

REVERE SMELTING & REFINING SITE

# CONSTRUCTION COMPLETION REPORT - OPERABLE UNIT 1

ECOBAT RESOURCES NEW YORK, LLC

FORMERLY REVERE SMELTING & REFINING  
CORPORATION

MIDDLETOWN, NEW YORK

DECEMBER 2023



wsp



**FINAL  
CONSTRUCTION  
COMPLETION REPORT -  
OPERABLE UNIT 1  
ECOBAT RESOURCES NEW  
YORK, LLC  
FORMERLY REVERE SMELTING  
& REFINING CORPORATION  
MIDDLETOWN, NEW YORK  
REVERE SMELTING & REFINING SITE**

PROJECT NO.: 31401015.005  
DATE: DECEMBER 2023

WSP  
100 SUMMER STREET  
13<sup>TH</sup> FLOOR  
BOSTON, MA 02110

TEL.: +1 617 426-7330  
FAX: +1 617 482-8487  
WSP.COM

# QUALITY MANAGEMENT

ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
Remarks				
Date				
Prepared by	CDA/MDP			
Signature				
Checked by				
Signature				
Authorized by				
Signature				
Project number	31401015.005			
Report number				
File reference				



# TABLE OF CONTENTS

	PROFESSIONAL ENGINEER CERTIFICATION .....	III
1	INTRODUCTION .....	1
2	SITE DESCRIPTION .....	3
2.1	Site Location and Description.....	3
2.2	Operable Unit Boundaries .....	4
2.3	Geology .....	4
2.4	Historic Land Use and Development Trends.....	5
2.5	Groundwater .....	6
2.6	Freshwater Wetlands .....	6
3	OU1 REMEDIAL ACTION HISTORY .....	7
4	OU1 REMEDY IMPLEMENTATION.....	11
4.1	Institutional Controls .....	12
4.2	ENGINEERING CONTROLS .....	13
5	REFERENCES .....	15
6	ACRONYMS.....	17



## *FIGURES*

FIGURE 1	SITE LOCATION MAP
FIGURE 2	SITE LAYOUT
FIGURE 3	OU1 TAX PARCELS

## *APPENDICES*

APPENDIX A	CONSTRUCTION COMPLETION REPORT FOR THE PHASE I, PHASE II-A, PHASE II-B, AND PHASE III REMEDIATION ACTIONS
APPENDIX B	STREAM AND WETLAND RESTORATION AS-BUILT AND YEAR 1 MONITORING REPORT FOR OPERABLE UNIT 1
APPENDIX C	ENVIRONMENTAL EASEMENT, METES AND BOUNDS DESCRIPTION, AND PROOF OF RECORDING

# PROFESSIONAL ENGINEER CERTIFICATION

I, James A. Sobieraj, certify that I am currently a New York State-registered professional engineer (License No. 077394-1). I certify that the *Phase I, Phase II-A, Phase II-B, and Phase III Remedial Actions* were implemented and that all construction activities were completed in substantial conformance with the Remedial Design/Remedial Action Work Plans approved with modifications by the Division of Environmental Remediation (DER).

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, James A. Sobieraj, am certifying as Owner’s Designated Site Representative for the site.

I certify that all use restrictions, Institutional Controls, Engineering Controls, and/or any operation and maintenance requirements applicable to the Site are contained in an environmental easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

I certify that a Site Management Plan (SMP) has been submitted for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by the DER.



A handwritten signature in black ink that reads "James A. Sobieraj".

---

James A. Sobieraj, P.E.  
P.E. 077394-1

December 6, 2023

---

Date

# 1 INTRODUCTION

On behalf of Ecobat Resources New York, LLC (Ecobat), WSP USA Inc. (WSP) prepared this *Construction Completion Report for Operable Unit 1* (OU1; CCR) for the Revere Smelting & Refining site (site) located at 65 Ballard Road in Middletown, Orange County, New York. Ecobat was formerly known as Revere Smelting & Refining Corporation at the time the OU1 remedial action fieldwork was completed. As such, the corporate entity is referenced as Ecobat throughout the main body of this document. In Appendices A and B described below, the corporate entity is referenced as Revere Smelting & Refining Corporation, as that was the correct name at the time those documents were first prepared. The site is a secondary lead smelter, and historical environmental investigations have identified impacts to environmental media as a result of operations at the site. The site has been listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site #336-053. Lead and arsenic are the primary constituents of concern (COCs).

In accordance with the February 1, 2011, Order on Consent and Administrative Settlement Agreement Index #3-20100528-80 (2011 Order) between the New York State Department of Environmental Conservation (NYSDEC) and Ecobat, among other parties, and the associated Record of Decision (ROD) dated September 19, 2011, Ecobat was required to remove lead and arsenic-contaminated soil and sediment that was present in areas of OU1 at concentrations above site-specific remedial objectives. This CCR summarizes the regulatory history leading up to completion of the remedial action in OU1, presents the timeframe within which the construction activities were completed, and includes the following documents:

- Construction Completion Report for the Phase I, