site Contacts

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Former Adirondack Steel (401039) Site Contacts

Company/ Organization	Contact Person	Primary Phone Number	Email Address
NYSDEC	Lisa Gorton	518-402-9574	lisa.gorton@dec.ny.gov
NYSDEC	Ben Rung	518-402-9826	benjamin.rung@dec.ny.gov
NYSDOH	Steven Berninger	518-402-0443	steven.berninger@health.ny.gov
SM Gallivan	Jack Melsom	518-525-5910	jmelsom@gallivan.com

Notes:
Contact before entering property as courtesy.
DER = Division of Environmental Remediation
NYSDEC = New York State Department of Environmental Conservation
NYSDOH = New York State Department of Health

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Appendix C

Excavation Work Plan

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Excavation Work Plan
Former Adirondack Steel Site (401036)
Operable Units 1, 2, and 3
Colonie, New York

Prepared for

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7017

Prepared by

EA Engineering, P.C. and Its Affiliate
EA Science and Technology
269 West Jefferson Street
Syracuse, New York 13202
315-431-4610

August 2023

Revisions to Final Approved Excavation Work Plan

Revision Number	Date Submitted	Summary of Revision	NYSDEC Approval Date
0	August 2023	Original Submittal	September 2023

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August 2023

CERTIFICATION

I, Donald Conan, certify that I am currently a New York State Registered Professional Engineer and that this Excavation Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10).

Donald Conan, P.E., P.G.
New York State Professional Engineer No. 75666

17 August 2023

Date

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TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS

CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
DER	Division of Environmental Remediation
EWP	Excavation Work Plan
No.	Number
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes of Rules and Regulations
P.E.	Professional Engineer
P.G.	Professional Geologist
Site	Former Adirondack Steel Site
SMP	Site Management Plan

1. INTRODUCTION

This Excavation Work Plan (EWP) applies to the Former Adirondack Steel Site (Site) Operable Units as described in the Environmental Easement (Appendix A of the Site Management Plan [SMP]). Exposure to PCBs in soil/fill at the site is prevented by existing buildings, concrete, asphalt, and soil cover systems. A site cover currently exists and will be maintained to allow for commercial/industrial use of the site and prevent exposure to any remaining contamination. These cover systems include portions of OU-3 where subsurface investigation was not possible due to site conditions. Demolition or disruption of these cover systems will require further characterization to refine the nature and extent of contamination.

2. NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter residual materials at the site, the site owner or their representative will notify the New York State Department of Environmental Conservation (NYSDEC). The following table includes contact information for the above notification. The information in the following table will be updated, as necessary, to provide accurate contact information. A full listing of site-related contact information is provided in Appendix B of the SMP.

Notifications*

Name	Contact Information
Lisa Gorton, P.E.	518-402-9574 lisa.gorton@dec.ny.gov
Ben Rung, P.E.	518-402-9826 benjamin.rung@dec.ny.gov
Steven Berninger	518-402-0443 steven.berninger@health.ny.gov

Notes:
*Notifications are subject to change and will be updated, as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated, and any work that may impact an engineering control.

- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling.

- A schedule for the work, detailing the start and completion of all intrusive work. The work schedule must specify the duration of time that any engineering controls will be removed, compromised, or otherwise impacted.

- A summary of the applicable components of this EWP.
- A statement that the work will be performed in compliance with this EWP and 29 Code of Federal Regulations (CFR) 1910.120, 29 CFR 1926 Subpart P, and 40 CFR 761.61 (if applicable).
- A copy of the contractor's Health and Safety Plan, in electronic format.
- Identification of disposal facilities for potential waste streams.
- Identification of sources of any anticipated backfill, along with the required request to import form and all supporting documentation including, but not limited to, chemical testing results.

The NYSDEC Project Manager will review the notification and may impose additional requirements for the excavation that are not listed in this EWP.

3. SOIL SCREENING METHODS

Visual, olfactory, and instrument-based (e.g., photoionization detector) soil screening will be performed by a qualified environmental professional during all excavations into known or potentially contaminated material (remaining contamination). A qualified environmental professional is defined in 6 New York Code of Rules and Regulations (NYCRR) Part 375 (NYSDEC 2006): a Professional Engineer (P.E.) who is licensed and registered in New York State, or a qualified person who directly reports to a P.E. who is licensed and registered in New York State. Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the Certificate of Completion.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires analytical testing to determine if the material can be reused on-site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-site disposal of materials and on-site reuse is provided in Sections 7 and 8 of this EWP.

4. SOIL STAGING METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters, and other discharge points. Stockpiles will always be kept covered with appropriately anchored tarps. Stockpiles will be routinely inspected, and damaged tarp covers will be promptly replaced. Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the NYSDEC. Stockpiled materials not being re-used on-site will be scheduled for off-site transportation and disposal at an appropriate facility in a timely manner.

5. MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional or person under their supervision as defined in 6 NYCRR Part 375 will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this EWP. The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under the SMP is posed by utilities or easements on the site. A site utility stakeout will be completed for all utilities prior to any ground intrusive activities at the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate federal, state, local, and New York State Department of Transportation requirements.

A truck wash will be operated on-site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-site in an appropriate manner. Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed daily, at a minimum, as needed to maintain a clean condition with respect to site-derived materials. Material accumulated from the street cleaning and egress cleaning activities will be disposed off-site at a permitted landfill facility in accordance with all local, state, and federal regulations.

6. MATERIAL TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, state, and federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used, or the material will be appropriately dewatered and stabilized prior to transport. Truck transport routes will be determined based on where the proposed excavation will occur and must be approved by NYSDEC prior to use. All trucks exiting the site will use these approved truck routes.

The most appropriate truck route will account for: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in residential areas outside the project site. Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development. Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

7. MATERIAL DISPOSAL OFF-SITE

All material excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, state (including 6 NYCRR Part 360) and federal regulations (including 40 CFR 761.61). If disposal of material from this site is proposed for unregulated off-site disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be submitted to the NYSDEC. Unregulated off-site management of materials from this site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate (i.e., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, construction/demolition recycling facility, etc.). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include, but not be limited to, waste profiles, test results, facility acceptance letters, manifests, bills of lading, and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled in accordance with 6 NYCRR Parts 360, 361, 362, 363, 364, and 365, as well as 40 CFR 761.61. Material that does not meet Unrestricted Soil Cleanup Objectives is prohibited from being taken to a New York State recycling facility (6 NYCRR Part 360-16 Registration Facility).

8. MATERIAL REUSE ON-SITE

Chemical criteria for on-site reuse of material is subject to approval by NYSDEC prior to excavation work. The qualified environmental professional will ensure that procedures defined for materials reuse in the SMP are followed and that unacceptable material (i.e., contaminated) does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed on a demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Any proposed materials for reuse on-site will be sampled for full-suite analytical parameters including per- and polyfluoroalkyl substances and 1,4-dioxane in accordance with Division of Environmental Remediation (DER)-10 Table 5.4(e) unless prior approval is obtained from NYSDEC for modification of the sampling frequency and analytes. Results of analytical testing will be reported to the NYSDEC for acceptance. The analytical results of soil/fill material testing must meet the site use criteria presented in NYSDEC DER-10 Appendix 5 – Allowable Constituent Levels for Imported Fill or Soil for all constituents listed, and the NYSDEC Sampling, Analysis,

and Assessment of Per- and Polyfluoroalkyl Substances (NYSDEC November 2022 or date of current version, whichever is later) guidance values.

Soil/fill material for reuse on-site will be segregated and staged as described in Section 4 of this EWP. The anticipated size and location of stockpiles will be provided in the 15-day notification to the NYSDEC Project Manager. Stockpile locations will be based on the location of site excavation activities and proximity to nearby Site features. Material reuse on-site will comply with requirements of NYSDEC DER-10 Section 5.4(e)4. Any modifications to the requirements of DER-10 Section 5.4(e)4 must be approved by the NYSDEC Project Manager.

Any demolition material proposed for reuse on-site will be sampled for asbestos and PCBs, and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

9. FLUIDS MANAGEMENT

All liquids to be removed from the site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported, and disposed in accordance with applicable local, state, and federal regulations. Dewatering, purge, and development fluids will not be recharged back to the land surface or subsurface of the Site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e., a local pond, stream, or river) will be performed under a State Pollutant Discharge Elimination System permit.

10. COVER SYSTEM RESTORATION

Invasive activities that disturb or remove any part of the cover system will be restored in a manner that complies with the Record of Decisions (NYSDEC 2015, 2016) and SMP. The existing cover system is described in Section 3.3 of the SMP. If the type of cover system changes from that which exists prior to the excavation (e.g., a soil cover replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of remaining contamination. A figure showing the modified surface shall be included in subsequent Periodic Review Reports and in an updated SMP.

11. BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site. A Request to Import/Reuse Fill or Soil form (http://www.dec.ny.gov/regulations/67386.html) will be prepared and submitted to the NYSDEC Project Manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d) and New York State Division of Environmental Remediation (DER)-10 Section 5.4(e). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table 375-6.8(b) for residential use or commercial use depending on the parcel. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight-fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases. All stockpiles will be graded for stability and stored on polyethylene sheeting.

12. STORMWATER POLLUTION PREVENTIONS

Smaller scale disturbances for future utility maintenance and landscaping conducted after the completion of the RA is not anticipated to require coverage under the general State Pollutant Discharge Elimination System Permit or preparation of a Storm Water Pollution Prevent Plan. However, best management practices, such as the placement of silt fencing and hay bales at the perimeter of soil stockpiles and/or use of polyethylene liners and covers shall be implemented during small scale soil disturbances.

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

13. EXCAVATION CONTIGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition. The NYSDEC Project Manager will be promptly notified of the discovery.

Sampling will be performed on product, sediment, and surrounding soils, etc., as necessary, to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (Target Analyte List metals; Target Compound List volatiles and semivolatiles, Target Compound List pesticides, polyvinyl chlorinated biphenyls, 1,4-dioxane, and per- and polyfluoroalkyl substances), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

14. COMMUNITY AIR MONITORING PLAN

Continuous air monitoring will be conducted for protection of the downwind community during site work activities, per the New York State Department of Health (NYSDOH) generic Community Air Monitoring Plan (CAMP) in DER-10 Appendix 1A. Continuous air monitoring for volatile organic compounds will be conducted by a minimum of one dedicated person and will use approved instrumentation during ground intrusive activities. The location of air sampling stations will be based on prevailing wind conditions. The following action levels have been established for air monitoring:

Parameter	Action Level	Action
Total particulates	2.5 times background and/or greater than 150 micrograms per cubic meter	Work ceases until mitigated
Volatile organic compounds	5 parts per million above background (15-minute average) at the downwind perimeter of the work zone	Work ceases until mitigated
Visible dust	Visible dust as determined by the engineer	Work ceases until mitigated

Additional action levels developed by the contractor will need to be approved by NYSDEC and NYSDOH. The locations of air monitoring instrumentation will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations. Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

15. ODOR CONTROL PLAN

This Odor Control Plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis will include odor masking agents. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted, and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work,

is the responsibility of the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on-site and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (a) direct load-out of soils to trucks for off-site disposal; (b) use of chemical odorants in spray or misting systems; and, (c) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

16. DUST CONTROL PLAN

Particulate monitoring must be conducted in accordance with the CAMP provided in Section 14. If particulate levels exceed thresholds listed in the CAMP or if visible airborne dust is observed leaving the Site, dust suppression techniques shall be employed.

A dust suppression plan should be developed that addresses dust management during invasive on-site work that includes, at a minimum, the following items:

- Dust suppression will be achieved by using a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.

- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.

- Gravel will be used on roadways to provide a clean and dust-free road surface.

- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

17. OTHER NUISANCES

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

18. REFERENCES

New York State Department of Environmental Conservation (NYSDEC). 2006. *6 New York Code of Rules and Regulations Part 375 Environmental Remediation Programs.* December.

———. 2016. *Record of Decision Former Adirondack Steel Operable Unit Number 02: Off-site Drainageway, State Superfund Project, Colonie, Albany County, Site No. 401039.* March.

———. 2015. *Record of Decision, Former Adirondack Steel Operable Unit Number 03: On-site Drainageway and Adjacent Uplands, State Superfund Project, Colonie, Albany County, Site No. 401039.* March.

———. 2022. *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS).* November.

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Appendix D

Health and Safety Plan

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Former Adirondack Steel Site
Colonie, New York

Site-Specific Health and Safety Plan

NYSDEC Site No. 401039

Prepared for

New York State Department of Environmental Conservation
Division of Environmental Remediation
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Albany, New York 12207

Prepared by

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August 2023

Revisions to Approved Health and Safety Plan

Revision Number	Date Submitted	Summary of Revision	New York State Department of Environmental Conservation Approval Date
0	August 2023	Original Submittal	September 2023

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LIST OF ATTACHMENTS

LIST OF ACRONYMS AND ABBREVIATIONS

°C	Degrees Celsius
CFR	Code of Federal Regulation
COVID-19	Coronavirus Disease 2019
CPR	Cardiopulmonary resuscitation
dBA	A-weighted decibel
DEET	Diethyltoluamide
DER	Division of Environmental Remediation
EA	EA Engineering, P.C. and its affiliate EA Science and Technology
EPA	U.S. Environmental Protection Agency
ft	Foot (feet)
HASP	Health and Safety Plan
IRM	Interim remedial measure
kV	Kilovolt(s)
L	Liter
NIOSH	National Institute for Occupational Health and Safety
NYSDEC	New York State Department of Environmental Conservation
OSHA	Occupational Safety and Health Administration
OU	Operable unit
PCB	Polychlorinated biphenyl
PPE	Personal protective equipment
SDS	Safety data sheet
SHSO	Site Health and Safety Officer

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1. INTRODUCTION

1.1 OBJECTIVE

This Site-Specific Health and Safety Plan (HASP) has been developed for the sole use of EA's employees and subcontractors while performing activities at the site. This HASP is not intended for firms who do not participate in EA training and health and safety programs or are not under direct subcontract to EA. The objective of this Site-Specific Health and Safety Plan (HASP) is to provide personnel with protection standards and mandatory safety practices, procedures, and contingencies to be followed while performing field activities for the Former Adirondack Steel Site. The typical work activities addressed within this HASP include the following on-site field activities:

- Sitewide inspections (annual and following major storm events)

The safety organization, procedures, and protective equipment for this HASP have been established based on an analysis of potential physical, chemical, and biological hazards. Specific hazard control methodologies have been evaluated and selected to minimize the potential for accident or injury. One copy of this HASP will be maintained for use during scheduled field activities. The copy will be made available for site use/employee review.

The HASP describes the procedures that must be followed during referenced site activities. Operational changes that could affect the health and safety of personnel, the community, or the environment will not be made without the prior approval of the Project Manager and the Program Health and Safety Officer. This document will be periodically reviewed to ensure that it is current and technically correct. Changes in site conditions and/or the scope of work will involve a review and modification to the HASP. Such changes will be completed in the form of a numbered revision.

The provisions of this HASP are mandatory for EA personnel and subcontractors working at the site. Visitors to a work site must abide by the requirements of the HASP. It should be acknowledged that the employees of subcontractors might work in accordance with their own independent HASP. A subcontractor's HASP must meet the requirements of this HASP.

1.2 SITE AND FACILITY DESCRIPTION

The Former Adirondack Steel Site is currently a Class 2 Site listed on the NYSDEC Registry of Inactive Hazardous Waste Sites (Site No. 401039). The property contains an abandoned steel mill called the Adirondack Steel Casting Co. Inc. located at 191 Watervliet-Shaker Road in the Town of Colonie, Albany County, New York. The property contains eight dilapidated, unoccupied buildings, foundation slabs of the original production buildings, access roads, and emerging tree growth. Gas House Creek and a drainage ditch border the east and north sides of the property. The site occupies 4.2 acres of the 38.5-acre former industrial property and includes three OUs: OU-1 (0.4 acres onsite), OU-2 (2.1 acres offsite), and OU-3 (3.8 acres onsite). It is located within one mile of five other sites in the New York State Remedial Program. The area surrounding the property is a mix of industrial/residential use.

1.3 POLICY STATEMENT

The site management field crew will be familiar with the HASP for site management activities that they are involved in. Prior to entering the Site, this HASP will be reviewed, and the agreement to comply with the requirements will be signed by field crew, subcontractors, and visitors and be maintained in the HASP Review Record (**Attachment A**).

Operational changes that could affect the health and safety of personnel, the community, or the environment will not be made without the prior approval from NYSDEC, the Project Manager, and the Health and Safety Representative. This document will be periodically reviewed to ensure that it is current and technically correct. Changes in site conditions and/or the scope of work will require a review and revision of the HASP.

By signing a HASP Review Record, the subcontractors and visitors acknowledge their responsibility to comply with the occupational health and safety requirements defined in this HASP. Site management field crew and subcontractor personnel on-site will be informed of site emergency response procedures and potential safety, or health hazards associated with the operations conducted in support of work assignments.

1.4 REFERENCES

This HASP addresses the following regulations and guidance documents:

- Quick Selection Guide to Chemical Protective Clothing, K. Forsberg and S.Z. Mansdorf, 3rd Ed. (1997)
- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute (NIOSH) for Occupational Safety and Health, Occupational Safety and Health Administration (OSHA), U.S. Coast Guard, U.S. Environmental Protection Agency (EPA) (86-116, October 1985)
- Occupational Safety and Health Administration Standards for General Industry, 29 Code of Federal Regulations (CFR) 1910
- OSHA Standards for Hazard Communication, 29 CFR 1910.1200/1926.59
- OSHA Standard for Respiratory Protection, 29 CFR 1910.134
- OSHA Standards for Construction Industry, 29 CFR 1926
- NIOSH for Pocket Guide to Chemical Hazards, Department of Health and Human Services, PHS, Center for Disease Control, NIOSH (2005)

- Threshold Limit Values, American Conference of Government Industrial Hygienists (2011).

1.5 DEFINITIONS

The following definitions are applicable to this HASP:

- ***Site*—**The area where field activities are to be performed.

- ***Project*—**On-site work performed under the scope of site management for the Former Adirondack Steel Site.

- ***Project Manager*—**The individual(s) who will have overall responsibility for site management. The Project Manager will provide services associated with the implementation of the Site Management Plan.

- ***Subcontractor*—**Includes third-party personnel hired for on-site services.

- ***On-site Personnel*—**All personnel involved with a work assignment.

- ***Visitor*—**Personnel, except the on-site personnel. Visitors must receive approval to enter the Site.

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2. ROLES AND RESPONSIBILITIES

2.1 PERSONNEL

Field crew and subcontractor employees are responsible for reading, understanding, and meeting the health and safety requirements contained in this HASP. A HASP Review Record sign-off sheet is provided as **Attachment A**. Employees are required to implement these procedures when carrying out daily operations and site-specific field activities. This will include receiving appropriate training and medical monitoring and using health and safety equipment (to include personal protective equipment [PPE]) to safely conduct site operations. This may include maintaining appropriate grooming standards (removal or proper trimming of beards, mustaches, and sideburns) to ensure the proper fit of respiratory protection. Employees will review each field activity prior to commencement to consider the potential health and safety hazards and the measures to be taken in the event of an emergency. Employees will know where safety data sheets (SDS) **(Attachment B**), first aid supplies, and emergency equipment are maintained. The Site Manager or Program Health and Safety Officer will be notified of potential health and safety hazards, near-miss conditions, or incidents present on the job site or unusual effects believed to be related to hazardous chemical exposures. Failure to follow established health and safety procedures could result in immediate dismissal from the Site, and if repeated, a potential loss of employment.

2.1.1 Responsibilities

Clear lines of authority will be established for enforcing compliance with the safety, health, and contingency procedures consistent with industry policies and procedures. Designated personnel will be responsible for implementation of the HASP during field activities. This includes field supervision; implementing and directing emergency operations; coordinating with on-site and off-site emergency responders; enforcing safe work practices and decontamination procedures (if needed); ensuring proper use of PPE; communicating site safety program modifications and requirements to site personnel; proper reporting of injuries, illnesses, and incidents to the appropriate internal and external organizations; and containing and controlling the loss of potentially hazardous materials to soil, air, and surface/groundwater during field operations.

In the event of an on-site injury, occupational illness, near-miss, or environmental contamination incident, the following organizations/individuals will be notified as appropriate:

- Site Manager
- Site Health and Safety Officer (SHSO)
- Project Manager
- Program Health and Safety Officer
- Corporate Health and Safety Officer
- NYSDEC representatives
- Other organizations or persons as appropriate.

2.2 SITE HEALTH AND SAFETY OFFICER

The SHSO is responsible for coordination of on-site contingency operations and the Site Health and Safety Program. The SHSO will be on-site at all times during work assignment field activities and will be responsible for daily compliance with site health and safety requirements. The SHSO's responsibilities include:

- Conducting visual inspections of the work site
- Stopping work when imminent safety or health risks exist or as outlined in this HASP
- Authorizing for personnel to perform field activities on-site (i.e., relative to medical examinations and training)
- Implementing the use of forms
- Implementing the guidance within this HASP
- Providing an initial health and safety briefing to site workers and visitors
- Evaluating reported hazardous conditions and recommending corrective actions
- Conducting necessary health and safety monitoring
- Identifying, investigating, and preparing incident reports as necessary
- Consulting with the Program Health and Safety Officer or Project Manager for guidance on occupational health and safety and contingency issues affecting a specific work assignment
- Providing technical support and guidance in the modification of HASP requirements
- Evaluating on-site environmental monitoring results and providing reporting requirements to the Project Manager.

During an emergency, the Site Manager (or the Alternate in the absence of the Site Manager) will be responsible for initiating and coordinating emergency responses/contingency operations.

The SHSO will have the authority to make on-the-spot corrections dealing with safety, health, and environmental pollution infractions. If it is determined that the infraction cannot be remedied immediately and is of such a nature that continuance of the field activity could result in significant illness, injury, environmental contamination, and violations, the SHSO will have the authority to order a cessation of the activity until such time as the problem can be remedied.

2.3 PROJECT MANAGER

The Project Manager will have overall responsibility for site field activities and will be the primary contact during the work assignment field activities. The primary responsibilities of the Project Manager include:

- Assuring compliance with this HASP
- Coordinating field activities with the Site Manager
- Approving HASP Addendums and revisions
- Reviewing individual training and medical records prior to work start
- Providing overall supervisory control for health and safety protocols in effect for a work assignment
- Assigning the Site Manager and SHSO
- Assuring adequate resources are available for carrying out this HASP
- Preparing and submitting project reports.

2.4 SITE MANAGER

The Site Manager's responsibilities include but are not limited to:

- Providing technical support to the SHSO
- Evaluating on-site environmental monitoring results and reporting to the Project Manager and Program Health and Safety Officer
- Being responsible for initiating the evacuation of the work site when needed, communicating with off-site emergency responders, and coordinating activities of on-site and off-site emergency responders
- Determining if the abatement of hazardous conditions is sufficient prior to allowing resumption of field activities after an emergency.

2.4.1 SUBCONTRACTORS

Responsibilities of field crew and subcontractor personnel include:

- Following this HASP, applicable health and safety rules, regulations, and procedures

- Understanding and complying with 29 CFR 1910 and 29 CFR 1926 rules and regulations applicable to the operations they are conducting to ensure the health and safety of their personnel

- Using required controls, procedures, and safety devices, including PPE **(Attachment C**)

- Notifying his/her supervisor of identified or suspected emergencies and safety or health hazards

- Complying with training and medical requirements.

2.5 VISITORS

Visitors entering the on-site work areas will be required to sign the Entry/Exit Log (**Attachment D**) and to read and verify their understanding and willingness to comply with this HASP.

3. RISK ANALYSIS

3.1 PROJECT SCOPE OF WORK

Based on the field activities detailed in the Site Management Plan, the following potential hazard conditions may be anticipated:

- Personnel may be injured during physical lifting and handling of heavy equipment, construction materials, or containers. Additionally, personnel may encounter slip, trip, and fall hazards associated with sampling within the structures. Precautionary measures should be taken in accordance with this HASP.

- The use of mechanical equipment such as drill rigs, front loaders, dump trucks, backhoes, and bobcats can create a potential for crushing and pinching hazards due to movement and positioning of the equipment. In addition, the ambient noise levels around heavy equipment can cause disorientation and reduced awareness levels. Hard hats are required when working around this type of equipment.

- Field operations conducted during the winter months can impose excessive heat loss to personnel conducting strenuous activities during cold weather days and can impose cold-related illness symptoms during cold weather days or when the wind chill is high. In addition, heavy rains, electrical storms, and high winds may create extremely dangerous situations for employees.

- Field activities conducted during the hot summer months can impose excessive heat loading to personnel conducting strenuous activities or activities requiring the additional heat burden created due to the use of PPE.

- Entry into a confined space in support of this project is forbidden. However, it is not anticipated that confined space entry (i.e., buildings, storm sewers, etc.) will be required during the completion of the field activities.

- Site management activities do not include intrusive activities and therefore will not require employees to be direct proximity or contact with hazardous substances Level D PPE is sufficient for the monitoring activities covered by this HASP

The chemicals of concern that are present at the Site include, but are not limited to, polychlorinated biphenyls (PCBs). Safety data sheets for these chemicals are provided in **Attachment B**.

3.2 HAZARD COMMUNICATION

A written OSHA Hazard Communication Program for Construction (required by 29 CFR 1910.1200/1926.59) will be maintained on-site during field activities. Employees will be informed of the Hazard Communication Program's existence, contents, and location. This Program will be kept with the SDSs and contain a list of site-specific chemicals present. The list will be cross-referenced with the applicable SDS for ease in SDS accessibility.

An SDS for each chemical brought on-site during field activities will be maintained on-site by the SHSO. Subcontractors must inform the Site Manager and SHSO of hazardous substances brought on-site and provide appropriate SDS to the SHSO. Site workers and visitors will be informed of the Hazard Communication Program, their legal rights under the Program, the location of the chemical inventory, and the location of the SDS. Subcontractors will provide a list of the hazardous materials that will be used on-site in support of their operations. This information will be shared jointly with site employees and visitors to the Site.

Employee awareness of chemical identities, health and physical hazards, and characteristics is essential to safely handle chemicals and minimize potential hazards. The Hazard Communication Program must follow the OSHA requirements listed in 29 CFR 1910.1200/1926.59.

3.2.1 Hazard Communication Labeling

In-house containers will be properly labeled so that workers understand the contents of containers. Container labels will contain at least information on the name of the product or container, chemical(s) in the product, manufacturer's name and address, protective equipment required for the safe handling of the product, and first aid procedures in case of overexposure to product contents.

3.2.2 Hazard Communication Training

Site employees and visitors must be informed of the Hazard Communication Program, their legal rights under the program, and location of chemical inventory and SDS files. The employee's supervisor must describe hazardous substances used and provide information concerning:

- Nature of potential hazards
- Appropriate work practices
- Appropriate control programs
- Appropriate protective measures
- Methods to detect presence or release of hazardous substances
- Emergency procedures.

3.3 CHEMICAL HAZARDS

Field operation precautions and preventive measures for site management activities are described in the following paragraphs:

- ***Annual Site Inspections*** – No contact with site contaminants is anticipated when performing annual site inspections. However, inspections should be performed in Level D PPE at a minimum (**Section 5** for specific PPE).

A description of the requirements for the different levels of PPE, as well as upgrade/downgrade requirements, is provided in **Section 5**. Although ingestion of contaminants is also a primary

source of exposure, vigilance by site health and safety personnel will ensure proper use of PPE and personal hygiene to practically eliminate this route of exposure.

3.4 PHYSICAL HAZARDS

Physical hazards can potentially be present during field activities. These physical hazards may include, but not be limited to:

- Fire/explosion hazards
- Heat stress
- Equipment hazards
- Vehicle and pedestrian hazards
- Noise hazards
- Electrical hazards
- Utilities
- Weather hazards.

Physical hazards are listed below for each field activity that is scheduled to take place at the site:

- ***Inspection Activities***—General safety hazards, fire/explosion hazards, cold/heat stress, heavy equipment hazards, vehicle and pedestrian hazards, noise hazards, electrical/utility hazards, and biological hazards

The Site will be visually inspected for the presence of general safety hazards (e.g., trip/slip hazards, unstable surfaces or steep grades, sharp objects) prior to beginning work. If hazards are present, these hazards will be recorded, and precautionary measures taken to prevent injury.

3.4.1 Fire/Explosion Hazards

The potential for fire and/or explosion emergencies is always present on a Site. Substances capable of creating fire and explosion at a site include methane gas, petroleum-contaminated soil, and other flammable vapors. Workers must continuously monitor the work area for combustible or explosive gases when operations have the potential to generate sparks. Employees should always be alert for unexpected events, such as ignition of chemicals or sudden release of materials under pressure and be prepared to act in these emergencies.

Field vehicles will be equipped with a fire extinguisher. Employees must be trained in the proper use of fire suppression equipment. However, large fires that cannot be controlled with a fire extinguisher should be handled by professionals. The proper authorities should be notified in these instances.

3.4.2 Heat Stress and Heat-Related Illness

The use of protective equipment, if required, may create heat stress. Monitoring of personnel wearing impermeable personal protective clothing should commence when the ambient

temperature is 70 degrees Fahrenheit (°F) or above. Monitoring frequency should increase as ambient temperature increases, or as slow recovery rates are observed. Heat stress monitoring will be performed by a person with a current first-aid certification who is trained to recognize heat stress symptoms. For monitoring the body's recuperative abilities to excess heat, one or more of the following techniques will be used. Other methods for determining heat stress monitoring, such as the wet bulb globe temperature index from the American Conference of Governmental Industrial Hygienist Threshold Limit Value Booklet (2011), can be used.

To monitor the worker:

- Measure heart rate by counting the radial pulse during a 30-second period as early as possible in the rest period.
- If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.
- If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third.
- Measure oral temperature using a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking).
- If oral temperature exceeds 99.6°F (37.6 Degrees Celsius [°C]), shorten the next work cycle by one-third without changing the rest period.
- If oral temperature still exceeds 99.6°F (37.6°C) at the beginning of the next rest period, shorten the following work cycle by one-third.
- Do not permit a worker to wear a semi-permeable or impermeable garment when oral temperature exceeds 100.6°F (38.1°C).

3.4.2.1 Prevention of Heat Stress

Proper training and preventive measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat-related illness.

To avoid heat stress, the following steps should be taken:

- Adjust work schedules
- Modify work/rest schedules according to monitoring requirements
- Mandate work slow-downs, as needed

- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided

- Provide shelter (air conditioned, if possible) or shaded areas to protect personnel during rest periods

- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, i.e., 8 fluid ounces (oz) (0.23 liter [L]) of water must be ingested for approximately every 8 oz (0.23 kilogram) of weight loss. The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:

  — Maintain water temperature 50 to 60°F!

  — Provide small disposable cups that hold about 4 oz (0.1 L)

  — Have workers drink 16 oz (0.5 L) of fluid (preferably water or dilute drinks) before beginning work

  — Urge workers to drink a cup or two every 15 to 20 minutes, or at least each monitoring break. A total of 1 to 1.6 gallons (4 to 6 L) of fluid per day are recommended, but more may be necessary to maintain body weight

  — Train workers to recognize the symptoms of heat-related illness.

3.4.3 Cold-Related Illness

If work takes place in the winter months, effects of cold exposure are possible during the performance of field activities. Injury from cold exposure may occur in persons working outdoors during a period when temperatures average below freezing. The extremities, such as fingers, toes, and ears, are the most susceptible to frostbite.

3.4.3.1 Prevention of Cold-Related Illness

To avoid cold-related illness, the following steps should be taken:

- Educate workers to recognize the symptoms of frostbite and hypothermia
- Identify and limit known risk factors
- Assure the availability of an enclosed, heated environment on or adjacent to the Site
- Assure the availability of dry changes of clothing
- Develop the capability for temperature recording at the Site
- Assure the availability of warm drinks.

3.4.4 Heavy Equipment Hazards

The use of heavy equipment (e.g., drill rigs, excavators, generators, compressors, etc.) may pose safety hazards to site workers. Heavy equipment work must be conducted only by trained, experienced personnel. If possible, personnel must remain outside the turning radius of large, moving equipment. At a minimum, personnel must maintain visual contact with the equipment operator. No guards, safety appliances, or other devices may be removed or made ineffective unless repairs or maintenance are required, and then only after power has been shut-off and locked out. Safety devices must be replaced once repair or maintenance is complete. Exhaust from equipment must be directed so that it does not endanger workers or obstruct the view of the operator. When not operational, equipment must be set and locked so that it cannot be activated, released, dropped, etc.

3.4.5 Vehicle and Pedestrian Hazards

Vehicle traffic or pedestrians, particularly in busy areas, may be susceptible to site hazards or may present a hazard to site workers. Equipment must be located in an area that does not present a hazard to bystanders. Barriers must be used to separate the work areas from both vehicular and pedestrian traffic areas and to prevent inadvertent entry into the work area. When possible, work in high traffic areas will be performed when traffic is minimal. Safety cones (with a minimum height of 28 inches) will be placed around the work area to create a buffer zone. Workers should wear safety vests or reflective material to enhance visibility in these areas. The buffer zone will be maintained even when work is not being performed in the area to prevent unauthorized access and to make the work site visible.

3.4.6 Noise Hazards

Work around large equipment often creates excessive noise. Noise can cause workers to be startled, annoyed, or distracted; can cause physical damage to the ear, pain, and temporary and/or permanent hearing loss; and can interfere with communication. If workers are subjected to noise exceeding an 8-hour time-weighted average sound level of 85 A-weighted decibels (dBA), hearing protection will be selected with an appropriate noise reduction rating to comply with 29 CFR 1910.95 and to reduce noise levels below levels of concern.

3.4.7 Working Near Railroad Right-of-Way

Working on or adjacent to an active rail line can impose several hazards. During site inspection activities, access to the railroad right-of-way will not be required. A site fence currently separates workers from entering the OU-2 drainage ditch from the onsite areas. Workers will refrain from entering the right-of-way during performance of the Site Management Plan. If entry is required, a revision to this HASP shall be issued to incorporate working on or adjacent to the railroad.

3.4.8 Electrical Hazards

Overhead power lines, electrical wiring, electrical equipment, and buried cables pose risks to workers of electric shock, burns, heart fibrillation, and other physical injuries, as well as fire and explosion hazards. Workers will take appropriate protective measures when working near live electrical parts, including inspection of work areas to identify potential spark/ignition sources, maintenance of a safe distance, proper illumination of work areas, provision of barriers to prevent inadvertent contact, and use of non-conductive equipment. If wiring or other electrical work is needed, it must be performed by a qualified electrician.

General electrical safety requirements include:

- Electrical wiring and equipment must be a type listed by UL, Factory Mutual Engineering Corporation, or other recognized testing or listing agency.

- Installations must comply with the National Electrical Safety Code or the National Electrical Code regulations.

- Portable and semi-portable tools and equipment must be grounded by a multi-conductor cord having an identified grounding conductor and a multi-contact polarized plug-in receptacle.

- Tools protected by an approved system of double insulation, or its equivalent, need not be grounded. Double insulated tools must be distinctly marked and listed by UL or FM.

- Live parts or wiring or equipment must be guarded to prevent persons or objects from touching them.

- Electric wire or flexible cord passing through work areas must be covered or elevated to protect it from damage by foot traffic, vehicles, sharp corners, projections, or pinching.

- Circuits must be protected from overload.

- Temporary power lines, switch boxes, receptacle boxes, metal cabinets, and enclosures around equipment must be marked to indicate the maximum operating voltage.

- Plugs and receptacles must be kept out of water unless equipped with approved submersible construction.

- Extension outlets must be equipped with ground fault circuit interrupters.

- Attachment plugs or other connectors must be equipped with a cord grip and be constructed to endure rough treatment.

- Extension cords or cables must be inspected prior to each use and replaced if worn or damaged. Cords and cables must not be fastened with staples, hung from nails, or suspended by bare wire.

- Flexible cords must be used only in continuous lengths without splice, with the exception of molded or vulcanized splices made by a qualified electrician.

3.4.8.1 High Voltage Hazards

Employees may be required to work around sources of high voltage at the Site. Caution should be exercised to minimize contact with high voltage equipment, including contact between sampling equipment and potentially charged items. The minimum working distances from power transmission and distribution lines and equipment that will be allowed at the Site are presented in the following table.

High Voltage Clearances

Nominal System Voltage	Minimum Required Clearance
0-50 kV	10 ft
51-100 kV	12 ft
101-200 kV	15 ft
201-300 kV	20 ft
301-500 kV	25 ft
501-750 kV	35 ft
751-1,000 kV	45 ft
Notes: ft =Foot (feet) kV = Kilovolt(s)	

To minimize the dangers presented by underground high voltage electric lines, the Project Manager will review existing underground utility maps to determine if underground utilities are present at the proposed test pit, soil boring, and monitoring well locations prior to intrusive activities. Subcontractor personnel performing ground intrusive activities will provide grounding cables that will be attached to equipment and a grounding source (i.e., ground grid cable) during subsurface excavation and drilling. Use of the grounding cables will reduce the potential for worker injury in the event that underground utilities are encountered during intrusive activities.

To minimize the dangers presented by backhoe or drill rig contact with aboveground high voltage electric lines, personnel will locate test pits and monitoring wells to maintain an adequate working distance from power transmission and distribution lines.

3.4.9 Utilities

Underground utilities pose hazards to workers involved in drilling and other invasive operations. These hazards include electrical hazards, explosion, and asphyxiation, as well as costly and annoying hazards associated with damaging communication, sewer, and water lines. Prior to commencement of invasive operations, Dig Safely New York, will be contacted to inspect and flag the area of investigation. Personnel should be aware that although an area may be cleared, it does not mean that unanticipated hazards will not appear. Workers should always be alert for unanticipated events such as snapping cables, drilling into unmarked underground utilities, drilling into a heavily contaminated zone, etc. Such occurrences should prompt involved individuals to halt work immediately and take appropriate corrective measures to gain control of the situation.

3.4.10 Weather Hazards

Weather conditions should always be taken into consideration. Heavy rains, electrical storms, high winds, and extreme temperatures, for example, may create extremely dangerous situations for employees. Equipment performance may also be impaired because of inclement weather. Whenever unfavorable conditions arise, the Site Manager and SHSO will evaluate both the safety hazards and ability of the employees to effectively perform given tasks under such conditions. Activities will be halted at their discretion.

Wind direction should be accounted for when positioning equipment at sampling locations. If exposure to organic vapors is anticipated, workers should locate upwind of the sampling point. Wind direction often changes abruptly and without warning, so personnel should always be prepared to reposition, if necessary.

3.5 BIOLOGICAL HAZARDS

Potential hazards may be present at the Site due to bites from stray domestic and wild animals (to include rodents), spiders, bees, and other venomous arthropods, ticks may be encountered during field operations potentially resulting in Lyme disease, rabies, or punctures from sharp objects presenting a possible hazard from tetanus. In the case of an animal or insect bite that can be serious or fatal, workers must seek immediate medical attention and report the incident to the SHSO prior to leaving the Site. An employee known to be allergic or sensitive to poisonous insects should alert the Site Manager and SHSO. Prompt medical attention procedures, as outlined in **Section 8.2** of this HASP will be followed in the event of animal bites (since many animals carry rabies or other diseases/viruses).

3.5.1 Bloodborne Pathogens

During the conduct of site operations, field crew may be exposed to blood and body secretions in support of emergency response operations where site personnel have been injured and require first aid and/or cardiopulmonary resuscitation (CPR). Due to the potential that blood and body secretions may contain disease causing organisms such as Hepatitis B virus and Human Immunodeficiency virus, in an emergency response situation, employees electing to provide first aid and CPR support, until the arrival of a competent on-site medical responder, should take

appropriate measures to reduce or eliminate their potential for contact and exposure. The concept of "Universal Precautions" will be followed, which refers to the practice of assuming a potential hazard is present in a patient's bodily fluids. Employees providing first aid support should wear the appropriate PPE to prevent or reduce their potential for contact and exposure. This will typically be accomplished through the use of rubber gloves, splash-proof eye protection, and the use of mouth-to-mouth guards and proper cleanup (good sanitation and hygiene) following an incident. Hands and face should be thoroughly washed with water and an antiseptic soap or cleanser following an incident, or antiseptic containing disposable towelettes used in the absence of appropriate field washing facilities. The Program Health and Safety Officer should be notified of potential employee exposures to blood and body fluids while conducting work in support of this project.

3.5.2 West Nile Virus

West Nile virus is a member of the Japanese encephalitis complex of flaviviruses, transmissible by mosquitoes, and can cause febrile, sometimes fatal human illness. Until 1999, this virus had never been reported in the Western Hemisphere. Mosquitoes, primarily bird-feeding species, are the primary vectors of West Nile virus, although the virus has been isolated from other bird-feeding arthropods, including some tick species. The natural transmission cycle of the virus involves a bird-mosquito cycle but may include a tick-bird cycle where soft ticks (Argasidaes) or hard ticks (Ixodidaes) are found feeding on reservoir birds. The urban cycle of the disease requires species of mosquitoes that will feed on free-ranging or domestic birds and people. The unprecedented introduction of West Nile virus into the metropolitan area of New York City in the late-Summer of 1999 has resulted in a large-scale review of existing programs and required resources to address this threat. Representatives of several local health units and state and federal agencies met to address each of the significant surveillance and response issues associated with this mosquito-borne disease. As a result of these discussions and consultation with community groups, the New York State Department of Health has developed a set of complementary action plans to prevent a further episode of West Nile virus infections.

According to New York State Department of Health, outdoor workers should take the following precautions to minimize potential exposure to the West Nile virus from adult mosquito bites:

- It is not necessary to change standard work health and safety practices outdoors unless there is evidence of the mosquito-borne disease.

- If the West Nile virus is identified in an area, workers should be advised of the precautions that they may choose to take to try to reduce the risk of mosquito bites:

  — Wear shoes, socks, long pants, and a long-sleeved shirt when outdoors for long periods of time or when mosquitoes are most active (between dusk and dawn). Maintain body fluids to avoid heat stress.

  — Consider the use of mosquito repellent, according to directions, when it is necessary to be outdoors for long periods or at times when mosquitoes are most active.

3.5.3 Lyme Disease

Lyme disease commonly occurs in summer and is transmitted by the bite of infected ticks. “Hot spots” in the United States include New York, New Jersey, Pennsylvania, Massachusetts, Connecticut, Rhode Island, Minnesota, and Wisconsin. Few cases have been identified in other states. Symptoms of Lyme disease include a rash or a peculiar red spot, like a bull’s eye, which expands outward in a circular manner. The victim may have a headache, weakness, fever, a stiff neck, swilling and pain in the joints, and eventually, arthritis.

Tick repellant containing diethyltoluamide (DEET) or permethrin should be used when working in tick-infested areas, and pants legs should be tucked into boots. In addition, workers should search the entire body every 3 or 4 hours for attached ticks. Ticks should be removed promptly and carefully without crushing, since crushing can squeeze the disease-causing organism into the skin. A gently and steady pulling action should be used to avoid leaving the head or mouth parts in the skin. Hands should be protected with surgical gloves when removing ticks.

3.5.4 Pandemic Response

During a pandemic, field crew must take precautionary steps to avoid the spread of communicable diseases. Some precautionary steps in each project task listed below may include the following:

- No carpooling where possible to maintain social distancing and reduce transmission between coworkers.
- Minimize employees in small spaces to avoid crowding and maintain 6 ft between workers.
- When a 6-ft distance cannot be maintained between field crew, face coverings will be worn (e.g., a scarf, bandana, or face mask).
- Maintain diligent use of PPE including nitrile gloves and safety glasses to limit contact with eyes.
- Field crew shall frequently clean hands with soap and water for at least 20 seconds especially if in a public place, or after blowing nose, coughing, or sneezing.
    - If soap and water are not readily available, field crew shall use a hand sanitizer that contains at least 60 percent alcohol.
    - Field crew shall avoid touching eyes, nose, and mouth with unwashed hands or with gloved hands.
- Field crew should discuss work roles prior to the start of work to reduce passing tools, logbooks, iPads, and other equipment between individuals.

- Any field crew or potential site visitors should be excused from jobsite if the following pertains to them:

  — Currently experiencing fever, chills, a cough, sore throat, or shortness of breath.

  — Has been in contact with someone who has been medically diagnosed with Coronavirus Disease 2019 (COVID-19).

  — Has traveled within the last 14 days.

  — Has been in contact with anyone, including family members, who have traveled within the last 14 days.

4. GENERAL SAFETY PRACTICES

4.1 SAFETY PROCEDURES

Safe work practices, which must be followed by site workers, include:

- At least one copy of this HASP must be at the project site, in a location readily available to personnel, and reviewed by project personnel prior to starting work.
- Site personnel must use the buddy system.
- Potentially contaminated PPE must not be removed from the work area before being cleaned or properly packaged and labeled.
- Potentially contaminated waste, debris, and clothing must be properly contained, and legible and understandable precautionary labels affixed to each container to define its content.
- Removing potentially contaminated soil or debris from protective clothing or equipment with compressed air, shaking, or any other means that may re-suspend contaminants into the air is prohibited.
- Eat, drink, and smoke only in those areas designated by the Site Manager/SHSO. These activities will not take place within any work zone.
- Large bulk containers, such as 55-gallon drums, must only be moved with the proper equipment, and must be secured to prevent dropping or loss of control during transport.
- Emergency equipment such as eyewash, fire extinguishers, etc. must be staged in readily accessible locations.
- Employees must be aware, and inform their partners or fellow team members, of the potential non-visible effects of exposure to toxic materials. The symptoms of such exposures may include:

  — Headaches
  — Dizziness
  — Nausea
  — Blurred vision
  — Cramps
  — Irritation of eyes, skin, or respiratory tract.

Each employee required to take prescription drugs will notify the SHSO prior to the start of work, and upon approval, may take prescription drugs in the Support Zone only. Controlled or unauthorized drugs will **not** be permitted on-site at any time.

4.2 BUDDY SYSTEM

On-site personnel must use the buddy system. Visual contact must be maintained between crew members, and crew members must observe each other for signs of chemical exposure, and heat or cold stress. Indications of adverse effects include, but are not limited to:

- Changes in complexion and skin coloration
- Changes in coordination
- Changes in demeanor
- Excessive salivation and pupillary response
- Changes in speech pattern.

Team members must also be aware of potential exposure to possible safety hazards, unsafe acts, or non-compliance with safety procedures.

If protective equipment or noise levels impair communications, pre-arranged hand signals must be used for communication. Personnel must stay within line of sight of another team member.

4.3 EMERGENCY EQUIPMENT

Adequate emergency equipment for the activities conducted on-site and as required by applicable sections of 29 CFR 1910 and 29 CFR 1926 must be maintained on-site. Personnel will be provided with access to emergency equipment including, but not limited to, the following:

- Emergency eyewash unit(s) meeting American Nation Standards Institute Z358.1-1990
- Fire extinguishers of adequate size, class, number, and location (one in each EA vehicle) as required by applicable sections of 29 CFR 1910 and 29 CFR 1926.
- First aid kit of adequate size for the number of personnel on-site.

4.4 PERSONAL HYGIENE AND SANITATION

4.4.1 Break Area

Breaks will be taken off-site. There will be no smoking, eating, drinking, or chewing gum or tobacco on-site.

4.4.2 Potable Water

The following rules apply for project field operations:

- An adequate supply of potable water will be provided at the work site. Potable water must be kept away from hazardous materials, contaminated clothing, and contaminated equipment.

- Portable containers used to dispense drinking water must be capable of being tightly closed and must be equipped with a tap dispenser. Water must not be consumed directly from the container, nor dipped from the container.

- Containers used for drinking water must be clearly marked and not used for any other purpose.

- Disposable cups and/or bottles will be supplied; both a sanitary container for unused cups and a receptacle for disposing of used cups must be provided.

4.4.3 Sanitary Facilities

Public restrooms are located nearby at local gas stations and rest facilities, which will be used for washing before eating, drinking, or smoking. Personnel are required to wash off exposed skin surfaces prior to eating, smoking, or drinking following site operations and work activities.

4.4.4 Lavatory

Public restrooms are located nearby.

4.4.5 Trash Collection

Trash generated during site management activities will be inspected, and if considered a hazardous waste, disposed of as a hazardous waste. Trash determined to be non-hazardous will be disposed of as municipal waste. Trash generation is not anticipated as part of site management activities.

4.5 SPILL CONTROL PLAN

Personnel must take every necessary precaution to minimize the potential for spills during site operations. On-site personnel are obligated to report immediately any discharge, no matter how small, to the Project Manager. In the event of a significant spill, containment, control, and cleanup procedures will adhere to NYSDEC Technical Procedural Guidance document for personnel health and safety protection.

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5. PERSONAL PROTECTIVE EQUIPMENT

5.1 LEVELS OF PROTECTION

Based upon currently available information, the Site is considered non-hazardous and will require Level D protection for currently anticipated conditions and activities. Site inspection does not include intrusive activities, so known or unknown chemical hazards will not be encountered. Level D protection is sufficient for the monitoring activities covered by this HASP. The type of PPE and level of protection will be re-evaluated as required if there are changes to site conditions or scope of work. Upgraded or downgraded PPE requirements will prompt revision to the HASP.

5.1.1 Level D Personal Protective Equipment

Level D will be worn for entry on-site and for all activities and will consist of the following:

- Coveralls or appropriate work clothing
- Steel-toe, steel-shank safety boots/shoes
- Hard hats (when overhead hazards are present or as required by the SHSO)
- Chemical resistant gloves (nitrile/neoprene) when contact with potentially contaminated soil or water is expected
- Safety glasses with side shields
- Hearing protectors (during drilling or other operations producing excessive noise)
- Boot covers (optional unless in contact with potentially contaminated soil or water)
- Poly coated coveralls (when contact with contaminated soil and water is anticipated, e.g., when surging/pumping wells and pressure-washing equipment).

Insulated clothing, hats, etc. must be worn when temperatures or wind chill fall below 40°F.

5.2 HEARING PROTECTION

Hearing protection must be available and properly worn whenever noise levels exceed 85 dBA (noise level at which a normal conversation cannot be carried on at a 3-ft distance). When the SHSO determines that a potential excessive noise exposure exists, a sound level meter will be used for measurements. Two types of hearing protection will be available on-site: foam earplugs and earmuffs. The hearing protectors will have a Noise Reduction Rating sufficient to reduce the sound level to below 85 dBA.

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6. EMPLOYEE TRAINING

6.1 SITE WORKERS

Personnel who will be performing non-hazardous on-site tasks are not required to have been trained according to United States Department of Labor OSHA Standard, 29 CFR 1910.120/29 CFR 1926.65 *Hazardous Waste Operations and Emergency Response*. These workers will have appropriate health and safety training based upon their specific job tasks and activities.

The Site Manager, SHSO, and personnel conducting the site monitoring activities (e.g., groundwater monitoring) will be trained as required to meet the United States Department of Labor OSHA Standard, 29 CFR 1910.120/29 CFR 1926.65, *Hazardous Waste Operations and Emergency Response* to qualify as a hazardous waste site worker and supervisor. Training will include:

- A minimum of 40 hours of initial off-site instruction
- A minimum of 3 days of actual field experience under the direct supervision of a trained, experienced supervisor
- An 8-hour refresher training period annually
- Additional training that addresses unique or special hazards/operational requirements
- First aid and CPR.

On-site management and supervisors who are directly responsible for or who supervise employees will receive at least 8 additional hours of specialized management training. Copies of training certificates and dates of attendance will be available through the SHSO upon request.

6.1.1 Subcontractor Training

Prior to start of work operations, the Project Manager will obtain a written list of subcontractor personnel to be on-site, and written certification from subcontractor management that these workers meet the training requirements for their assigned tasks.

6.2 SITE-SPECIFIC TRAINING

The SHSO will be responsible for developing a site-specific occupational hazard training program and providing training to personnel who are to work at the Site. At a minimum, this training will consist of the following topics:

- Names of personnel responsible for site health and safety
- Safety, health, and other hazards at the Site
- Proper use of PPE
- Work practices by which the employee can minimize risk from hazards

- Safe use of engineering controls and equipment on the Site
- Acute effects of compounds at the Site
- Decontamination procedures.

7. MEDICAL SURVEILLANCE

7.1 MEDICAL EXAMINATIONS

Site workers potentially involved with the field sampling operations must have satisfactorily completed a comprehensive medical examination by a licensed occupational physician within 12 months (or 24 months with the approval of the consulting physician) prior to the start of site operations. The date of medical examination of each qualified person will be maintained on-site with the project field team. Medical surveillance protocols must comply with 29 CFR 1910.120/29 CFR 1926.65.

Medical examinations and consultations must be provided for employees covered by this program on the following schedule:

- Prior to assignment
- At least annually for employees covered by the program
- At termination of employment or reassignment to an area where the employee would not be covered if the employee has not been examined within the past 6 months
- As soon as possible upon the development of signs or symptoms that may indicate an overexposure to hazardous substances or health hazards
- More frequently if the physician deems such examination necessary to maintain employee health.

7.2 RECORDS

An accurate record of the medical surveillance and exposure will be maintained for each employee for a period of no less than 30 years after the termination of employment, as per 29 CFR 1910.1020. Records must include at least the following information about the employee:

- Name and social security number
- Physician’s written opinions, recommendations, limitations, and test results
- Employee medical complaints related to hazardous waste operations
- Information provided to the physician by the employee concerning possible exposures, accidents, etc.

Subcontractors must provide medical surveillance information in writing to the Project Manager for their workers prior to mobilization on-site.

7.3 FIRST AID AND MEDICAL TREATMENT

Persons on-site must report a near-miss incident, accident, injury, or illness to their immediate supervisor or the Site Manager. First aid will be provided by the designated site first aider. Injuries and illnesses requiring medical treatment must be documented. The Site Manager must conduct an accident investigation as soon as emergency conditions no longer exist, and first aid and/or medical treatment has been ensured. The accident/incident report must be completed and submitted to the Corporate Health and Safety Officer within 24 hours after the incident.

If first aid treatment is required, first aid kits are kept in all EA vehicles. If treatment beyond first aid is required, the injured individual(s) should be transported to the medical facility. If the injured is not ambulatory or shows signs of not being in a comfortable or stable condition for transport, then an ambulance/paramedics should be summoned. If there is a doubt as to the injured worker's condition, it is best to let the local paramedic or ambulance service examine and transport the worker.

8. ACCIDENT PREVENTION AND CONTINGENCY PLAN

8.1 ACCIDENT PREVENTION

Field personnel will receive health and safety training prior to the initiation of site activities. On a day-to-day basis, individual personnel should be constantly alert for indicators of potentially hazardous situations and for signs and symptoms in themselves and others that warn of hazardous conditions and exposures. Rapid recognition of dangerous situations can avert an emergency. Before daily work assignments, regular meetings should be held.

Discussion should include:

- Tasks to be performed
- Time constraints (e.g., rest periods, cartridge changes)
- Hazards that may be encountered, including their effects, how to recognize symptoms and monitor them, concentration limits, or other danger signals
- Emergency procedures.

8.1.1 Vehicles and Heavy Equipment

Working with large motor vehicles and heavy equipment could be a major hazard at a Site. Injuries can result from equipment hitting or running over personnel, impacts from flying objects, or overturning of vehicles. Vehicle and heavy equipment design and operation will be in accordance with 29 CFR, Subpart O, 1926.600 through 1926.602. In particular, the following precautions will be utilized to help prevent injuries/accidents:

- Brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horn, and other safety devices will be checked at the beginning of each shift by the equipment operator.
- Large construction motor vehicles will not be backed up unless the vehicle has a reverse signal alarm audible above the surrounding noise level, or the vehicle is backed up only when an observer signals that it is safe to do so.
- Heavy equipment or motor vehicle cabs will be kept free of all non-essential items, and loose items will be secured.
- Large construction motor vehicles and heavy equipment will be provided with necessary safety equipment (seat belts, rollover protection, emergency shut-off in case of rollover, backup warning lights, and audible alarms).

- Blades and buckets will be lowered to the ground and parking brakes will be set before shutting off heavy equipment or vehicles.

8.2 CONTINGENCY PLAN

8.2.1 Emergency Recognition

Prior to work startup, personnel must be familiar with emergency condition identification, notification, and response procedures. **The emergency telephone numbers for local emergency response and reporting organizations and directions and map to the nearest hospital are included in Attachment E. NOTE: The HASP will be left open to the emergency contacts page at all times during site activities.** The Site Manager and SHSO will rehearse/review emergency procedures and/or applicable site contingencies initially during site orientation and as part of the ongoing site safety program. On-site emergencies will ultimately be handled by off-site emergency personnel. Initial response and first-aid treatment; however, will be provided on-site.

Person(s) identifying an accident, injury, emergency condition, or a scenario requiring implementation of a response in support of this Plan will immediately take actions to report the situation to the Site Manager. Notification may take place by runner, hand-held radio, or telephone. The Site Manager/SHSO will initiate the required response based upon the type of incident, following the procedures contained in this HASP. A chain-of-command and sign-in sheets for personnel on the Site will be established at the beginning of each workday to ensure personnel are accounted for and who will take control should the Site Manager or SHSO become injured. The following items constitute those site conditions requiring an emergency response or contingency action in accordance with this HASP:

- Fire/Explosion:
  - The potential for human injury exists
  - Toxic fumes or vapors are released
  - The fire could spread on-site or off-site, and possibly ignite other flammable materials or cause heat-induced explosions
  - The use of water and/or chemical fire suppressants could result in contaminated runoff
  - An imminent danger of explosion exists.
- Heavy Equipment Accident:
  - On-site traffic accident where personal injury has occurred.
- Natural Disaster:

- A rainstorm exceeds the flash flood level
- The facility is in a projected tornado/hurricane path, or a tornado/hurricane has damaged facility property
- Severe wind gusts are forecasted or have occurred and have caused damage to the facility.

- Medical Emergency:
  - Overexposure to hazardous materials
  - Trauma injuries (broken bones, severe lacerations/bleeding, burns, animal bites)
  - Eye or significant skin contact with hazardous materials
  - Loss of consciousness
  - Heat stress (heat stroke)
  - Heart attack
  - Respiratory failure
  - Allergic reaction.

- Discovery of Unanticipated Hazards (e.g., unmarked utility lines, heavily contaminated material).

Follow-up operations to evaluate and control the source of fire, explosions, and hazardous materials incidents will occur only after discussion with the Project Manager and Site Manager. The Site Manager will act as the Emergency Coordinator at the Site to coordinate on-site activities and contingencies until the arrival of outside response organizations. If the Site Manager is unable to act as the Emergency Coordinator, then the authority to take action will be transferred to the SHSO, or other designee, as indicated in the daily updated chain-of-command.

8.2.2 Emergency Procedures

In the event of an emergency, the information available at that time must be properly evaluated and the appropriate steps taken to implement the Emergency Response Plan. The Site Manager (or SHSO if the Site Manager is part of the emergency) will assume command of the situation. He/she will alert the emergency management system and evacuate personnel to the pre-designated evacuation location. In a site emergency, the Site Manager (or the SHSO if the Site Manager is not available) must sound an emergency alarm (designated as an air horn or car horn) repeatedly several times, upon hearing work must stop, and personnel must move to the pre-designated evacuation location. If the emergency situation cannot be conveyed by word of mouth, a whistle or other horn will be sounded. Three short blasts, separated by a 2-second silence, will be used as the emergency signal. First aid will be administered only to limit further injury and stabilize the victim. The local Emergency Medical Services must be notified immediately, if needed. The routes to the nearest hospital are shown in **Attachment E**. The Site Manager/SHSO will make required notifications to include, but not be limited to, the NYSDEC representative and Project Manager, as defined in **Section 2** and the appropriate federal and state agencies.

Site personnel will have the capability of notifying emergency responders directly from the Site using the phone in the company vehicle or in the site support office. In the event of an accident/incident, the Project Manager should be immediately notified of a reportable accident/incident or contingency.

The following information will be provided when reporting an emergency:

1. Name and location of person reporting
2. Location of accident/incident
3. Name and affiliation of injured party
4. Description of injuries, fire, spill, or explosion
5. Status of medical aid and/or other emergency control efforts
6. Details of chemicals involved
7. Summary of accident, including suspected cause and time it occurred
8. Temporary control measures taken to minimize further risk.

This information is not to be released to parties other than those listed in this section and Emergency Response Team members. Once emergency response agencies have been notified, the Project Manager will be notified immediately.

8.2.3 Chemical Exposure

If a member of the field crew demonstrates symptoms of chemical exposure, the procedures outlined below should be followed:

- Another team member (buddy) should remove the individual from the immediate area of contamination. The buddy should communicate to the Site Manager (via voice and hand signals) of the chemical exposure. The Site Manager should contact the appropriate emergency response agency.

- Precautions should be taken to avoid exposure of other individuals to the chemical.

- If the chemical is on the individual's clothing, the chemical should be neutralized or removed if it is safe to do so, or the clothing should be removed and bagged.

- If the chemical has contacted the skin, the skin should be washed with copious amounts of water.

- In case of eye contact, an emergency eye wash should be used. Eyes should be washed for at least 15 minutes.

Chemical exposure incidents must be reported in writing to the Program Health and Safety Officer. The SHSO or Site Manager is responsible for completing the accident report provided in **Attachment F**.

8.2.4 Personal Injury

Personnel should always be alert for signs and symptoms of illnesses related to chemical, physical, and on-site health hazards. Severe injuries resulting from accidents must be recognized as emergencies and treated as such. If feasible, in the field, at least two people currently trained in first aid/CPR must be present on-site. This will normally be the Field Manager and SHSO.

In a medical emergency, the Site Manager (or the SHSO if the Field Manager is not available) must sound the emergency air horn or car horn several times, upon which work must stop and personnel must move to the pre-designated evacuation location. If the emergency situation cannot be conveyed by word of mouth, a whistle or other horn will be sounded. Three short blasts, separated by a 2-second silence, will be used as the emergency signal. Personnel currently trained in first aid will evaluate the nature of the injury, decontaminate the victim (if necessary), and initiate first aid assistance immediately and transport if appropriate. First aid will be administered only to limit further injury and stabilize the victim. The local Emergency Medical Services must be notified immediately, if needed. The routes to the nearest hospital are shown in **Attachment E**. Although not anticipated, victims who are heavily contaminated with toxic or dangerous materials must be decontaminated before being transported from the Site. Decontamination will consist of removal of contaminated coveralls/clothing and wrapping the victim in a sheet or other cloth like material. No persons will re-enter the site of injury/illness until the cause of the injury or symptoms has been determined and controlled. At no time will personnel transport victims to emergency medical facilities unless the injury does not pose an immediate threat to life and transport to the emergency medical facility can be accomplished without the risk of further injury. Emergency Medical Services will be used to transport serious injuries off-site unless deemed otherwise by the Site Manager/SHSO.

The Site Manager must complete an Accident/Loss and Incident Report provided in **Attachment F** and submit it to the Project Manager within 24 hours of the following types of incidents:

- Job-related injuries and illnesses
- Accidents resulting in loss or damage to property
- Accidents involving vehicles and/or vessels, whether or not they result in damage to property or personnel
- Accidents in which there may have been no injury or property damage, but which have a high probability of recurring with at least a moderate risk to personnel or property
- Near-miss incidents, which could have resulted in any of the conditions defined above.

An accident that results in a fatality or the hospitalization of three or more employees must be reported within 8 hours to the United States Department of Labor through the Project Manager. Subcontractors are responsible for their reporting requirements.

In order to support on-site medical emergencies, first aid/emergency medical equipment will be available at the following locations:

- First-aid kit; work vehicle
- Eye wash; work vehicle
- Emergency alarm; horn on the work vehicle
- Copy of the HASP, work vehicle
- Telephone; work vehicle.

The eye wash kit must be portable and capable of supplying at least a 15-minute supply of potable water to the eyes.

8.2.5 Operations Shutdown

The Site Manager, SHSO, or the Project Manager may mandate operations shutdown. Conditions warranting work stoppage will include (but are not limited to):

- Uncontrolled fire
- Explosion
- Uncovering potentially dangerous buried hazardous materials
- Condition immediately dangerous to life and health or the environment
- Potential for electrical storms
- Treacherous weather-related conditions
- Limited visibility.

8.2.6 Evacuation Procedures

In the event the Site must be evacuated, the following procedures should be followed:

- The Site Manager will initiate evacuation procedures by signaling to leave the Site.

- Personnel in the work area should evacuate the area and meet in the common designated area.

- Personnel suspected to be in or near the work area should be accounted for and the whereabouts of missing persons determined immediately.

Further instruction will then be given by the Site Manager.

8.2.7 Procedures Implemented in the Event of a Major Fire, Explosion, or On-site Health Emergency Crisis

Fire and explosion must be immediately recognized as an emergency. The SHSO (or Site Manager if SHSO is not available) must sound an emergency signal, and personnel must be decontaminated (if necessary) and evacuated to the pre-designated evacuation location.

Only persons properly trained in fire suppression and other emergency response procedures will support control activities. Control activities will consist of the use of on-site portable fire extinguishers for limited fire suppression and employee evacuation. Upon sounding the emergency alarm, personnel will evacuate the hazard location and assemble at the designated site meeting area.

Only those site personnel trained in the use of portable fire extinguisher use will attempt to suppress a site fire. Small multipurpose dry chemical extinguishers will be maintained in each vehicle on-site. Fires not able to be extinguished using on-site extinguishers will require the support of the local fire department.

The Site Manager should take measures to reduce injury and illness by evacuating personnel from the hazard location as quickly as possible. The Site Manager must then notify the local fire department. The Site Manager will determine proper follow-up actions. Site personnel will not resume work during or after a fire/explosion incident until the emergency coordinator has directed that the incident is over, and work may resume. During the incident, site personnel will remain outside the incident area and obey the instructions of the Emergency Coordinator.

8.2.8 Emergency Telephone Numbers

Attachment E provides a listing of emergency telephone numbers.

8.3 SPILL CONTAINMENT PROCEDURES

Small incidental spills, (i.e., those which cause no injury to personnel or the public), may be cleaned up quickly and easily. For large spills, (i.e., those that contaminate personnel or the environment), attend to first aid measures first, stop the source of the spill if possible, and then notify appropriate emergency response services. Safety of workers will be managed by adhering to policies and procedures outlined in the NYSDEC Technical Procedural Manual for Personal Health and Safety Protection.

Spills of hazardous materials or wastes which are listed by EPA as having a reportable quantity value must be reported to appropriate federal, state, and local agencies if a reportable quantity or greater is released. The Site Manager is responsible for determining the appropriate agencies prior to work startup.

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Attachment A

Health and Safety Plan Review Record

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Health and Safety Plan Review Record

I have read the Health and Safety Plan for this site and have been briefed on the nature, level, and degree of exposure likely as a result of participation in this project. I agree to conform to all the requirements of this Plan.

Site: Former Adirondack Steel Site, 191 Watervliet-Shaker Rd, Colonie, New York			
Name	**Signature**	**Affiliation**	**Date**

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Attachment B

Safety Data Sheets

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1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **POLYCHLORINATED BIPHENYLS (PCB)**
Synonym(s) CHLOREXTOL • CHLORINATED BIPHENYL • MONTAR • PCB • PHENOCHLOR

1.2 Uses and uses advised against

Use(s) INSULATION • PLASTICISER • TRANSFORMER LUBRICANT

1.3 Details of the supplier of the safety data sheet

Supplier name **GENERIC REPORT - FOR REFERENCE PURPOSES ONLY**
Address PO Box 21, West Perth, WA, Australia, 6872
Telephone (08) 9322 1711
Fax (08) 9322 1794
Email Not supplied
Website Not supplied

1.4 Emergency telephone number(s)

Emergency (08) 9322 1711

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

GHS Classification(s) Specific Target Organ Systemic Toxicity (Repeated Exposure): Category 2
Aquatic Toxicity (Chronic): Category 1

2.2 Label elements

Signal word **WARNING**

Pictograms

Hazard statement(s)

H373 May cause damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Prevention statement(s)

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P273 Avoid release to the environment. This statement does not apply where this is the intended use.

Response statement(s)

P314 Get medical advice/attention if you feel unwell.
P391 Collect spillage.

Disposal statement(s)

P501 Dispose of contents/container in accordance with relevant regulations.

2.3 Other Hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS number	EC number	Content
POLYCHLORINATED BIPHENYLS (PCB)	1336-36-3	215-648-1	100%

4. FIRST AID MEASURES

Product name **POLYCHLORINATED BIPHENYLS (PCB)**

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. To protect rescuer, use a Type A (Organic vapour) respirator or an Air-line respirator (in poorly ventilated areas). Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.
First aid facilities	No information provided.

4.2 Most important symptoms and effects, both acute and delayed

No information provided.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Dry agent, carbon dioxide or foam. Prevent contamination of drains and waterways.

5.2 Special hazards arising from the substance or mixture

Combustible. May evolve toxic gases (carbon oxides, dibenzofurans, dioxins, hydrogen chloride, phenols, chlorides, hydrocarbons) when heated to decomposition.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

2X

2	Water Fog (or fine water spray if fog unavailable)
X	Full protective clothing including Self Contained Breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal. Only trained personnel should undertake clean up.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in segregated, locked and signposted compound with bunded floor. Drums may be plastic lined. Ensure area is cool, dry, well ventilated removed from direct sunlight, incompatible substances, heat or ignition sources and foodstuffs. Ensure each container is adequately labelled, protected from physical damage & sealed when not in use. Check regularly for leaks or spills.

Product name **POLYCHLORINATED BIPHENYLS (PCB)**

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Substance	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
PCBs (42% Chlorine)	SWA (AUS)	--	1	--	2
PCBs (54% Chlorine)	SWA (AUS)	--	0.5	--	1

Biological limits

No biological limit values have been entered for this product.

8.2 Exposure controls

Engineering Controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

PPE

Eye/Face Wear splash-proof goggles.

Hand Wear viton (R) or neoprene gloves.

Body Wear coveralls.

Respiratory Wear a Type A (Organic vapour) respirator. If using product in a confined area, wear an Air-line respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	VARY FROM OILY LIQUID TO WHITE CRYSTALLINE SOLID AND NON CRYSTALLINE RESIN
Odour	MILD AROMATIC ODOUR
Odour Threshold	NOT AVAILABLE
pH	NOT AVAILABLE
Melting Point	NOT AVAILABLE
Boiling Point	340°C to 375°C
Flash Point	NOT AVAILABLE
Evaporation Rate	NOT AVAILABLE
Flammability	COMBUSTIBLE
Upper Explosion Limit	NOT AVAILABLE
Lower Explosion Limit	NOT AVAILABLE
Vapour Pressure	NOT AVAILABLE
Vapour Density	NOT AVAILABLE
Solubility (water)	INSOLUBLE
Partition Coefficient	NOT AVAILABLE
Autoignition Temperature	NOT AVAILABLE
Decomposition Temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive Properties	NOT AVAILABLE
Oxidising Properties	NOT AVAILABLE
Specific Gravity	1.44

9.2 Other information

% Volatiles	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information in sections 10.2 to 10.6.

10.2 Chemical stability

No information provided.

10.3 Possibility of hazardous reactions

No information provided.

10.4 Conditions to avoid

No information provided.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), alkalis (e.g. sodium hydroxide), heat and ignition sources.

10.6 Hazardous decomposition products

May evolve toxic gases (carbon oxides, dibenzofurans, dioxins, hydrogen chloride, phenols, chlorides, hydrocarbons) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Health hazard summary	Toxic. This product has the potential to cause adverse health effects. Use safe work practices to avoid eye or skin contact and inhalation. PCBs are classified as probably carcinogenic to humans (IARC Group 2A). Chronic exposure may result in liver and skin damage. Chronic exposure may result in birth defects. Cumulative poison.
Eye	Irritant. Contact may result in irritation, lacrimation, pain and redness.
Inhalation	Toxic. Over exposure may result in irritation of the nose and throat, coughing, loss of appetite, nausea and vomiting. Chronic exposure may result in liver damage. PCBs are classified as probably carcinogenic to humans (IARC Group 2A).
Skin	Toxic - irritant. Contact may result in irritation, redness, rash, brown-grey pigmentation and chloracne. May be absorbed through skin with harmful effects.
Ingestion	Toxic. Ingestion may result in nausea, vomiting, abdominal pain, diarrhoea, dizziness and drowsiness. Chronic exposure may result in liver damage and skin pigmentation.
Toxicity data	POLYCHLORINATED BIPHENYLS (PCB) (1336-36-3) LD50 (Ingestion): 1900 mg/kg (mouse) LDLo (Skin): 1148 mg/kg/38 days intermittently (rabbit) TCLo (Inhalation): 0.93 mg/m³/8 hours/20 weeks intermittently (rat) TDLo (Ingestion): 400 mg/kg (female rat) TDLo (Intraperitoneal): 700 mg/kg (female rat)

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Results of PBT and vPvB assessment

No information provided.

12.6 Other adverse effects

Product name **POLYCHLORINATED BIPHENYLS (PCB)**

Current evidence suggests that the major source of Polychlorinated biphenyls (PCBs) released to the environment is an environmental cycling process of PCBs previously introduced into the environment. This cycling process involves volatilisation from ground surfaces (water, soil) into the atmosphere with subsequent removal from the atmosphere via wet/dry deposition and then revolatilisation. Monochlorinated biphenyls, dichlorinated biphenyls and trichlorinated biphenyls biodegrade relatively rapidly, tetrachlorinated biphenyls biodegrade slowly, & higher chlorinated biphenyls are resistant to biodegradation.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal PCBs may only be disposed of by authorised methods or organisations. Contact your state EPA or the manufacturer for additional information.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

	Land Transport (ADG)	Sea Transport (IMDG/IMO)	Air Transport (IATA/ICAO)
14.1 UN number	2315	-	-
14.2 UN proper shipping name	POLYCHLORINATED BIPHENYLS	-	-
14.3 Transport hazard classes			
DG Class	9	-	-
Subsidiary risk(s)	None Allocated	-	-
14.4 Packing group	II	-	-
14.5 Environmental hazards		None Allocated	
14.6 Special precautions for user			
Hazchem Code	2X		

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications N - Dangerous for the environment
Xn - Harmful

Risk phrases	R33:	Danger of cumulative effects.
	R50/53:	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety phrases	S2:	Keep out of reach of children.
	S35:	This material and its container must be disposed of in a safe way.
	S60:	This material and its container must be disposed of as hazardous waste.
	S61:	Avoid release to the environment. Refer to special instructions/safety data sheets.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

15.2 Chemical safety assessment

No information provided.

Product name **POLYCHLORINATED BIPHENYLS (PCB)**

16. OTHER INFORMATION

Additional information

This ChemAlert report is for informational purposes in case of accidental exposure to Polychloinated Biphenyls (PCBs)

IARC - GROUP 2A - PROBABLE HUMAN CARCINOGEN. This product contains an ingredient which has demonstrated sufficient evidence to have been classified by the International Agency for Research into Cancer (IARC) as a probable human carcinogen and whose use should be strictly monitored and controlled.

POLYCHLORINATED BIPHENYLS: The use of PCBs has been banned in industry for some time, however problems may occur due to their use in the past. PCBs have been reported to be present within construction jointing sealants and capacitors. Special precautions are required when handling materials which may contain PCBs. Please consult Risk Management Technologies for further information.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

COLOUR RATING SYSTEM: RMT has assigned all ChemAlert reports a colour rating of Green, Amber or Red for the sole purpose of providing users with a quick and easy means of determining the hazardous nature of a product. Safe handling recommendations are provided in all ChemAlert reports so as to clearly identify how users can control the hazards and thereby reduce the risk (or likelihood) of adverse effects. As a general guideline, a Green colour rating indicates a low hazard, an Amber colour rating indicates a moderate hazard and a Red colour rating indicates a high hazard.

While all due care has been taken by RMT in the preparation of the Colour Rating System, it is intended as a guide only and RMT does not provide any warranty in relation to the accuracy of the Colour Rating System. As far as is lawfully possible, RMT accepts no liability or responsibility whatsoever for the actions or omissions of any person in reliance on the Colour Rating System.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value

Product name **POLYCHLORINATED BIPHENYLS (PCB)**

TWA Time Weighted Average

Report Status

This ChemAlert report has been independently compiled by RMT's scientific department utilising the original Safety Data Sheet ('SDS') for the product provided to RMT by the manufacturer. The information is based on the latest chemical and toxicological research and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. It is an independent collation by RMT of information obtained from the original SDS for this product. Its content has not been authorised or verified by the manufacturer / distributor of the chemical to which it relates.

This ChemAlert report does not constitute the manufacturer's original SDS and is not intended to be a replacement for same. It is provided to subscribers of ChemAlert as a reference tool only, is not all-inclusive and does not represent any guarantee as to the properties of the product. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer.

While RMT has taken all due care to include accurate and up-to-date information in this ChemAlert report, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this ChemAlert report.

Prepared By

Risk Management Technologies
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Western Australia 6005
Phone: +61 8 9322 1711
Fax: +61 8 9322 1794
Email: info@rmt.com.au
Web: www.rmt.com.au

Last Reviewed: 05 Feb 2013
Date Printed: 27 Apr 2015
Based on SDS dated: 05 Feb 2013

End of Report

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Attachment C

Personal Protective Equipment Activity Record

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Personal Protective Equipment Activity Record

Site: Former Adirondack Steel Site, 191 Watervliet-Shaker Rd, Colonie, New York		
Weather Condition:		**On-site Hours: From**
		To
Changes in Personal Protective Equipment Levels[(a)]	**Work Operations**	**Reasons for Change**
Site Health and Safety Plan Violations	**Corrective Action Specified**	**Corrective Action Taken (yes/no)**
Observations and Comments:		
Completed by: _____ **Site Health and Safety Officer** **Date**		
(a) Only the Site Health and Safety Officer may change personal protective equipment levels, using only criteria specified in the Health and Safety Plan.		

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Attachment D

Site Entry and Exit Log

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Site Entry and Exit Log

Site: Former Adirondack Steel Site, 191 Watervliet-Shaker Rd, Colonie, New York				
Name	**Date**	**Time of Entry**	**Time of Exit**	**Initials**

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Attachment E

Emergency Telephone Number and Hospital Directions

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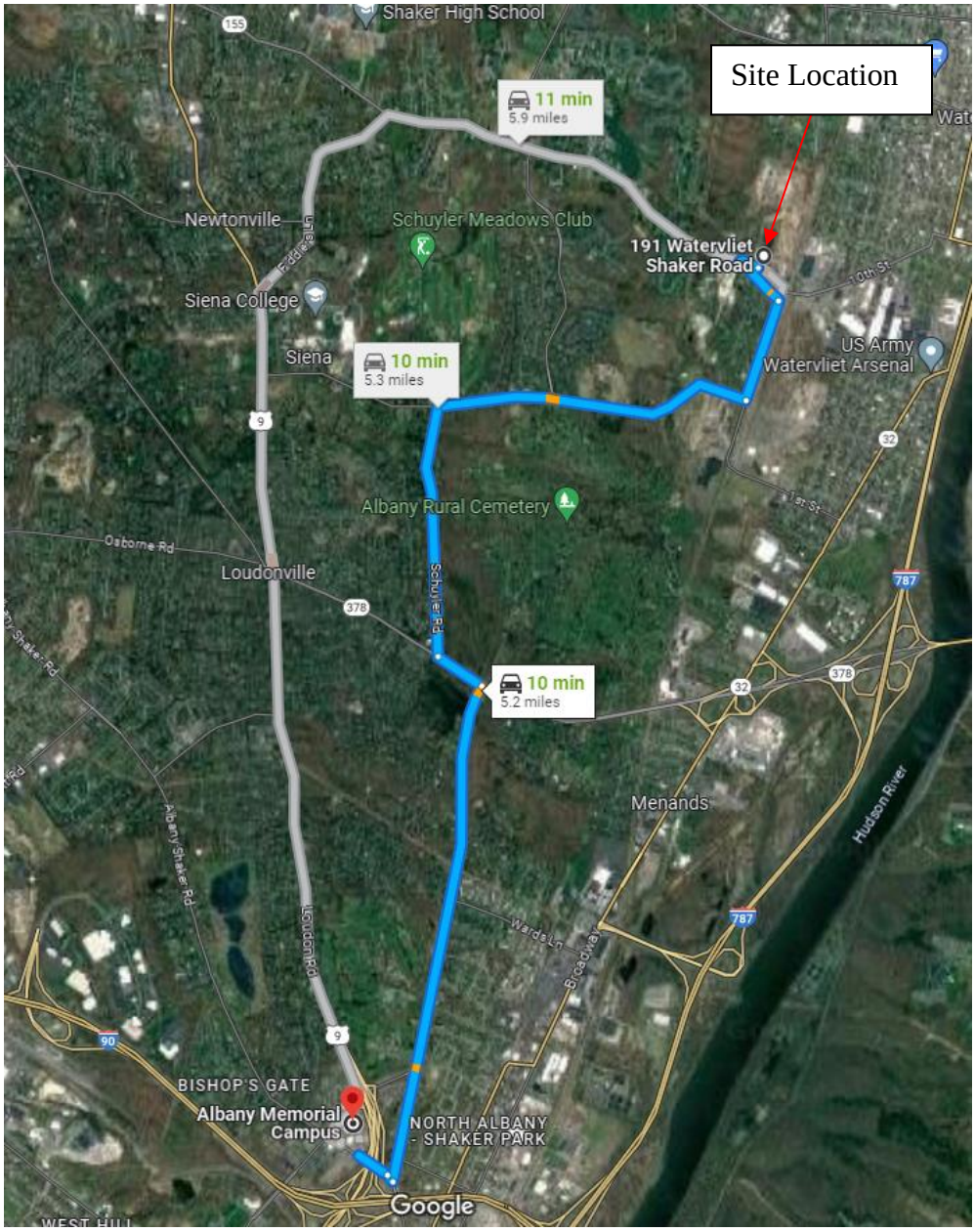
Emergency Telephone Numbers and Hospital Directions

Site: Former Adirondack Steel Site, 191 Watervliet-Shaker Rd, Colonie, New York	
Police: Colonie Police Department	9-1-1
Fire: Colonie Fire Department	9-1-1
Ambulance: Colonie EMS	9-1-1 or (518) 782-2645
Hospital: Albany Memorial Hospital	(518) 471-3221
Upstate New York Poison Center: *750 East Adams Street, Syracuse, New York 13210*	(315) 464-7078 800-222-1222 (emergency)
Directions to Albany Memorial Hospital, 600 Northern Boulevard, Albany, NY 12204: Starting at 191 Watervliet-Shaker Road, travel northwest on Lincoln Avenue. Turn left onto NY-155E then take an immediate right back onto Lincoln Avenue. Stay right on Lincoln Avenue and follow for another 0.6 miles. Turn right onto Spring Street and follow for 1.2 miles, then make a left on Schuyler Road and follow for 1 mile. Turn left onto NY-378E is followed by a quick right onto NY-377 S / Van Rensselaer Boulevard. After 1.9 miles, turn right onto Loudonville / Shaker Road and follow 0.1 miles to Albany Memorial Hospital. Travel time is approximately 10 minutes.	

Map to Hospital

Directions to Albany Memorial Hospital:
Starting at 191 Watervliet-Shaker Road, travel northwest on Lincoln Avenue. Turn left onto NY-155E then take an immediate right back onto Lincoln Avenue. Stay right on Lincoln Avenue and follow for another 0.6 miles. Turn right onto Spring Street and follow for 1.2 miles, then make a left on Schuyler Road and follow for 1 mile. Turn left onto NY-378E is followed by a quick right onto NY-377 S / Van Rensselaer Boulevard. After 1.9 miles, turn right onto Loudonville / Shaker Road and follow 0.1 miles to Albany Memorial Hospital. Travel time is approximately 10 minutes.



Attachment F

Accident/Loss Report

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ACCIDENT/LOSS REPORT

THIS REPORT MUST BE COMPLETED BY THE INJURED EMPLOYEE OR SUPERVISOR AND FAXED TO EA CORPORATE HUMAN RESOURCES WITHIN 24 HOURS OF ANY ACCIDENT. THE FAX NUMBER IS **(410) 771-1780**.

NOTE: WHENEVER AN EMPLOYEE IS SENT FOR MEDICAL TREATMENT FOR A WORK RELATED INJURY OR ILLNESS, PAGE 4 OF THIS REPORT MUST ACCOMPANY THAT INDIVIDUAL TO ENSURE THAT ALL INVOICES/BILLS/CORRESPONDENCE ARE SENT TO HUMAN RESOURCES FOR TIMELY RESPONSE.

A. DEMOGRAPHIC INFORMATION:

NAME OF INJURED EMPLOYEE:_____
HOME ADDRESS:_____
HOME PHONE:_____ DATE OF BIRTH:
AGE:_____ SEX: M F
MARITAL STATUS:_____ NAME OF SPOUSE (if applicable):_____
SOCIAL SECURITY NUMBER:_____ DATE OF HIRE:_____
NUMBER OF DEPENDENTS:_____
EMPLOYEES JOB TITLE:_____
DEPT. REGULARLY EMPLOYED:_____
WAS THE EMPLOYEE INJURED ON THE JOB: Y N
PRIMARY LANGUAGE OF THE EMPLOYEE:_____

B. ACCIDENT/INCIDENT INFORMATION:

DATE OF ACCIDENT:_____ TIME OF ACCIDENT:_____
REPORTED TO WHOM:_____ NAME OF SUPERVISOR:_____
EXACT LOCATION WHERE ACCIDENT OCCURRED (including street, city, state and County): _____
_____
_____

EXPLAIN WHAT HAPPENED (include what the employee was doing at the time of the accident and how the accident occurred):_____
_____
_____
_____
_____

DESCRIBE THE INJURY AND THE SPECIFIC PART OF THE BODY AFFECTED (i.e., laceration, right hand, third finger):_____
_____
_____

OBJECT OR SUBSTANCE THAT DIRECTLY INJURED EMPLOYEE:_____

_____

NUMBER OF DAYS AND HOURS EMPLOYEE USUALLY WORKS PER WEEK:_____
IS THE EMPLOYEE EXPECTED TO LOSE AT LEAST ONE FULL DAY OF WORK?_____
DOES THE EMPLOYEE HAVE A PREVIOUS CLAIM? Y N If yes, STATUS Open Closed
WAS THE EMPLOYEE ASSIGNED TO RESTRICTED DUTY?_____

C. ACCIDENT INVESTIGATION INFORMATION

WAS SAFETY EQUIPMENT PROVIDED? Y N If yes, was it used? Y N
WAS AN UNSAFE ACT BEING FORMED ? Y N If yes, describe_____
WAS A MACHINE PART INVOLVED? Y N If yes, describe_____
WAS THE MACHINE PART DEFECTIVE? Y N If yes, in what way_____
WAS A 3RD PARTY RESPONSIBLE FOR THE ACCIDENT/INCIDENT? Y N
If yes, list name, address, and phone number_____

_____

WAS THE ACCIDENT/INCIDENT WITNESSED? Y N
If yes, list name, address, and phone number:_____

_____

D. PROVIDER INFORMATION

WAS FIRST AID GIVEN ONSITE? Y N
If yes, what type of medical treatment was given_____
PHYSICIAN INFORMATION (if medical attention was administered)
NAME:_____
ADDRESS (include city, state, and zip):_____
PHONE:_____

HOSPITAL ADDRESS (include name, address, city, state, zip code, and phone)

_____

_____

WAS THE EMPLOYEE HOSPITALIZED? Y N If yes, on what date_____
WAS THE EMPLOYEE TREATED AS AN OUTPATIENT, RECEIVE EMERGENCY TREATMENT OR AMBULANCE SERVICE?_____

PLEASE ATTACH THE PHYSICIANS WRITTEN RETURN TO WORK SLIP

NOTE: A PHYSICIAN'S RETURN TO WORK SLIP IS REQUIRED PRIOR TO ALLOWING THE WORKER TO RETURN TO WORK.

E. AUTOMOBILE ACCIDENT INFORMATION (complete if applicable)

AUTHORITY CONTACTED AND REPORT #_____
EA EMPLOYEE VEHICLE YEAR, MAKE AND MODEL_____

V.I.N. _____ PLATE/TAG# _____
OWNER'S NAME AND ADDRESS: _____

_____
DRIVER'S NAME AND ADDRESS: _____

_____
RELATION TO INSURED: _____ DRIVER'S LICENSE # _____
DESCRIBE DAMAGE TO YOUR PROPERTY: _____

_____

_____
DESCRIBE DAMAGE TO OTHER VEHICLE OR PROPERTY: _____

_____

_____
OTHER DRIVER'S NAME AND ADDRESS: _____

_____
OTHER DRIVER'S PHONE: _____
OTHER DRIVER'S INSURANCE COMPANY AND PHONE: _____

_____
LOCATION OF OTHER VEHICLE: _____
NAME, ADDRESS, AND PHONE OF OTHER INJURED PARTIES: _____

_____

_____
WITNESSES

NAME: _____ PHONE: _____
ADDRESS: _____
STATEMENT: _____

_____
SIGNATURE: _____

NAME: _____ PHONE: _____
ADDRESS: _____
STATEMENT: _____

_____
SIGNATURE: _____

F. ACKNOWLEDGEMENT

NAME OF SUPERVISOR: _____
DATE OF THIS REPORT: _____ REPORT PREPARED BY: _____

I have read this report and the contents as to how the accident/loss occurred are accurate to the best of my knowledge.

Signature: _____ Date: _____
Injured Employee

I am seeking medical treatment for a work related injury/illness.

Please forward all bills/invoices/correspondence to:

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC
225 SCHILLING CIRCLE
SUITE 400
HUNT VALLEY, MD 21031

ATTENTION: Michele Bailey
HUMAN RESOURCES

(410) 584-7000

Appendix E

Site Management Forms

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SITE-WIDE INSPECTION **Date: _____**

Adirondack Steel Site (401036)	Temperature: (°F)		(am)		(pm)
Site Owner: _____ Current Site Use: _____	Wind Direction/Speed:		(am)		(pm)
	Weather:	(am) (pm)			
	Arrival Time		(am)		
	Departure Time		(pm)		
	Inspection conducted by:				

Site Appearance and Condition

Is there evidence of vandalism or unauthorized entry?

Is there evidence of erosion or digging?

Is there evidence of illegal disposal? Is there uncontrolled vegetative growth?

Additional Comments:

SSD System

Are there any visible cracks in the concrete surface? Is there damage to the concrete surface?

Is there evidence of uneven settling or ponding of water?

Additional Comments:

Gas House Creek Corridor

Site Appearance: Is there evidence of vandalism? Is there any damage to the fence? Are there any signs of erosion, digging, or disposal? Is there evidence of unauthorized access (e.g. ATV tire tracks)

Vegetation and Wildlife: Are there any signs of inadequate coverage in the grassy areas? Does any of the vegetation look stressed or withered? Is there any evidence of invasive species? Are there any signs of ground-burrowing animals, insects, or nests?

Drainage Pipes: Is there any evidence of damage to drainage pipes or outfall areas? Is there any debris, buildup, or obstructions in the drainage pipes? Is there any overgrown or unwanted vegetation in the outfall areas? Are there any signs of erosion around the outfall areas?

Additional Comments:

OU-2 Drainage Channel Corridor

Site Appearance: Are there any signs of erosion or digging in the bank along the OU-2 drainage channel? Is the vegetation on the bank stressed or withered?

Additional Comments:

OU-2 & OU-3 (only after major storm event)

Inspection: conduct a visual inspection of areas inundated by major storm surge. If sediment been deposited on the floodplain, document extents. Are there any areas of erosion or scour? Have any bulkheads been compromised?

Additional comments:

Summary of Green Remediation Metrics for Site Management

Site Name: _____ Site Code: _____
Address: _____ City: _____
State: _____ Zip Code: _____ County: _____

Initial Report Period (Start Date of period covered by the Initial Report submittal)
Start Date: _____

Current Reporting Period
Reporting Period From: _____ To: _____

Contact Information
Preparer's Name: _____ Phone No.: _____
Preparer's Affiliation: _____

I. Energy Usage: Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

	Current Reporting Period	**Total to Date**
Fuel Type 1 (e.g., natural gas (cf))		
Fuel Type 2 (e.g., fuel oil, propane (gals))		
Electricity (kWh)		
Of that Electric usage, provide quantity:		
Derived from renewable sources (e.g., solar, wind)		
Other energy sources (e.g., geothermal, solar thermal (Btu))		

Provide a description of all energy usage reduction programs for the site in the space provided on Page 3.

II. Solid Waste Generation: Quantify the management of solid waste generated on-site.

	Current Reporting Period (tons)	**Total to Date (tons)**
Total waste generated on-site		
OM&M generated waste		
Of that total amount, provide quantity:		
Transported off-site to landfills		
Transported off-site to other disposal facilities		
Transported off-site for recycling/reuse		
Reused on-site		

Provide a description of any implemented waste reduction programs for the site in the space provided on Page 3.

III. Transportation/Shipping: Quantify the distances travelled for delivery of supplies, shipping of laboratory samples, and the removal of waste.

	Current Reporting Period (miles)	**Total to Date (miles)**
Standby Engineer/Contractor		
Laboratory Courier/Delivery Service		
Waste Removal/Hauling		

Provide a description of all mileage reduction programs for the site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the site.

IV. Water Usage: Quantify the volume of water used on-site from various sources.

	Current Reporting Period (gallons)	**Total to Date (gallons)**
Total quantity of water used on-site		
Of that total amount, provide quantity:		
Public potable water supply usage		
Surface water usage		
On-site groundwater usage		
Collected or diverted storm water usage		

Provide a description of any implemented water consumption reduction programs for the site in the space provided on Page 3.

V. Land Use and Ecosystems: Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e., Green Infrastructure).

	Current Reporting Period (acres)	**Total to Date (acres)**
Land disturbed		
Land restored		

Provide a description of any implemented land restoration/green infrastructure programs for the site in the space provided on Page 3.

Description of green remediation programs reported above (Attach additional sheets if needed)
Energy Usage:
Waste Generation:
Transportation/Shipping:
Water usage:
Land Use and Ecosystems:
Other:

CERTIFICATION BY CONTRACTOR
I, _____ (**Name**) do hereby certify that I am _____ (**Title**) of the Company/Corporation herein referenced and contractor for the work described in the foregoing application for payment. According to my knowledge and belief, all items and amounts shown on the face of this application for payment are correct, all work has been performed and/or materials supplied, the foregoing is a true and correct statement of the contract account up to and including that last day of the period covered by this application. _____ **Date** **Contractor**

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Appendix F

Extreme Precipitation Tables

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Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point

Smoothing	Yes
State	New York
Location	Albany, New York, United States
Latitude	42.724 degrees North
Longitude	73.716 degrees West
Elevation	10 feet
Date/Time	Wed Mar 01 2023 14:17:46 GMT-0500 (Eastern Standard Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.54	0.70	0.88	1.09	**1yr**	0.76	0.95	1.25	1.52	1.85	2.24	2.52	**1yr**	1.98	2.42	2.84	3.40	3.92	**1yr**
2yr	0.34	0.53	0.65	0.86	1.08	1.34	**2yr**	0.94	1.20	1.53	1.84	2.20	2.62	2.95	**2yr**	2.32	2.83	3.30	3.91	4.46	**2yr**
5yr	0.40	0.63	0.79	1.06	1.35	1.68	**5yr**	1.16	1.46	1.91	2.30	2.74	3.22	3.64	**5yr**	2.85	3.50	4.06	4.71	5.35	**5yr**
10yr	0.45	0.71	0.90	1.22	1.59	1.99	**10yr**	1.37	1.70	2.27	2.73	3.23	3.77	4.28	**10yr**	3.34	4.11	4.76	5.42	6.15	**10yr**
25yr	0.54	0.85	1.08	1.49	1.98	2.49	**25yr**	1.71	2.08	2.85	3.41	4.01	4.64	5.30	**25yr**	4.11	5.09	5.87	6.53	7.38	**25yr**
50yr	0.60	0.96	1.24	1.73	2.34	2.96	**50yr**	2.02	2.42	3.39	4.05	4.73	5.44	6.23	**50yr**	4.82	5.99	6.89	7.52	8.49	**50yr**
100yr	0.69	1.11	1.43	2.03	2.76	3.51	**100yr**	2.38	2.82	4.02	4.79	5.58	6.39	7.33	**100yr**	5.65	7.05	8.08	8.67	9.76	**100yr**
200yr	0.78	1.27	1.65	2.37	3.27	4.17	**200yr**	2.82	3.29	4.78	5.68	6.59	7.50	8.64	**200yr**	6.64	8.31	9.49	10.00	11.23	**200yr**
500yr	0.93	1.54	2.00	2.91	4.08	5.23	**500yr**	3.52	4.04	5.99	7.11	8.20	9.28	10.73	**500yr**	8.21	10.32	11.75	12.08	13.54	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.20	0.31	0.38	0.51	0.62	0.84	**1yr**	0.54	0.83	0.90	1.12	1.40	1.95	2.08	**1yr**	1.72	2.00	2.32	3.16	3.59	**1yr**
2yr	0.33	0.51	0.63	0.85	1.05	1.18	**2yr**	0.90	1.15	1.31	1.69	2.16	2.58	2.86	**2yr**	2.28	2.75	3.24	3.84	4.35	**2yr**
5yr	0.37	0.57	0.71	0.98	1.24	1.37	**5yr**	1.07	1.34	1.51	1.95	2.48	3.07	3.46	**5yr**	2.72	3.33	3.84	4.49	5.11	**5yr**
10yr	0.41	0.62	0.77	1.08	1.40	1.53	**10yr**	1.21	1.50	1.68	2.15	2.82	3.51	3.93	**10yr**	3.11	3.78	4.37	5.05	5.73	**10yr**
25yr	0.46	0.70	0.87	1.24	1.63	1.78	**25yr**	1.41	1.74	1.92	2.46	3.25	4.17	4.68	**25yr**	3.69	4.50	5.20	5.89	6.64	**25yr**
50yr	0.50	0.76	0.95	1.36	1.83	2.00	**50yr**	1.58	1.95	2.13	2.73	3.59	4.76	5.35	**50yr**	4.22	5.14	5.93	6.62	7.43	**50yr**
100yr	0.55	0.83	1.04	1.51	2.07	2.25	**100yr**	1.78	2.20	2.37	3.03	3.97	5.44	6.12	**100yr**	4.81	5.88	6.78	7.47	8.34	**100yr**
200yr	0.61	0.91	1.16	1.67	2.33	2.54	**200yr**	2.01	2.49	2.64	3.38	4.39	6.23	7.00	**200yr**	5.52	6.73	7.75	8.42	9.35	**200yr**
500yr	0.70	1.04	1.34	1.94	2.77	3.00	**500yr**	2.39	2.93	3.03	3.90	5.01	7.48	8.41	**500yr**	6.62	8.08	9.29	9.89	10.90	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	

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Appendix G

Climate Resiliency Report

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Climate Resiliency Assessment Report
Former Adirondack Steel Site (401039)
Colonie, New York

Prepared for

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7017

Prepared by

EA Engineering, P.C. and Its Affiliate
EA Science and Technology
269 West Jefferson Street
Syracuse, New York 13202
(315) 431-4610

April 2020
Version: DRAFT
EA Project No. 1490732

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	Degrees Fahrenheit
EA	EA Engineering, P.C. and Its Affiliate EA Science and Technology
EPA	U. S. Environmental Protection Agency
ft	Foot (feet)
in.	Inch(es)
No.	Number
NYSDEC	New York State Department of Environmental Conservation
OU	Operable unit
PCB	Polychlorinated biphenyl
ppm	Part(s) per million
RAO	Remedial action objectives
RCP	Representative concentration pathway
ROD	Record of Decision

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ES. EXECUTIVE SUMMARY

EA Engineering, P.C. and its affiliate EA Science and Technology, under Contract to the New York State Department of Environmental Conservation completed a Climate Resiliency Assessment for the Former Adirondack Steel Site (New York State Department of Environmental Conservation Site Number 401039) located in Colonie, Albany County, New York. The Climate Resiliency Assessment includes an assessment of projected climate change impacts, associated vulnerabilities, and both implemented and potential adaptation measures that could be undertaken now or in the future. Due to the ever-growing understanding of climate change, the information provided within the report should be revisited as climate change projections are refined over time.

Adirondack Steel Casting Co. Inc. produced steel casting for various industrial customers. The site contained transformers associated with the steel mill that were the source of the known polychlorinated biphenyl (PCB) contamination at the site. A variety of tenants also occupied the property while it was known as the Adirondack Industrial Park. PCBs are understood to have reached soil at the site through routine maintenance of transformers, poor handling of used fluids, and/or unauthorized scavenging. The property contains eight dilapidated, unoccupied buildings (two of which are on the Class 2 site list), foundation slabs of the original production buildings, deteriorating access roads, and emerging tree growth. The northern end of the property also contains a 9-acre landfill that received spent foundry and core sands; furnace slag and refractories; and dust from collector furnace and slag.

The site has been the subject of remedial investigations since 1979, and has been broken up into three operable units (OUs):

- OU-1 is comprised of the soil in the vicinity of the North Power Station and South Power Station where electrical equipment containing PCBs and volatile organic compounds was maintained or damaged resulting in releases of fluid to the ground surface. Remedial work was completed at OU-1 in 2010 and is not discussed in greater detail in this report.

- OU-2 is comprised of the offsite drainage ditch that runs along the eastern and northern boundary of the Former Adirondack Steel property. The ditch also borders the west side of the Canadian Pacific Railway's right-of-way. The drainage ditch is a concrete and rip-rap lined swale. Sediment and soil within OU-2 is contaminated with PCBs originally released from OU-1.

- OU-3 is comprised of the onsite drainage ditch (Gas House Creek) and adjacent uplands consisting primarily of fill material and associated surface debris piles. It contains portions of the site with PCB contaminated soil not included in OU-1.

To address PCB contamination within OU-2 and OU-3, a remedial action will be conducted in four phases, where each phase addresses contamination in four sections of OU-3, Gas House Creek (OU-2 and OU-3) and the OU-2 drainage ditch. The goal of the OU-2 remedial action is to excavate and dispose of offsite PCB-contaminated soil and sediment with PCB concentrations exceeding 1 parts per million (ppm), to the extent feasible due to the proximity of the adjacent

Canadian Pacific Railway. The proximity of the adjacent railroad and the measures needed to protect the integrity of the rail and/or rail structures make it infeasible to excavate PCB-impacted material greater than 2 feet below ground surface without excavation support. Therefore, several different remedial/management strategies will be implemented to appropriately manage PCB impacts for future occupants.

In OU-3, contaminated soil, sediment, and fill from the OU will be excavated and disposed of offsite. This includes onsite soil, which exceeds 1 ppm of PCBs in the top foot and 10 ppm of PCBs below the top foot and onsite drainageway sediment which exceeds 1 ppm of PCBs. Onsite debris piles will also be removed and disposed of offsite. Backfill materials meeting the standards set forth in 40 Code of Federal Regulations § 761.61 for low-occupancy will be used for site restoration in both OU-2 and OU-3.

Climate change impacts such as increases in temperatures and frequency and severity of precipitation events are included in site remediation and long-term management to ensure the site remains stable in the future. By 2100, projected impacts in Colonie include increases in average temperature by 6.1 to 11.4 degrees Fahrenheit and in precipitation by 8 inches (in.) per year. Increased precipitation and heavy rainfall events may cause localized flood related damage to the Former Adirondack Steel site.

In general, remedies at contaminated sites may be vulnerable to the implications of climate change and extreme weather events. The federal Superfund program developed an approach that raises awareness of these vulnerabilities and applies climate change and weather science as a standard operating practice in cleanup projects. The approach involves periodic screening of Superfund remedy vulnerabilities, prioritizing the Superfund program's steps to adapt to a changing climate and identifying adaptation measures to assure climate resilience of Superfund sites.

There are several key definitions which are important to consider when addressing climate resilience and adaptation:

- ***Vulnerability:*** The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity.

- ***Resilience:*** A capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.

- ***Adaptation:*** Adjustment or preparation of natural or human systems to a new or changing environment, which moderates harm or exploits beneficial opportunities.

- ***Adaptive Capacity:*** The ability of a system to adjust to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities or to cope with the consequences.

As part of the resiliency assessment, an adaptation plan has been created, which will be integrated with the Site Management Plan. This adaptation plan incorporates strategies and measures already implemented or planned for the site and defines impact thresholds and monitoring for exceedance of these thresholds. If a set threshold is surpassed, appropriate action will be taken to ensure the remedy remains in place and is effective. A new set of thresholds and plan may be created to decrease risks associated with climate change impacts.

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1. INTRODUCTION AND PROJECT OVERVIEW

This report provides an assessment of the projected climate change impacts on the remedies implemented to address polychlorinated biphenyl (PCB), benzo[a]pyrene, dieldrin, and cadmium contamination in soil, sediment, surface water, and fill. These impacts were reviewed to assess possible site vulnerabilities. The report provides a list of adaptation measures, implemented now or that could be implemented in the future, as climate change projections are refined to address any identified vulnerabilities. This resiliency plan along with the site management program will employ a strategic monitoring approach to ensure the effectiveness of the implemented remedies. The remedial program also addresses the goal of the Town of Colonie 2019 Comprehensive Plan Update to consider adaptation strategies to ensure the resiliency of the town's infrastructure in response to a changing climate (Town of Colonie 2019).

This report includes current climate impact projections with the most up-to-date information as of 2020. Due to the ever-growing understanding of climate change, this report can be viewed as a living document, with information to be updated as climate change projection data is refined.

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2. PROJECT SITE CHARACTERIZATION

2.1 PHYSICAL SETTING

The Former Adirondack Steel Site (New York State Department of Environmental Conservation [NYSDEC] Site Number [No.] 401039) is located at191 Watervliet-Shaker Road in the Town of Colonie, Albany County, New York (**Figure 2-1**) and is the location of an abandoned steel mill; the Adirondack Steel Casting Co. Inc. The site is currently a Class 2 site listed on the NYSDEC Registry of Inactive Hazardous Waste Sites and occupies 4.2 acres of the 38.5 former industrial property and includes three operable units (OUs): OU-1 (0.4 acres onsite), OU-2 (2.1 acres offsite), and OU-3 (3.8 acres onsite). These areas are shown in **Figure** 2-2 and described below:

- OU-1 – Comprised of the soil in the vicinity of the North Power Station and South Power Station where electrical equipment containing PCBs and volatile organic compounds was maintained or damaged resulting in releases of fluid to the ground surface. These releases resulted in the contamination of the soil in three locations over a portion of the Former Adirondack Steel Site property. OU-1 includes the former excavation areas near the former power station buildings and foundation slabs and is contained within the boundaries of OU-3. OU-1 remedial work has been completed and a No Further Action Record of Decision (ROD) was signed on 31 March 2010.

  OU-2 – Comprised of the offsite drainage ditch that runs along the eastern and northern boundary of the Former Adirondack Steel Site property. The ditch also borders the west side of the Canadian Pacific Railway's (CP) railroad right-of-way. The drainage ditch is a concrete and rip-rap lined swale. The ditch primarily consists of surface water runoff from the site and a continuation of Gas House Creek from OU-3. Water in the ditch is stagnant at some locations and flows south starting from a grade break located near the southern end of OU-3 (**Figure 2-2**) south of the metal building. Surface water south of the grade break flows south through the drainage ditch offsite near Watervliet-Shaker Road. North of this point, it drains in a northerly direction to where it extends below Barker Lane, to a point near Early Drive where it turns east, crossing below the CP railroad right-of-way. Sediment and soil within OU-2 is contaminated with PCBs originally released from OU-1, with higher detections located at the confluence of the OU-3 and OU-2 drainage ditches.

- OU-3 – Comprised of the onsite drainage ditch (Gas House Creek) and adjacent uplands consisting primarily of fill material and associated surface debris piles located sporadically within the boundaries of OU-1 and OU-3. It contains portions of the site with PCB-contaminated soil not included in OU-1. To the west and north, OU-3 borders a large foundation slab and other unused buildings, and CP railroad to the east. A pre-design investigation was completed at OU-3 in October/November 2016.

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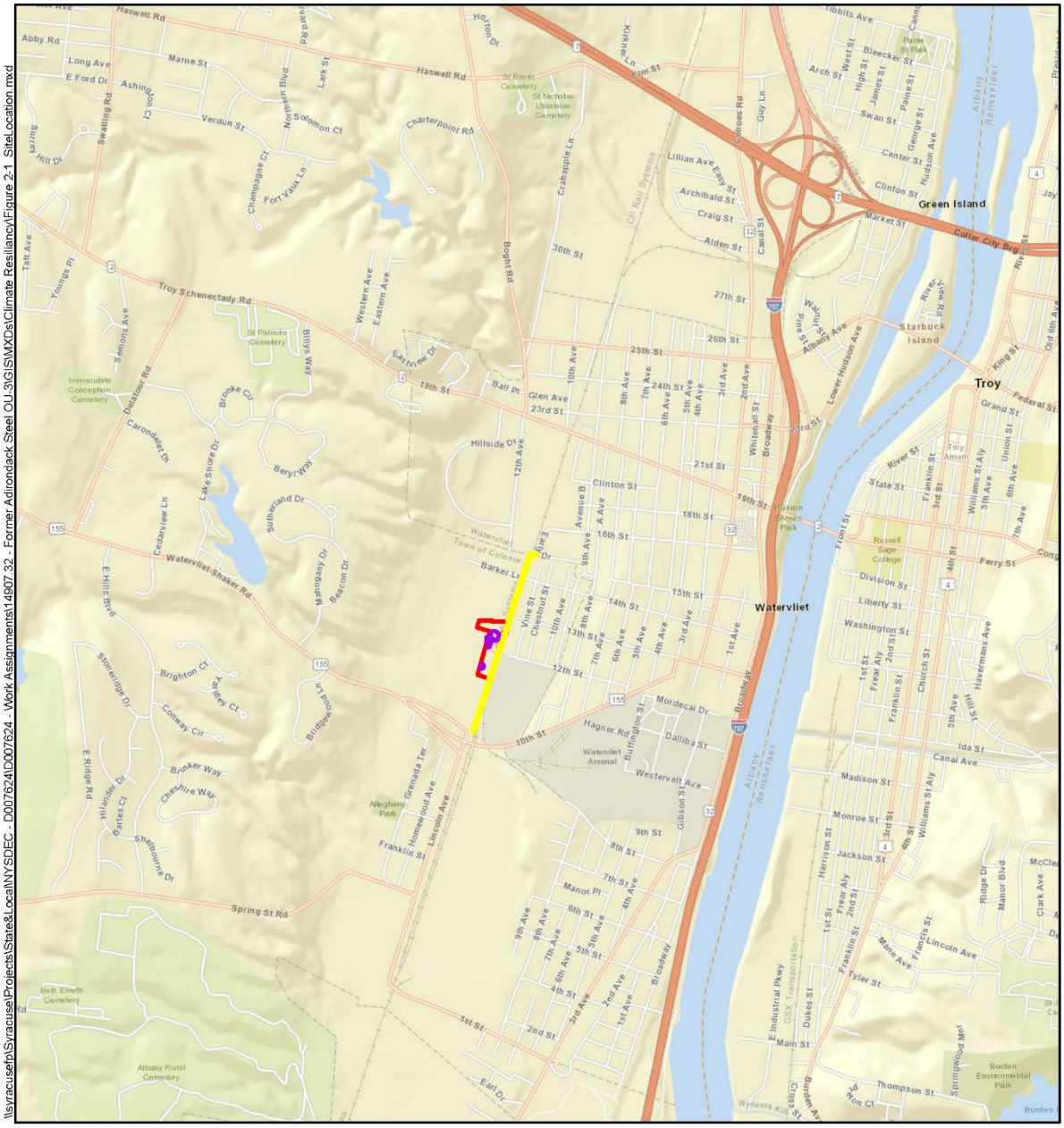
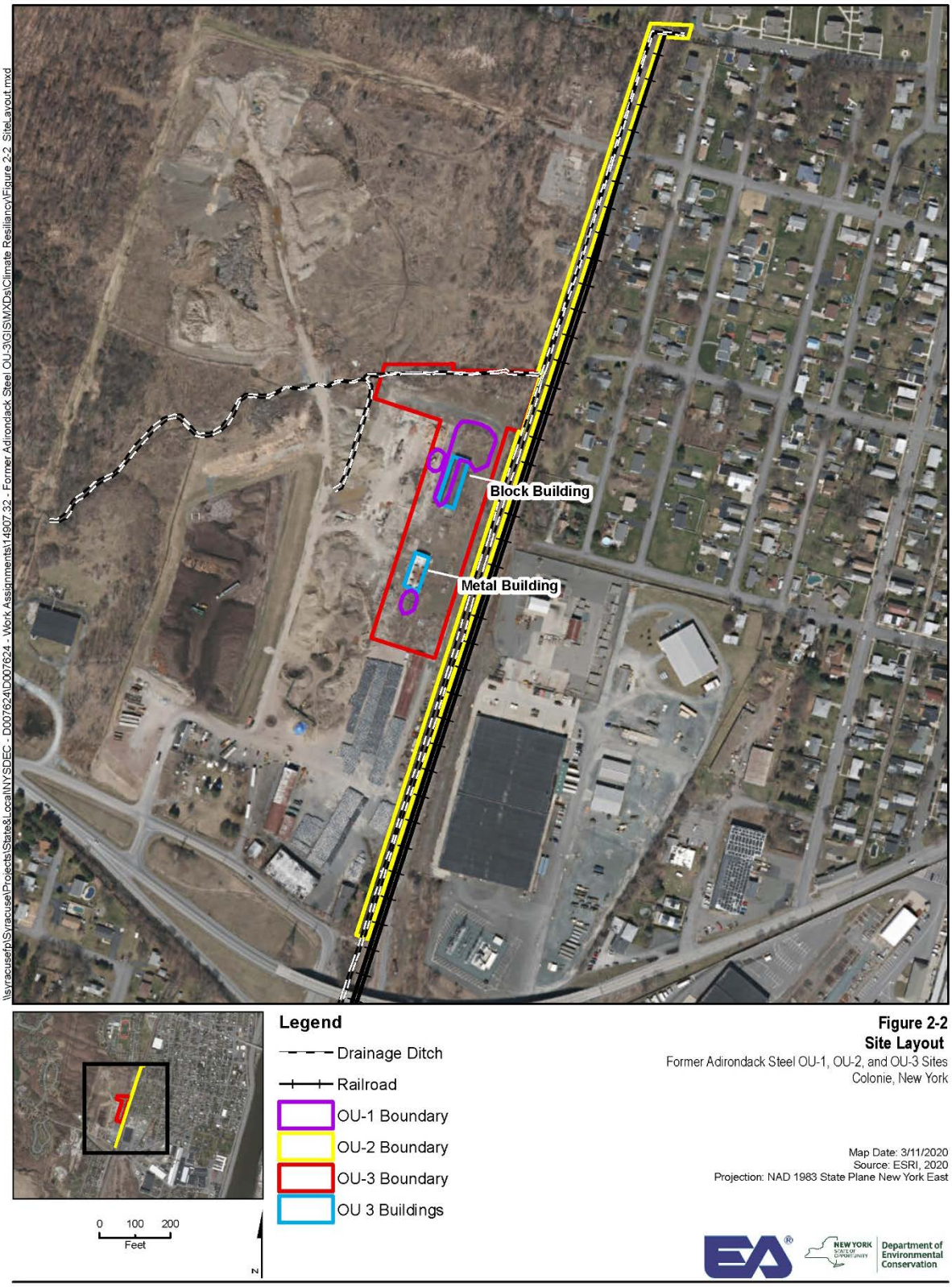

\\syracusefp\Syracuse\Projects\State&Local\NYSDEC - D007624\D007624 - Work Assignments\149907.32 - Former Adirondack Steel OU-3\GIS\MXDs\Climate Resiliancy\Figure 2-1 SiteLocation.mxd
Legend
OU-1 Boundary
OU-2 Approximate Boundary
OU3 Approximate Boundary
0
0.25
0.5
Miles
N
Figure 2-1
Site Location
Former Adirondack Steel OU-1, OU-2, and OU-3 Sites
Colonie, New York
Map Date: 3/11/2020
Source: ESRI, 2020
Projection: NAD 1983 State Plane New York East
Department of Environmental Conservation


\\syracusefp\Syracuse\Projects\State&Local\NYSDEC - D007624\D007624 - Work Assignments\149077.32 - Former Adirondack Steel OU-3\GIS\MXDs\Climate Resiliancy\Figure 2-2 SiteLayout.mxd
Block Building
Metal Building
Legend
Drainage Ditch
Railroad
OU-1 Boundary
OU-2 Boundary
OU-3 Boundary
OU 3 Buildings
0 100 200
Feet
N
Figure 2-2
Site Layout
Former Adirondack Steel OU-1, OU-2, and OU-3 Sites
Colonie, New York
Map Date: 3/11/2020
Source: ESRI, 2020
Projection: NAD 1983 State Plane New York East
NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation

2.1.1 Site Geology

The site lies within the Ridge and Valley physiographic province of the United States. This province is a formerly mountainous area that has been subjected to Pleistocene glaciation. As a result, the rocks underlying much of the province consist of folded and fractured gneisses, schists, slates, quartzites, and marbles that are generally covered with a mantle of glacial drift (Prickle and Yoho 1977). On a more localized scale, the site lies on the Hudson-Mohawk Lowlands province of New York. The general topography of this province resulted from erosion along the outcrop belts of softer rocks. Most of the province has low elevation and relief. It is underlain primarily by Ordovician shales (Broughton et al. 1966).

The closest sizable surface waterbody to the site is the Hudson River, which is located approximately 0.8 miles east of the site.

Overburden and fill across the site varied in thickness from east to west. Fill thickness ranged from 28 feet of overburden/fill in the eastern portion of the site to as little as 0.4 feet in the western portion of the site. Fill materials are typically dark brown or black fine sands. Native materials underlying the fill typically consist of gray or brown clays and fine sands. Bedrock consists of dark gray shale. The top of bedrock elevation varies across the site, ranging from up to 57 feet (ft) above mean seal level on the western side of the main manufacturing area to down to 17 ft above mean seal level on the eastern side of the site (Ecology and Environment Engineering, P.C. [EEEPC] August 2008).

2.1.2 Site Hydrology/Hydrogeology

The surficial aquifers of the Albany area have been classified by Waller (1983) into two systems: the shallow aquifer and the deep aquifer. Recharge is through precipitation. The shallow aquifer is discontinuous and is located in the glacial deposits that form the overburden. Yield and pumping rates are correlated with grain size and degree of compaction.

At the site, a 333-acre offsite watershed west of OU-3 is the source to intermittent flow observed in the OU-3 drainage ditch. The OU-3 drainage ditch flows east toward the railroad tracks combining with the OU-2 drainage ditch. When water from the OU-3 drainage ditch combines with the OU-2 ditch, it changes direction to flow north toward Baker Lane. Water in the OU-2 ditch is stagnant at some locations and flows south starting from a grade break at the southern end of OU-3. Based on monitoring well gauging performed in 2005 and 2006, groundwater ranges from 3 to 7 ft below ground surface (bgs) in OU-3.

The OU-2 drainage ditch is armored with 1–2 ft diameter rip-rap and water flows in a northerly direction to a 24-in. diameter culvert pipe under Barker Lane. From the culvert pipe, water continues to flow north in an open ditch to a point near Early Drive where it is joined by another small drainage ditch, turns east, and crosses beneath the CP railroad ROW in a box culvert (EA Engineering, P.C. and its affiliate EA Science and Technology [EA 2017a]).

Currently, flow in the OU-2 and OU-3 drainage ditches is partially obstructed by vegetation, debris and undersized culvert pipes within the channels. Two culverts on the southern end of OU-2 restrict flow offsite, causing ponding. On the northern end of OU-2, flow to the north is generally less restricted during rain/high flow events when water can flow over debris obstacles in the channel. When water levels are lower, water backs up with pooling created by tires, shopping carts, and other various debris in the channel. In the central and northern portion of OU-2, the majority of the flow is attributable to the OU-3 drainage ditch with some runoff contributions from the vegetated area west of the railroad tracks.

2.2 HISTORY OF OPERATIONS

Adirondack Steel Casting Co. Inc. produced steel casting for various industrial customers. The site contained transformers associated with the steel mill that were the source of the known PCB contamination at the site. A variety of tenants also occupied the property while it was known as the Adirondack Industrial Park. PCBs are understood to have reached soil at the site through routine maintenance of transformers, poor handling of used fluids, and/or unauthorized scavenging. The property contains eight dilapidated, unoccupied buildings (two of which are on the Class 2 site list), foundation slabs of the original production buildings, deteriorating access roads, and emerging tree growth. The northern end of the property also contains a 9-acre landfill that received spent foundry and core sands; furnace slag and refractories; and dust from collector furnace and slag.

2.3 CONTAMINANTS OF CONCERN

At OU-2, the ditch is contaminated with PCBs originally released from OU-1 with higher detections at the confluence of the OU-2 and OU-3 drainage ditches. OU-3 contains portions of the site with PCB-contaminated soil not included in OU-1.

In the OU-3 upland area, PCBs in soil are present to concentrations of 1,590 parts per million (ppm) in surface soil, while subsurface concentrations have been detected up to 12,000 ppm. The majority of PCB contamination in OU-3 located in the northern to northeast region of the site. Benzo[a]pyrene, a polycyclic aromatic hydrocarbon, dieldrin, an organochloride originally produced as an insecticide, and cadmium, a heavy metal, have also been found in OU-3. Non-PCB contaminants are co-located with PCB-contaminated soil and will be remediated by the remedy to address PCBs.

3. REMEDIAL ACTION

3.1 PREVIOUS INVESTIGATIONS AND ACTIVITIES

Early Investigations and Early U.S. Environmental Protection Agency Involvement

Beginning in 1979, operations of the landfill were reviewed due to NYSDEC regulations of solid waste facilities (NUS Corporation [NUS] 1991; EEEPC 2008). Various site investigations were conducted between 1988 and 1991. In 1992, NYSDEC referred the Former Adirondack Steel Site to the U.S. Environmental Protection Agency (EPA) for immediate appropriate action under the Emergency Response Program in order to alleviate surficial PCB contamination, and EPA initiated an Emergency Removal Action in 1993. In September 1994, the EPA issued an Administrative Order to Timmons Corporation, the property owner at the time. The Timmons Corporation responded with the intent to comply and consolidated the contaminated soil in a secure building on the east side of the property. The owner reportedly intended to dispose of the soil offsite in 1998 but failed to do so. Therefore, the EPA completed disposal in 1999.

Remedial Investigations and OU-1 Record of Decision

A remedial investigation was performed for OU-1 and OU-3 between 2005 and 2007 (EEEPC 2008), which concluded that the site is mainly contaminated with PCBs and selected metals, with minor occurrences of volatile organic compounds and semi-volatile organic compounds (EEEPC 2008). Based on the results of the remedial investigation, an interim remedial measure was conducted to excavate PCB-contaminated soil in OU-1 (EEEPC 2010). The ROD associated with this measure stated that No Further Action would take place for OU-1 and imposed institutional controls to prevent excavation/surfacing of subsurface soils.

In 2011, additional PCB delineation sampling was conducted in OU-2. The associated report concluded that PCBs are pervasive throughout the drainage ditches in sediment and subsurface soil samples. In 2014, a supplemental remedial investigation was performed for OU-3 to further delineate PCB contamination and identify data gaps to assist in the evaluation of remedial alternatives in the feasibility study (EEEPC 2014a; EEEPC 2014b).

OU-2 and OU-3 Record of Decisions

The ROD for OU-3 (NYSDEC 2015) calls for the excavation and offsite disposal of PCB-contaminated soil exceeding 1 milligram per kilogram in the top foot of soil and in the onsite drainage ditch, and excavation and offsite disposal of PCB-contaminated soil exceeding 10 milligrams per kilogram below the top foot of soil. The existing buildings and remaining building slab will remain in place, acting as a cover system. An environmental easement will be issued for OU-3 allowing the use and development of the site for commercial or industrial use and requiring the remedial party or site owner to submit periodic certification of institutional controls or engineering controls to the NYSDEC. A Site Management Plan will be created including (but not limited to) the identification of all use restrictions and an excavation plan.

The ROD for OU-2 (NYSDEC 2016) states that, to the extent feasible, as limited by the proximity to an active railroad, soil, sediment, and fill from OU-2 exceeding 1 milligram per kilogram of PCBs will be excavated and transported offsite for disposal. If the NYSDEC's remedial goals cannot be met, a Site Management Plan will be prepared to provide specific requirements for site maintenance, development, and use of OU-2.

Pre-Design Investigation

A pre-design investigation was conducted by EA for OU-3 and OU-2 in 2016–2017, which involved surface soil sampling, sub-surface soil sampling, and sediment sampling. As shown in **Figure 3-1**, EA established and utilized a 25 ft by 25 ft alpha-numerical grid system to enable a systematic evaluation of PCB contamination. Topographic surveys of OU-2 and OU-3 (pre- and post-sampling) and a stormwater flow study were also performed (EA 2017a; EA 2017b).

3.2 DESCRIPTION OF THE PROPOSED REMEDY

EA prepared an overlay of the site and all available sample data, which consists of a 25 ft by 25 ft grid system, which enabled a systematic evaluation of PCB contamination, both in concentration and depth (**Figure 3-1**). Using this grid system, EA was able to identify the location and volume of contaminated media requiring removal or treatment within OU-2 and OU-3.

Generally, the remedial action will be conducted in four phases, where each phase addresses contamination in four sections of OU-3, Gas House Creek (OU-2 and OU-3) and the OU-2 drainage ditch. The proposed remedy is being designed to withstand the high-projection 25-year storm event in the year 2050, which involves installation of a d_{50} of 4.5 in. diameter stone throughout the stream channel. Certain sections of the stream, such as the bank along the railroad, will have stone with larger diameters up to 15 in., to replace existing stone of similar size. The following sections describe remedial design objectives and elements for each OU.

3.2.1 OU-2

The goal of the OU-2 remedial action is to excavate and dispose of offsite PCB-contaminated soil, sediment, and fill with PCB concentrations exceeding 1 ppm, to the extent feasible due to the proximity of the adjacent CP railroad. The proximity of the adjacent railroad and the measures needed to protect the integrity of the rail and/or rail structures make it infeasible to excavate PCB-impacted material greater than 2 ft bgs without excavation support. Therefore, several different remedial/management strategies will be implemented to appropriately manage PCB impacts for future occupants. Grids with PCB-impacted material were categorized into one of four types based on the magnitude of PCB contamination with remedial strategies for each grid type dependent on depth and magnitude of PCB contamination. The four types are as follows:

- Type 0: Grids with either no data (Type 0[a]) or PCB concentrations ≤1 ppm (Type 0[b])
- Type 1: Grids with PCB concentrations >1 and ≤25 ppm
- Type 2: Grids with PCB concentrations >25 and ≤100 ppm
- Type 3: Grids with PCB concentrations >100 ppm.

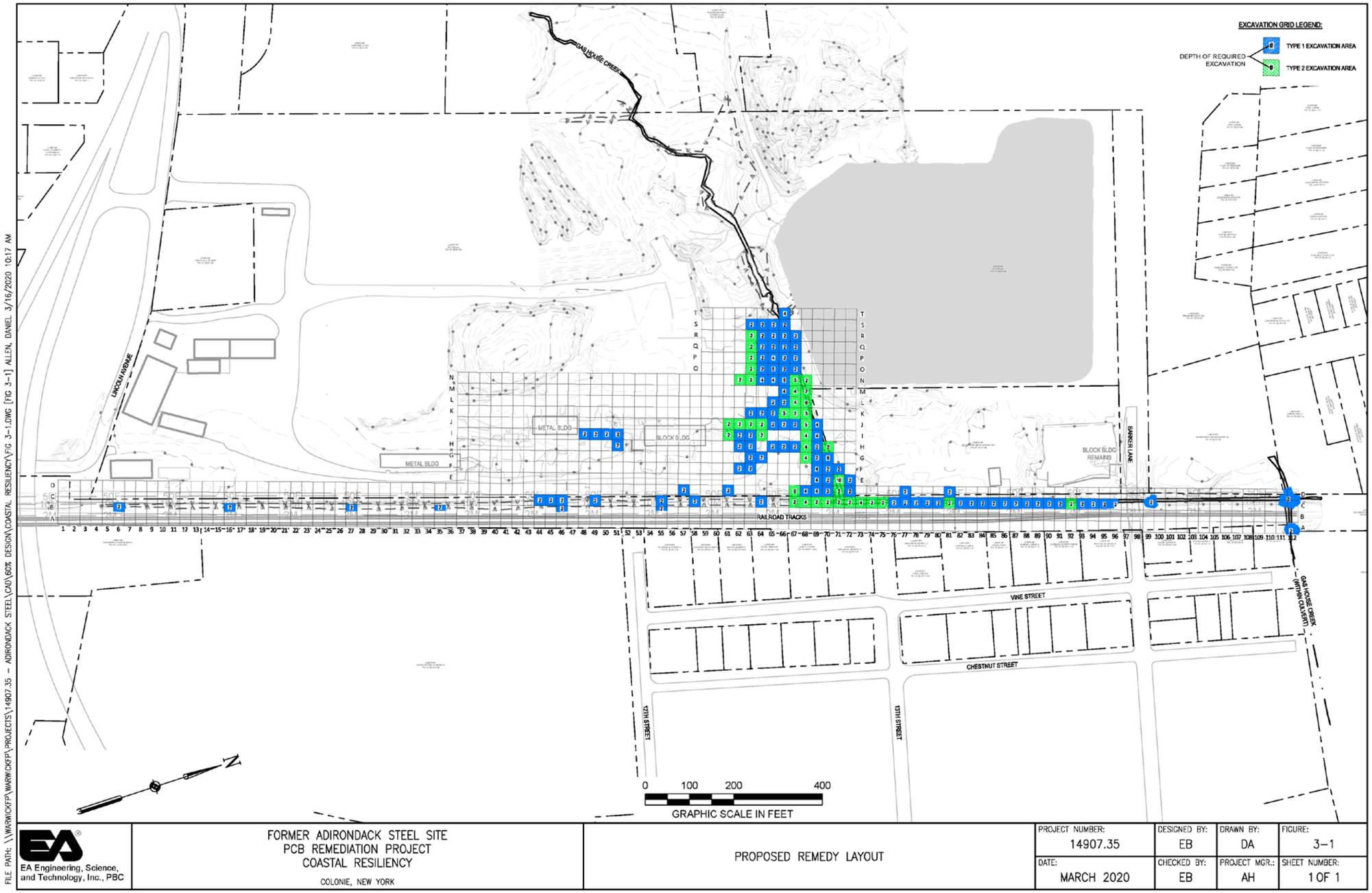
For all grids (Type 0 – Type 3), if PCB contamination is suspected or identified between 0–2 ft bgs, but not deeper than 2 ft bgs, a shallow excavation will be performed to remove the impacted material. The difference between each type is how excavation and site restoration are executed when PCB contamination extends deeper than 2 ft bgs:

- Type 0:
  - Design excavation depths do not exceed 2 ft bgs
  - Excavations are backfilled with clean fill.
- Type 1:
  - Design excavation depths do not exceed 2 ft bgs
  - Excavations are backfilled with clean fill
  - If known contamination exists at depths beyond 2 ft bgs (≤25 ppm), contamination is left in place and institutional controls are implemented.
- Type 2:
  - Design excavation depths do not exceed 2 ft bgs
  - Excavations are backfilled with clean fill
  - If known contamination exists at depths beyond 2 ft bgs (≤100 ppm), contamination is left in place, capped with a clay cap compliant with 40 Code of Federal Regulations (CFR) 761.61, and institutional controls are implemented.
- Type 3:
  - Excavations extend to depths necessary to remove impacted material with PCB concentrations >100 ppm
  - Excavation support (shoring) will be required for depths greater than 2 ft
  - Restoration of this type grid is dependent on concentration of material left in place, if necessary.

Confirmation sampling will be performed to ensure remedial goals are achieved. Surface water sampling will be conducted to ensure that removal of the waste has addressed migration of contaminants to surface water.

Diversion of surface water will be implemented as needed to facilitate access to drainage ditch sediment. Materials exceeding the Toxic Substances Control Act threshold for PCB concentrations of 50 ppm will be disposed of or treated at a facility permitted to accept hazardous waste. Soils with PCB concentrations below 50 ppm will be disposed or treated at a facility permitted to accept PCB-contaminated soil.

Where necessary, material will be treated prior to disposal. Clean fill meeting the standards set forth in 40 CFR § 761.61 for low-occupancy areas will be brought in as needed to replace excavated material and complete the backfilling of the excavation to establish the designed grades at the site.


EXCAVATION GRID LEGEND:
DEPTH OF REQUIRED EXCAVATION
TYPE 1 EXCAVATION AREA
TYPE 2 EXCAVATION AREA
GAS HOUSE CREEK
LINCOLN AVENUE
METAL BLDG
BLOCK BLDG
BLOCK BLDG REMAINS
BARKER LANE
RAILROAD TRACKS
VINE STREET
CHESTNUT STREET
12TH STREET
13TH STREET
GAS HOUSE CREEK (WITHIN CULVERT)
0 100 200 400
GRAPHIC SCALE IN FEET
FILE PATH: \\WARWICKFP\WARWICKFP\PROJECTS\14907.35 - ADIRONDACK STEEL\CAD\60% DESIGN\COASTAL RESILIENCY\FIG 3-1.DWG [FIG 3-1] ALLEN, DANIEL 3/16/2020 10:17 AM
EA Engineering, Science, and Technology, Inc., PBC
FORMER ADIRONDACK STEEL SITE
PCB REMEDIATION PROJECT
COASTAL RESILIENCY
COLONIE, NEW YORK
PROPOSED REMEDY LAYOUT
PROJECT NUMBER: 14907.35
DESIGNED BY: EB
DRAWN BY: DA
FIGURE: 3-1
DATE: MARCH 2020
CHECKED BY: EB
PROJECT MGR.: AH
SHEET NUMBER: 1 OF 1

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3.2.2 OU-3

In OU-3, contaminated soil, sediment, and fill from the OU will be excavated and disposed of offsite. This includes onsite soil, which exceeds 1 ppm of PCBs in the top foot and 10 ppm of PCBs below the top foot and onsite drainageway sediment, which exceeds 1 ppm of PCBs. Onsite debris piles will also be removed and disposed of offsite. Surface water will be diverted around work areas to enable work to be performed in the dry.

Samples of soil from the bottom and sidewalls defining the lateral extent of excavation areas will be collected and analyzed to ensure remedial goals are achieved. Surface water sampling will be conducted to ensure that removal of the waste has addressed migration of contaminants to surface water.

A site cover currently exists and will be maintained to allow for commercial use of the site, and any site redevelopment will maintain a site cover, which can consist of either structures such as buildings, pavement, or sidewalks. The cover system applies to all portions of OU-3 where subsurface investigation was not possible due to site conditions consisting of dilapidated onsite buildings that create a dangerous physical environment. In locations of the existing building footprints (Metal Building, Block Building, and Forge Shop slab), the existing foundation slab will serve as the cover.

Materials exceeding the Toxic Substances Control Act threshold for PCB concentrations of 50 ppm will be disposed or treated at a facility permitted to accept hazardous waste. Soils with PCB concentrations below 50 ppm will be disposed or treated at a facility permitted to accept PCB-contaminated soil.

Backfill materials meeting the standards set forth in 40 CFR § 761.61 for low-occupancy will be used for site restoration.

3.3 POSSIBLE EXPOSURE PATHWAYS

The specific remedial action objectives (RAOs) for OU-2 and OU-3 are provided in **Tables 3-1, 3-2, and 3-3**. A majority of RAOs apply to both OU-2 and OU-3, and differences are noted on a case by case basis.

Table 3-1 Soil-Specific RAOs

Soil	Specific RAOs
RAOs for Public Health Protection	• Prevent ingestion/direct contact with contaminated soil.
RAOs for Environmental Protection	• Prevent migration of contaminants that would result in groundwater or surface water contamination. • Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Table 3-2 Surface Water-Specific RAOs

Soil	Specific RAOs
RAOs for Public Health Protection	• Prevent ingestion of water impacted by contaminants. • Prevent contact or inhalation of contaminants from impacted water bodies (OU-2 only).
RAOs for Environmental Protection	• Restore surface water to ambient water quality criteria for the contaminant of concern. • Prevent impacts to biota from ingestion/direct contact with surface water causing toxicity and impacts from bioaccumulation through the marine or aquatic food chain (OU-3 only).

Table 3-3. Sediment-Specific RAOs

Sediment	Specific RAOs
RAOs for Public Health Protection	• Prevent direct contact with contaminated sediments.
RAOs for Environmental Protection	• Prevent releases of contaminant(s) from sediments that would result in surface water levels in excess of (ambient water quality criteria). • Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain (OU-3 only). • Restore sediments to pre-release/background conditions to the extent feasible.

3.3.1 Human Health Risk Assessment

Human exposure assessments identify ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

Contact with contaminated soil onsite is not expected within OU-1 because that portion of the site has been remediated to meet soil cleanup objectives for commercial and industrial use. There is a potential for contact with contaminants in soil, surface water, and sediment onsite within OU-3 and offsite within OU-2; however, the goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

Post remedial action risks to human health are low. Human exposure to contaminants of concern through inhalation, touch, or ingestion is not expected as both OU-2 and OU-3 are considered low-occupancy areas according to the definition provided in 40 CFR § 761.3 and will be remediated to the standards set forth in 40 CFR § 761.61.

3.3.2 Ecological Risk Assessment

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis was deemed not necessary for OU-2 or OU-3 (NYSDEC 2015; NYSDEC 2016).

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4. POST REMEDIAL ACTION SITE

The Former Adirondack Steel Site property is zoned "industrial" and has been acquired by a private party. The area surrounding the Adirondack Steel Co. property is a mix of industrial and residential use. A site layout map is provided in **Figure 2-2**. However, both OU-2 and OU-3 are considered low-occupancy areas according to the definition provided in 40 CFR § 761.3 and will be remediated to the standards set forth in 40 CFR § 761.61.

Sampling results historically indicated elevated levels of PCBs. The goal of the selected remedy is to remove soil, sediment, and fill to meet the remedial objectives outlined in the OU-2 and OU-3 RODs. Land use and/or deed restrictions will be associated with the site so that residual materials are not likely to result in further risk to human or ecological health. Residual materials will remain in areas as listed below.

4.1 RESIDUAL MATERIALS

Residual materials anticipated to remain on site after the proposed remedy is completed are summarized in **Table 4-1**.

Table 4-1 Residual Materials

Operating Unit	Location/Remedy	Contaminants
OU-2	Residual materials are addressed by a deed restriction and cleaning the site to low-occupancy standards. A cap meeting the requirements of 40 CFR § 761.61(a)(7) will be installed if PCB concentrations >25 ppm remain.	PCBs
OU-3	Residual materials are addressed by a deed restriction and cleaning the site to low-occupancy standards. A site cover currently exists in select areas and will be maintained to allow for commercial use of the site.	PCBs, dieldrin, benzo[a]pyrene, cadmium

4.1.1 OU-2 Areas

Within OU-2, a remedial design program is being implemented to excavate PCB contaminated soils with PCB concentrations exceeding 1 ppm for offsite disposal to the extent practicable. PCB-contaminated soils, sediment, and fill with concentrations less than or equal to 100 ppm may remain in OU-2. As mentioned in Section 3, it is infeasible to remove all PCB-contaminated material greater than 1 ppm due to the proximity of the CP railroad; however, the remedy will still limit potential exposure. Deed restrictions will be implemented if remaining PCB concentrations are less than or equal to 25 ppm. A cap compliant with 40 CFR § 761.61(a)(7) will be installed in areas where remaining PCB concentrations are greater than 25 ppm but less than or equal to 100 ppm.

4.1.2 OU-3 Areas

Institutional control will be implemented in the form of an environmental easement for the controlled property that requires the remedial party or site owner to complete and submit a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3). The control will allow the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws and will restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the New York State Department of Health or County Department of Health. The owner will have to comply with the NYSDEC-approved Site Management Plan.

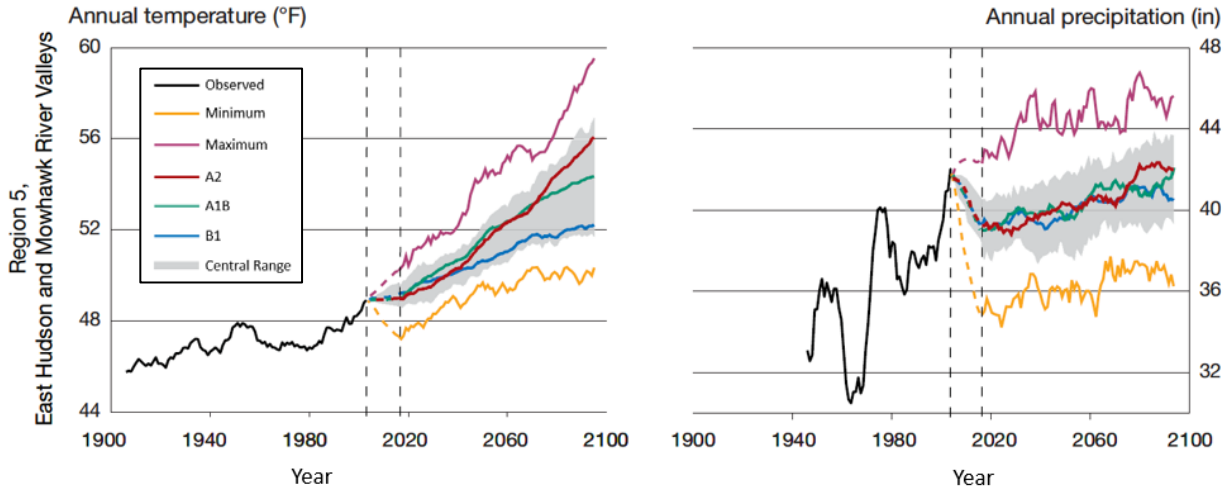
5. CLIMATE CHANGE PROJECTIONS

A review of the information regarding the projected climate impacts was performed, focusing on impacts projected to the years 2050 and 2100. The American Society of Civil Engineers suggests projecting to 2100 to ensure climate-resilient infrastructure. While there is still significant variability between different model projections, it is clear that there will be significant changes in the global climate to the year 2100 (ASCE 2018). Impacts investigated included sea level rise scenarios and associated possible saltwater intrusion to groundwater; precipitation intensity and quantity along with associated impacts to surface water, stormwater, and groundwater; temperature; and wind.

Climate change impacts have already been observed in the State of New York, including increases in temperature, precipitation, and sea-level (**Figure 5-1**). Future modeling predicts current climate change trends will continue. The climate change projections used in the Adirondack analysis are derived from a New York State climate change report prepared in 2011, with updates in 2014, with supplemental information from the 2019 New York City Panel on Climate Change Report (Rosenzweig et al. 2011; Horton et al. 2014; Rosenzweig and Solecki 2019). These reports include historical, current, and future projections of climate change scenarios for several distinct regions within New York. The Adirondack project site falls in the report's Region 5 (Horton et al. 2014), which encompasses the East Hudson and Mohawk River Valleys. This data was compared to site-specific conditions to evaluate impacts and vulnerabilities at the site. To capture some of the uncertainty associated with climate change predictions, three projections are analyzed below. The low estimate (10^{th} percentile), middle range estimate (25^{th} to 75^{th} percentile), and high estimate (90^{th} percentile). The middle range projection is likely to occur, while the high prediction represents a possible worst-case scenario. Based on the models, there is a 50 percent probability that actual future conditions will meet or exceed the middle range projection. The high prediction has a 1 percent probability that actual future conditions will meet or exceed the projection.

Projections are based on both global climate models and representative concentration pathways (RCPs). A global climate model is a mathematical representation of the Earth's climate, which uses atmospheric greenhouse gases and aerosols, as well as land use changes, to simulate physical exchanges between the ocean, atmosphere, land, and ice (Rosenzweig and Solecki 2019). RCPs are varying trends of greenhouse gases, aerosols, and land use changes included as inputs to global climate models. The New York City Panel on Climate Change report used two RCPs: (1) "RCP 4.5," defined as a medium-emissions scenario ; and (2) "RCP 8.5," defined as a high-emissions scenario.

Figure 5-1 Observed and Projected Annual Temperature and Precipitation for New York State Region 5, East Hudson and Mohawk River Valleys*



*Projected temperature (left) and precipitation (right). Observed conditions shown as black line. Projected model changes through time have been applied to the observed historical data. The green, red, and blue lines show the average for varying projected emissions scenarios across the 16 global climate models. The shaded area indicates the central range. The bottom (yellow line) shows the minimum projection across the suite of simulations and the top line (pink line) shows the maximum projections. A 10-year filter has been applied to the observed data and model output, represented by the dotted area between 2004 and 2015, which is the time frame not covered as a result of this filter. (Source: Rosenzweig et al. 2011)

5.1 PRECIPITATION

Since 1900, average precipitation in New York State has increased. From 1958 to 2010, the amount of precipitation in the northeastern United States falling in heavy events (over 1 in. of precipitation in a day) increased by more than 70 percent. During this timeframe, winter precipitation increased while summer precipitation decreased (NYSDEC 2020). Modeling of future conditions predicts both precipitation quantities and variability will continue to increase. In the middle range projection, Region 5 precipitation may increase by as much as 12 percent, approximately 5 in. per year, by 2050, and as much as 21 percent, approximately 8 in. per year, by 2100 (**Table 5-1**). In the middle range projections, heavy rainfall events may increase by as much as 12 percent, or 1 day per year, by 2050 (**Table 5-2**). Extreme precipitation event projections have been calculated as far out as 2080 and show that middle range heavy rainfall events may increase by as much as 13 percent, or 1 day per year.

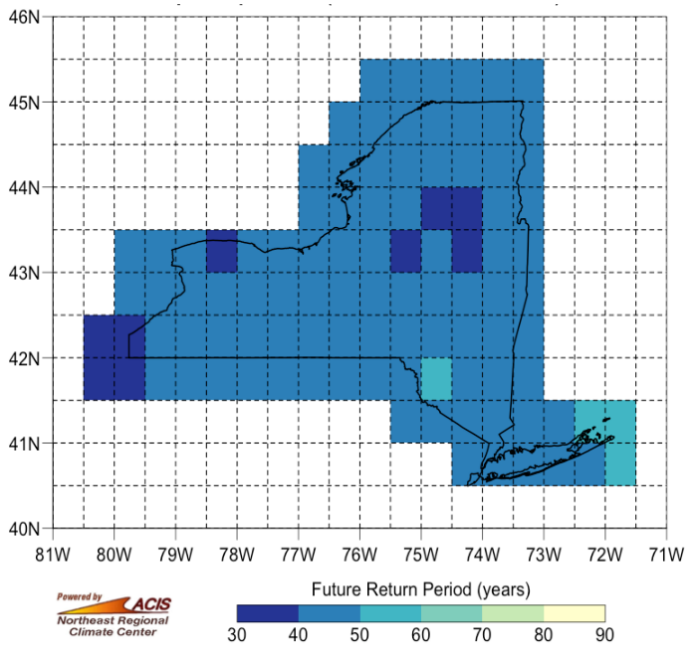
Table 5-1 Mean Annual Precipitation Changes in Region 5

Baseline (1971–2000) 38.6 in.	Low Estimate (10th Percentile)	Middle Range (25th to 75th Percentile)	High Estimate (90th Percentile)
2020s	- 1 percent	+ 2 to + 7 percent	+ 10 percent
2050s	+ 2 percent	+ 4 to + 12 percent	+ 15 percent
2100	- 1 percent	+ 5 to +21 percent	+26 percent
Source: Horton et al. 2014.			

Table 5-2 Extreme Precipitation Event Projections in Region 5

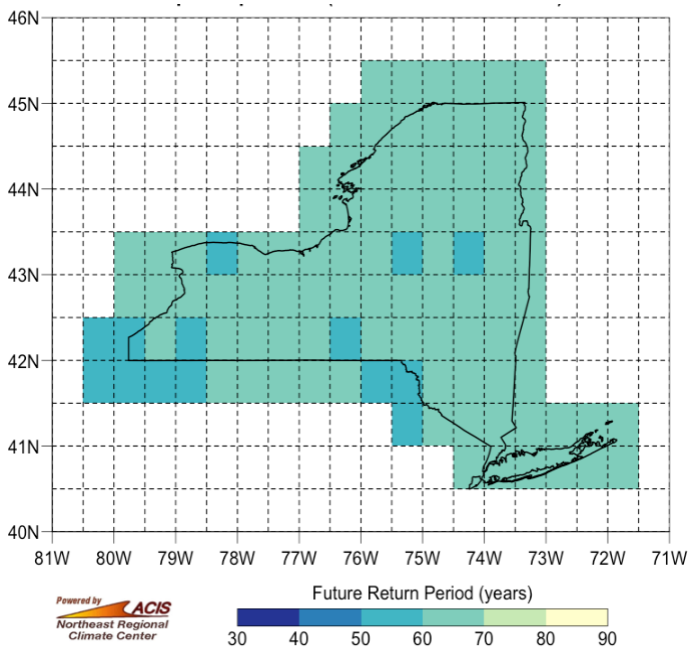
Baseline Days over 1 in. Rainfall (10 days)	Low Estimate (10th Percentile)	Middle Range (25th to 75th Percentile)	High Estimate (90th Percentile)
2020s	10	10 to 11	12
2050s	10	11 to 12	13
2080s	10	11 to 13	14
Source: Horton et al. 2014.			

The current 100-year rainfall event is projected to equal a 40- to 50-year event in Colonie by 2070–2099 according to the high projections (**Figure 5-2**, Northeast Regional Climate Center 2015), and is projected to equal a 60- to 70- year event by 2070–2099 according to the low projections (**Figure 5-3,** Northeast Regional Climate Center 2015).



Source: Northeast Regional Climate Center 2015.

Figure 5-2 Mean Future Return Periods: 1-Day 100-Year Rainfall Amounts, High Emission Scenario, 1970–1999 Versus 2070–2099



Source: Northeast Regional Climate Center 2015.

Figure 5-3 Mean Future Return Periods: 1-Day 100-Year Rainfall Amounts, Low Emission Scenario, 1970–1999 Versus 2070–2099

5.1.1 Surface water

Precipitation and heavy rainfall event increases are likely to decrease water quality and increase flooding associated with the wetlands and drainage ditch at OU-2 and OU-3. Heavy rainfall events may be cause for greater concern, as intense short events limit infiltration of water and increase flooding. During intense precipitation events, the modest topographical relief in the project area generally mitigates runoff velocities.

5.1.2 Groundwater

The aquifers in the Albany area are recharged through precipitation. Decreases in precipitation during summer months may reduce annual recharge, but impacts are expected to be minimal to these aquifers as the majority of recharge typically occurs during the late winter and early spring (Rosenzweig et al. 2011). Water on the site is not utilized for drinking water.

5.2 SEA LEVEL RISE

While sea level rise can cause significant impacts in coastal and other tidally-influenced areas, neither surface water or groundwater is tidally influenced at the Former Adirondack Steel site. The site lies approximately three quarters of a mile from the nearest bank of the Hudson River, where the river is weakly tidally influenced.

5.3 TEMPERATURE

Since 1970, the average state temperature has risen 2.4 degrees Fahrenheit (°F) overall annually and 4.4 °F for the winter months. Temperature has increased in all regions of New York, equating to about a 0.25 °F increase each decade. Modeling shows that temperatures are anticipated to continue to increase, with Region 5 (Saratoga) middle range projection average temperatures expected to be approximately 4.5 to 6.2 °F warmer by the 2050s, and 6.1 to 11.4 °F warmer by 2100 (**Table 5-3**). Summers are expected to intensify with extreme heat and heat waves, while winters are expected to become milder.

Table 5-3 Temperature Mean Annual Changes in Region 5

Baseline (1971–2000) 47.6 °F	**Low Estimate (10^{th} Percentile)**	**Middle Range (25^{th} to 75^{th} Percentile)**	**High Estimate (90^{th} Percentile)**
2020s	+ 1.7 °F	+ 2.3 to 3.2 °F	+ 3.7 °F
2050s	+ 3.5 °F	+ 4.5 to 6.2 °F	+ 7.1 °F
2100	+ 4.4 °F	+ 6.1 to 11.4 °F	+ 13.6 °F

Source: Horton et al. 2014.

5.4 WIND

Quantitative information for projected wind impacts is not currently available. It is not known how the number of tropical storms/hurricanes and nor'easters will change in the North Atlantic Basin, but it is likely that intense storm events and associated extreme winds will increase (Horton et al. 2014).

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6. CLIMATE CHANGE SENSITIVITY ASSESSMENT

Based upon the review of the existing site information and the projected impacts from climate change at the project site, the project team has assembled a list of site climate-related sensitivities and vulnerabilities. This assessment includes a review of site components, including but not limited to, surface water, groundwater, and any planned remedial structures. This information has been used to identify the sensitivity of these site components to identified climate impacts over time. This information is presented in text, table, and map format for ease of review.

Review of Possible Climate-Related Impacts to Remedial Efforts at Hazardous Sites

Before reviewing the possible impacts at the project site, it is beneficial to provide a brief survey of the possible effects of climate change on remedial efforts at sites containing hazardous materials in general. At sites with legacy contamination and ongoing remedial efforts, climate change and extreme weather events can potentially impact the effectiveness of site remediation design and can also impact contaminant toxicity, exposure, organism sensitivity, fate and transport, and long-term operations, management, and stewardship of remediation sites.

Higher temperature and lower pH can potentially increase the availability of contaminants in the environment. For example, the speciation and availability of metals changes with environmental pH, and the fate and transport of persistent organic contaminants changes with temperature and precipitation. Increasing temperatures can also change the water cycle, influencing the local water budget. Warmer temperatures can result in altered precipitation, increased evaporation rates of surface water, increased rates of water uptake by vegetation, and reduced rates of water recharge to soils and groundwater reservoirs (Famiglietti 2014).

Increased temperatures and changes to the water cycle may also result in more frequent and severe weather events, such as the occurrence of the 100-year storm event, as well as contribute to more frequent nuisance flooding due to the prevalence of supersaturated soils. Both events are exacerbated by sea level rise resulting in shoreline encroachment and increased nuisance flooding during high tide if the site is situated near enough to the tidal range.

Additional vulnerabilities of water resources include, but are not limited to, changes to water supplies; subsidence; increased amounts of water contamination, erosion, and related risks to water and wastewater infrastructure and operations; degradation of watersheds; alteration of aquatic ecosystems and loss of habitat, creating multiple impacts in coastal areas. These hydrological changes are happening at the same time as groundwater extraction is increasing as heat also increases demand for various water needs, including drinking, irrigation, and industrial uses (Famiglietti 2014).

A recent study showed a potential impact of such climatic shifts on residual contaminants in soil and groundwater (Libera et al. 2018). The study found that the hydrological shifts influence contaminant concentrations in a complex manner, since increased infiltration, for example, could cause conflicting effects of both diluting and mobilizing contaminants. The study showed that, in

general, higher infiltration events could mobilize vadose-zone residual contaminants, raising contaminant concentrations in groundwater for a prolonged period.

Similarly, the sensitivity of organisms and ecosystems can be affected by environmental change. Higher temperatures increase the metabolic rate of certain organisms, which can increase the rate at which they absorb or process contaminants (Noyes et al. 2009). Behavioral changes in response to environmental change may also alter exposure and sensitivity as organisms react to new stresses.

For context, a list of possible climate change sensitivity and vulnerabilities associated with remedial activities at sites in general terms is presented in **Table 6-1** derived from Maco et al., 2018.

Table 6-1 Possible Climate Change Impacts for Remediation

Climate Impact	Secondary Effect	Relevant remediation effect
Altered precipitation pattern	Wetter: Flooding, storms, more runoff	• Mobilization of contaminants (e.g., from vadose zone to groundwater) → Higher contaminant concentration/export, overpowering significant degradation rate in groundwater zone could remove natural protective barriers or cause infill subsidence in low-lying areas
		• Dilution → Lower contaminant concentration/export
		• Damage to cover systems
	Drier: Drought	• Oxidation of soils
		• Increased volatility
		• Less dilution → Higher contaminant concentration/export
		• Reduced mobilization → Higher contaminant persistence (higher contaminant concentration/export)
		• Insufficient water for remediation; Overuse of groundwater
		• Possible enhanced natural attenuation, expedited contaminant removal
	Altered salinity	• Altered degradation rates (physical, microbial)
Sea level rise (not relevant at this site)	Erosion	• Damage to site integrity
	Site inundation	• Increased mobilization of contaminants, possible dilution, or compromised site with mixing or loss of contaminated materials, increased bioavailability of contaminants
	Mobilization of sediment	• Clean sediments transported on top of contaminated sediments
	Surface water elevations increase	• Changing footprint of floodplains, river boundaries, and coastal shoreline encroachment → Impact on regulations (e.g., dredging, cleanup levels, negotiation of water levels, monitoring)
Extreme weather	Scour (wind/wave action; surface water flow velocity)	• Damage to site integrity, cover systems
	Flooding	• Possible dilution (lower contaminant concentration/export), or compromised site with mixing or loss of contaminated materials, damage to cover systems
	Extreme heat	• Increased volatility → Mobilization of contaminants from site through soil and air
		• Changes in use of site by wildlife
		• Melting permafrost → Mobilization of contaminants from site through water, soil, and air
	Freezing conditions	• Damage to cover systems and in situ stabilization systems

Table 6-1 Possible Climate Change Impacts for Remediation

Climate Impact	Secondary Effect	Relevant remediation effect
Extreme weather: Fire	Increased use of fire retardants	• Spread of contaminants
	Damage to site infrastructure	• Loss of function of remediation systems
Decreasing pH of surface water, soil and sediment		• Increased availability, mobilization, toxicity
		• Increased sensitivity of species due to pH stress
		• Altered transformation rates
Increasing temperature	Altered transformation or degradation	• Increased or decreased toxicity
	Decreased dissolved oxygen/anoxic conditions	• Altered transformation, decreased species resilience
	Increased species heat stress and associated conditions	• Increased sensitivity to contaminants
Human impact and responses	Vulnerable communities commonly comprised of low socioeconomic and minority populations	• Cardiopulmonary illness; Food, water, and vector-borne diseases • Loss of homes, drinking water, and livelihoods; Mental health consequences and stress

Source: Maco et al. 2018.

6.1 REMEDIATION SYSTEM COMPONENTS

There will not be any long-term active remedial systems in place at the site.

6.1.1 REMEDIATION OPERATIONS

As noted previously there have been ongoing remedial efforts at the subject site since the 1990s. In the context of this document the focus is on long-term management of the implemented remedies and planned remedial operations related to OU-2 and OU-3.

6.2 CONTAMINANTS OF CONCERN

Primary contaminants of concern that are likely to remain onsite (presented previously in **Table 4-1**) include PCBs in both OU-2 and OU-3, and dieldrin, benzo[a]pyrene, and cadmium, and trivalent chromium in OU-3. A summary of possible climate change impacts on residual contaminants of concern are presented in **Table 6-2**. A potential climate change vulnerability includes scour of the clean backfill materials to expose covered material. Both the chemical form of contaminants and abiotic factors affect mobility and bioavailability. Climate change can increase exposure to contaminants due to changes in processes involving soil organic carbon, surface runoff, redox state, and microbial community (Biswas et al. 2018).

PCBs are not particularly water-soluble but are often bound to soil and sediments suspended in bodies of water. Increasing temperatures due to climate change may increase the solubility and volatilization of PCBs, leading to increased exposure rates in aquatic organisms and nearby human communities (Zhang et al. 2019).

Dieldrin is relatively insoluble in water and is usually found in soils, sediments, and in animal fats or plant waxes due to bioaccumulation. Increased rainfall events could lead to extended periods of low-concentration contamination due to "washout" from surface runoff (EPA 2003).

Benzo[a]pyrene is relatively insoluble in water and not prone to bioaccumulation in aquatic organisms. As a product of incomplete combustion reactions, increased incidence of fire resultant from higher temperatures would increase the airborne concentration of benzo[a]pyrene (EPA 2017). However, given the existing and projected rainfall in the region and low incidence of benzo[a]pyrene, fires leading to combustion of the contaminant are not considered to be a risk.

Cadmium tends to become strongly adsorbed to clays, muds, humic and organic material, and is typically not bioavailable except to benthic feeders and bottom dwellers (EPA 2016). It may be re-suspended or return to the water column via turbulent flow of surface water associated with future storms.

Table 6-2 Summary of Possible Climate Change Impacts on Residual Contaminants of Concern

Climate Impact	Secondary Effect	Relevant Remediation Effect
Altered precipitation pattern	Flooding, storms, more runoff	Possible additional groundwater monitoring to assess impacts groundwater
		Lower contaminant concentration via dilution
		Increased inspection for erosion or other damage

The following section describes the possible climate sensitivities and/or vulnerabilities of these materials.

Precipitation

Increased flooding due to precipitation can lead to the mobilization of contaminants and increase concentrations in soils and surface waters. Increased infiltration can both dilute and mobilize contaminants. Higher infiltration events have been shown to raise contaminant concentrations in groundwater for a prolonged period (Maco et al. 2018). This is the case due to increased movement of the contaminant to groundwater from the vadose zone. Increased precipitation may result in increased use of chemicals (such as contained in fertilizers or pesticides), as chemicals may require repeated applications to provide the intended effect. The potential increased use of chemicals may increase chemical contamination in the project area, potentially interacting with exposed residual contaminants.

Extreme Weather

As noted within the other sections, extreme weather at the site can impact any remaining contaminants of concern through a variety of ways. These include increased scour and surface water flow velocity, which can all act to mobilize contaminated sediment. Flooding can also cause

possible dilution of the contaminants in an area as they are mobilized and moved to other areas. (Maco et al. 2018).

6.3 SITE-SPECIFIC SENSITIVITIES

Of all projected climate change impacts, extreme rainfall events are likely to have the greatest impact on the Former Adirondack Steel Site, and OU-2 and OU-3. To understand how the site currently reacts and would react under future rainfall events, EA modeled the 100-year flood events at the site for 2019 and the low, middle, and high estimates for 100-year flood events for 2050 and 2100, all under existing site conditions (**Figures 6-1 and 6-2**).

Under existing conditions, outputs show that a 2019 100-year flood event at the site inundates 0.97 acres, with most water remaining concentrated within the OU-2 and OU-3 drainage ditches. Downstream flooding is a known concern, concentrated offsite at an abandoned parking lot, just upstream of a culvert in OU-3. Flooding is also a concern at the very end of OU-3 where the culvert beneath Barker Lane ends.

Table 6-3 shows the total inundation area for future flood events at the site, assuming conditions remain the same.

Table 6-3 Summary of Inundation Areas for 100-Year Flood Events under Low, Medium, and High Projections, 2050 and 2100, Existing Conditions

Climate Impact	Climate Model Projection (Per Table 5-1)	Inundation Area (Acres)
2019	Existing	0.97
2050	Low	0.98
	Middle	1.01
	High	1.05
2100	Low	0.94
	Middle	1.01
	High	1.08

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Barker Lane
Parking Lot
Legend
2019
2050L
2050M
2050H
OU-1 Boundary
OU-2 Boundary
OU-3 Boundary
Drainage Ditch
Railroad
0
100
200
Feet
N
Figure 6-1
Inundation Areas For the High, Medium, and Low-Prediction 100-Year Flood Event, 2050, Existing Site Conditions
Former Adirondack Steel OU-1, OU-2, and OU-3 Sites
Colonie, New York
Map Date: 3/12/2020
Source: ESRI, 2020
Projection: NAD 1983 State Plane New York East
NEW YORK STATE OF OPPORTUNITY
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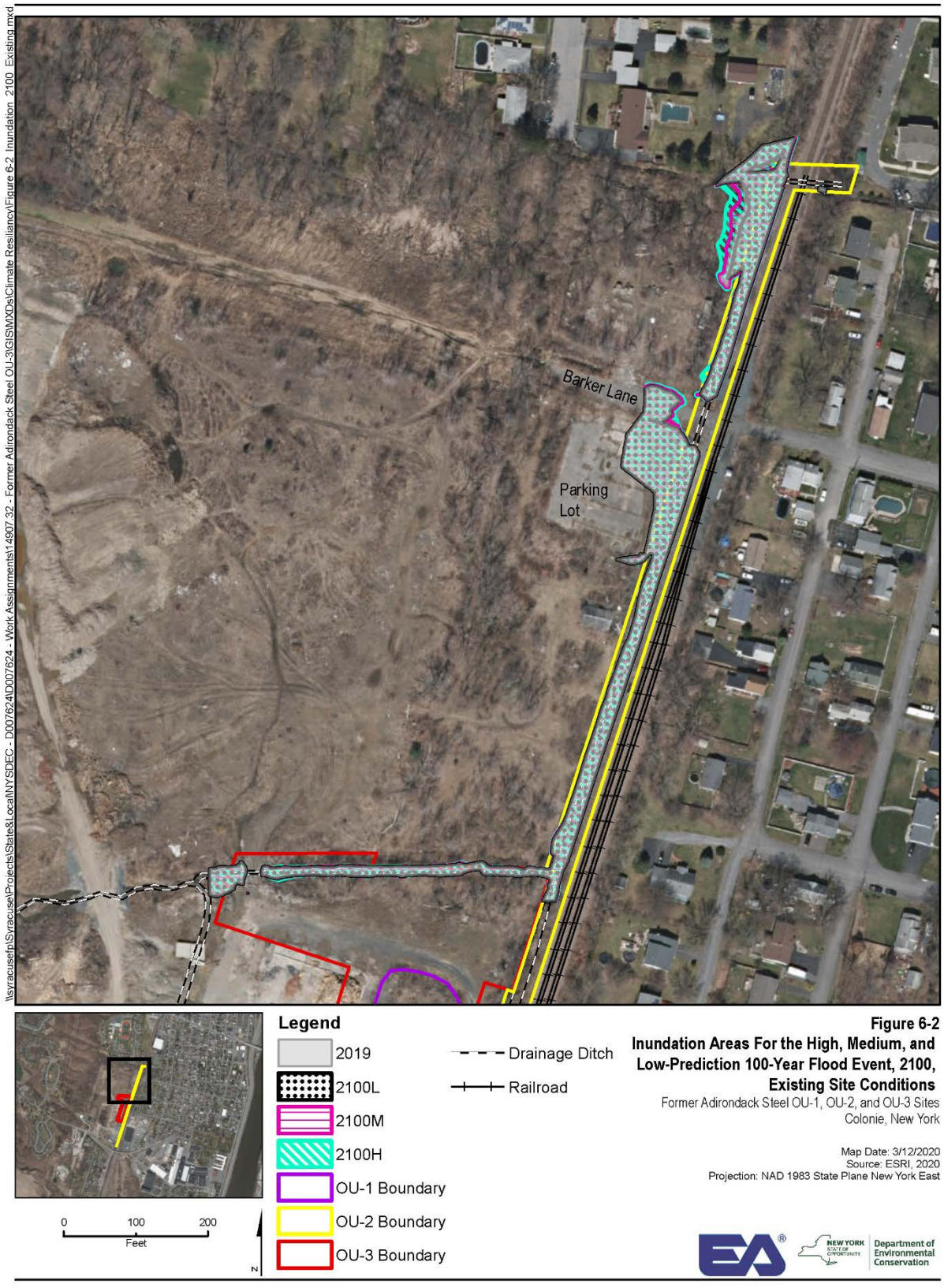
\\syracusefp\Syracuse\Projects\State&Local\NYSDEC - D007624\D007624 - Work Assignments\14907.32 - Former Adirondack Steel OU-3\GIS\MXDs\Climate Resiliancy\Figure 6-2_Inundation_2100_Existing.mxd
Barker Lane
Parking Lot
Legend
2019
2100L
2100M
2100H
OU-1 Boundary
OU-2 Boundary
OU-3 Boundary
Drainage Ditch
Railroad
0
100
200
Feet
N
Figure 6-2
Inundation Areas For the High, Medium, and Low-Prediction 100-Year Flood Event, 2100, Existing Site Conditions
Former Adirondack Steel OU-1, OU-2, and OU-3 Sites
Colonie, New York
Map Date: 3/12/2020
Source: ESRI, 2020
Projection: NAD 1983 State Plane New York East
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7. ADAPTATION MEASURES

The evaluation includes implemented or planned adaptation measures for the project site. These were generated by cross-referencing site conditions related to expected climate impacts with identified vulnerabilities and sensitivities. The climate adaptation measures identified are characterized within a frame of reference for the overall strategic adaptation goal for the particular site component. In the context of climate resiliency, this could be either to provide resistance to the impact (or protection); to provide resilience (or accommodation); or to provide a response-based measure.

Climate Adaptation Plan Framework – General Overview

Climate change occurs within a temporal scale so that a robust adaptation plan is warranted. There are several factors that drive climate change today and are projected to have lasting impacts on storm events, temperature, precipitation etc. that may be altered over time. Predictions of climate change impacts may become more precise with time; emissions of gases that contribute to climate change may be altered. These alterations would result in differences in predicted and actual climate change impacts. Therefore, an adaptation plan is needed that can be changed as conditions are altered. A robust plan is one that can be used without failure given a wide range of conditions. The components of a typical climate adaptation plan are outlined below.

The conceptual model (**Figure 7-1**) and the following sections outline a series of steps to develop a robust adaptation plan.

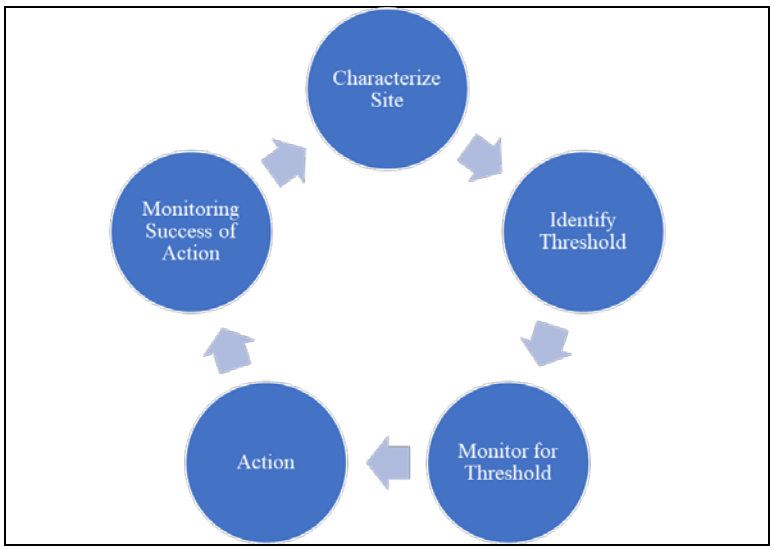


Figure 7-1 Conceptual Model for Adaptation Plan

Characterize Site

The first step of the adaptation plan is to characterize vulnerabilities and sensitivities at the site as has been completed in the previous sections. This data collection step answers the general questions:

1. Where are the issues (e.g., smaller scale – location)?
2. What are the issues (e.g., flooding, erosion, changes to groundwater transport)?
3. How severe are the issues?

These data can be used to inform further data collection and identification of thresholds.

Identify Threshold

A threshold is a parameter or parameters that are measured as indicators to implement or execute the next step of the management plan. Thresholds indicate that the issue at the site is no longer acceptable and the next step of the adaptation plan must be implemented. The thresholds will be specific to the vulnerabilities and sensitivities at a site and will need to be as concise as possible to quantify that the threshold has been achieved. Thresholds will have characteristics of frequency, magnitude, and duration.

Monitoring

Monitoring is used to evaluate if the specific threshold has been achieved. Monitoring data that need to be collected will be specific to the threshold. The sampling plan for data collection must have the specificity in spatial and temporal scale to capture frequency, magnitude, and duration.

Threshold and Subsequent Action

When a threshold is achieved, a specific action to limit risks and adverse outcomes should be executed.

Iterative Approach

The adaptation plan for each area will consist of a series of steps informed by events and monitoring that precede an action. Once a threshold is exceeded and a management action is implemented, monitoring should be continued to ensure that the action is and continues to be effective. As climate change impacts at the site change in the future, this action may no longer be effective. A new set of thresholds and a new monitoring plan should be initiated following implementation of an action.

To decrease risks associated with climate change at the Adirondack site, multiple and combinations of adaptation strategies and measures may be implemented. An adaptation strategy is a broader term describing a general approach that may be used at the site. Adaptation measures are used to describe specific actions that can be implemented to decrease climate risks.

Three principle adaptation strategies that can be considered are (Maco et al. 2018):

- Resistance or 'Protection' strategies
- Resilience or 'Accommodate' strategies
- Response strategies – which may include managed retreat from a site.

Once a principal strategy is identified then one or a variety of measures can be deployed to accomplish the overall adaptation management strategy for the site. As climatic conditions change over time, the adaptation plan may be accomplished using different measures. Strategies and measures should be implemented based on known and projected impacts as well as the goals and objectives for the area. Additionally, the measures chosen may need to change over time as conditions change and as previous areas of uncertainty and unknown variables become more certain (ESA 2018).

7.1 REMEDIATION SYSTEM COMPONENTS

There will not be any long-term active remedial systems in place at the site.

7.2 REMEDIATION OPERATIONS

There are no remediation operations anticipated at this time.

7.3 CONTAMINANTS OF CONCERN

The proposed remedy is addressing PCB in soils and sediments in OU-2 and OU-3 by removing contaminated soil and sediments above cleanup objectives, and implementing institutional controls where removal is not feasible. **Table 7-1** provides a list of implemented adaptation strategies and associated vulnerabilities addressed.

Table 7-1 Implemented Strategies

Adaptation Strategy	Sensitivities/Vulnerabilities Addressed
Clean Fill Resilience, Monitoring of Residual Levels of PCBs, and Movement of Material	Erosion of fill materials
	Damage to clean fill
	Increased bioavailability of PCBs
	Mixing or loss of residual materials

Implemented adaptation measures are further discussed below:

Clean Fill Resilience— Clean material will be placed on top of residual materials in certain areas, as some residual materials will be inaccessible due to structural concerns associated with the proximity of the adjacent railroad and measures needed to protect the integrity of the rail and/or rail structures. The goal is to minimize mobilization of the residual materials, which will include lining the OU-2 drainage ditch with rip rap.

All excavation areas will be backfilled with clean materials meeting the standards set forth in 40 CFR § 761.61 for low-occupancy areas. The resilient fill strategy includes a monitoring program in place through the site management plan. If the fill system is damaged by a storm or freeze/thaw event(s) then the fill could be restored to the same configuration in place prior to the damage.

As described in the opening section of this chapter, within an adaptation plan the strategy for a particular location may change over time as climate impacts increase. Using the OU-2 drainage ditch location as an example, it makes sense to employ a strategy of resilience or accommodation at first. Through this strategy, a threshold is set, and monitoring employed to identify a point in the future when the strategy of resistance (installation of an armored and/or submersible fill system) will be implemented.

Monitoring of Concentrations and Movement of Material—This is an integral part of the 'resilience' or accommodate strategy and is implemented through the Site Management Plan. Each location will be monitored periodically to ascertain if any damage or degradation has occurred and repair is needed. In addition, if a threshold point has been reached then this would also be a possible trigger to move to a different strategy for a location.

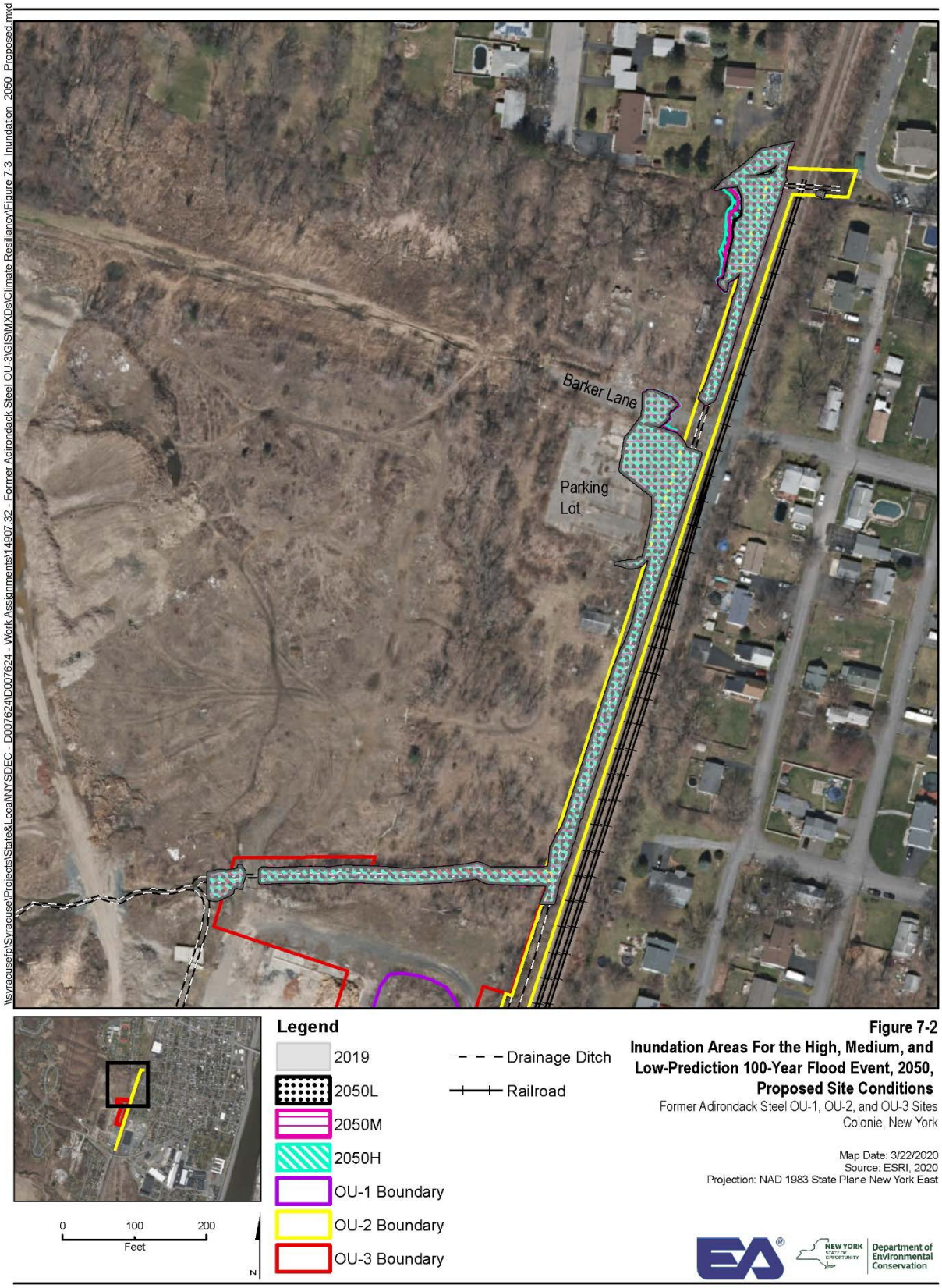
Monitoring may involve either, or both, a post-storm event inspection of inundated areas to look for signs of erosion, and if warranted, a post-storm survey of the fill areas. The post-storm survey would be compared to as-built survey elevations to determine any impacts to fill thickness.

7.4 SITE-SPECIFIC ADAPTAION MEASURES

The proposed remedy involves excavation of contaminated sediment and site restoration. Restoration design considered the anticipated increases in flood frequency and intensity associated with climate change. Accordingly, EA studied the low, middle, and high estimates for flood events for 2050 and 2100 under the proposed site conditions (**Figures 7-2 and 7-3**). These models are helping to inform the final design, including stone sizing and designing the project to withstand the high estimate 2050 25-year flood event.

Adaptation measures that have been identified applicable to this project include increasing the flood capacity of Gas House Creek. As the creek flows through OU-3, the side slopes will be restored to gentle slopes and vegetated. This will increase bank stability, reduce erosion, and provide additional storage capacity for larger storm events.

Additionally, downstream flooding is a known concern. Culvert replacements along OU-2 and OU-3 were considered to increase their capacity; however, it was determined that these undersized culverts provide restrictions which forces flood storage upstream. If the culverts were enlarged to meet hydraulic capacity, the downstream residential areas would receive higher peak flows and higher flood elevations and do not have flood storage capacity. Therefore, it was decided to leave these culverts in-place, thereby providing onsite flood storage, and prevent worsening downstream conditions. Allowing the site to flood also acts to prevent higher flow velocities within the drainage ditch and creek, in turn preventing higher rates of scour and erosion in these channels.


\\syracusefp\Syracuse\Projects\State&Local\NYSDEC - D007624\D007624 - Work Assignments\14907.32 - Former Adirondack Steel OU-3\GIS\MXDs\Climate Resiliancy\Figure 7-3 Inundation 2050 Proposed.mxd
Barker Lane
Parking Lot
Legend
2019
2050L
2050M
2050H
OU-1 Boundary
OU-2 Boundary
OU-3 Boundary
Drainage Ditch
Railroad
0
100
200
Feet
N
Figure 7-2
Inundation Areas For the High, Medium, and Low-Prediction 100-Year Flood Event, 2050, Proposed Site Conditions
Former Adirondack Steel OU-1, OU-2, and OU-3 Sites
Colonie, New York
Map Date: 3/22/2020
Source: ESRI, 2020
Projection: NAD 1983 State Plane New York East
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Barker Lane
Parking Lot
Legend
2019
2100L
2100M
2100H
OU-1 Boundary
OU-2 Boundary
OU-3 Boundary
Drainage Ditch
Railroad
0
100
200
Feet
N
Figure 7-3
Inundation Areas For the High, Medium, and Low-Prediction 100-Year Flood Event, 2100, Proposed Site Conditions
Former Adirondack Steel OU-1, OU-2, and OU-3 Sites
Colonie, New York
Map Date: 3/22/2020
Source: ESRI, 2020
Projection: NAD 1983 State Plane New York East
NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation

Under the proposed conditions, model outputs show that a 2019 100-year flood event at the site would inundate 1.03 acres, which represents a 6.1 percent increase in area inundated from the same 2019 100-year event under existing conditions. Observed increases in inundation area for proposed conditions under all modeled flood events (**Table 7-2**) are due to the fact that the proposed remedy widens drainage ditches within the excavated areas to increase flood storage capacity, thus increasing the resiliency of the site. Just as under existing conditions, flooding remains concentrated within the OU-2 and OU-3 drainage ditches, demonstrating the increased flood storage capacity of the design area. Downstream flooding remains a concern in the abandoned parking lot and end of OU-3.

Table 7-2 shows the total inundation area for future flood events at the site under the proposed site conditions.

Table 7-2 Summary of Inundation Areas for 100-Year Flood Events under Low, Medium, and High Projections, 2050 and 2100, Proposed Conditions

Climate Impact	Climate Model Projection (Per Table 5-1)	Inundation Area (Acres)	Percent Change in Area Inundated from Same Projection Under Existing Site Conditions (Table 5-1)
2019	Existing	1.03	+ 6.1 percent
2050	Low	1.05	+ 7.1 percent
	Middle	1.09	+ 7.9 percent
	High	1.13	+ 7.6 percent
2100	Low	1.01	+ 7.4 percent
	Middle	1.09	+ 7.9 percent
	High	1.16	+ 7.4 percent

7.5 CLIMATE ADAPTATION PLAN

Based on available information and a review of most likely climate impacts as discussed within this report, climate adaptation planning for the Former Adirondack Steel Site focuses on impacts that larger and more frequent rainfall events will have on residual levels of PCBs covered by clean backfill along the four sections of OU-3, Gas House Creek (OU-2 and OU-3) and the OU-2 drainage ditch. As previously stated, all excavated areas and areas with residual contamination will be capped with clean fill meeting the requirements of 40 CFR § 761.61 for low-occupancy areas.

As storm events grow larger and/or more frequent, floods are also likely to increase in frequency and magnitude, as shown in **Tables 5-1 and 5-2**. These events will increase scour and erosion of stream beds and banks at the site. To adapt to this, stone in the creek bed and in the drainage ditch will be sized to prevent erosion from design flood events. The proposed remedy is designed to withstand the high estimate 2050 25-year flood event and associated flow rates. A cap meeting the requirements of 40 CFR § 761.61(a)(7) will be installed if PCB concentrations >25 ppm remain. Residual materials are being addressed by a deed restriction and cleaning the site to low-occupancy standards. A site cover currently exists in select areas of OU-3 and will be maintained to allow for commercial use of the site.

The site will be monitored in compliance with a NYSDOH-approved Site Management Plan, which will require periodic testing and reporting on site conditions. Review of local precipitation gages should occur after major storm events to assess if precipitation surpasses the 2050 25-year threshold event. Should this threshold event be surpassed, site inspections will be conducted to assess potential degradation at the site. If degradation is observed, adaptation measures must be undertaken to protect human and environmental health. Primary adaptation measures for impacts to the site will include repair of damaged areas, likely involving regrading, recapping, or replacement of stones and/or fill with a backhoe. Should more significant adaptation measures be deemed necessary, site managers should consider increases in the size of channel stone throughout the stream channel to withstand higher flows associated with larger storm events.

8. SUMMARY AND CONCLUSIONS

Impacts from climate change are anticipated to increase in the future and site management at the Former Adirondack Steel Site may be altered by the changing climate. According to the middle range projection, precipitation in the Albany area may increase by as much as 8 in. per year by 2100, with heavy rain events increasing by 21 percent over that time period. Higher precipitation totals and heavy rainfall events could lead to additional monitoring for erosion and contaminant concentrations in soils and surface waters related to the remedy.

As part of this resiliency assessment a draft climate adaptation plan, Section 7.5, has been completed and is to be incorporated into the interim site management plan with an associated periodic review process. This draft adaptation plan incorporates strategies and measures already implemented or planned for the site and defines impact thresholds and monitoring for exceedance of these thresholds. If a set threshold is surpassed, an action will be taken to protect the public and the environment. A new set of thresholds and plan would then be created to decrease risks associated with climate change impacts.

In conclusion, the plan demonstrates and concludes that any potential vulnerability of the remedy to climate change such as severe weather events can be managed and mitigated through proactive monitoring of the remedy and, if appropriate, corrective measures. Accordingly, the long-term monitoring program incorporates findings and recommendations of this climate resiliency evaluation as well as requiring periodic updates to the assessment.

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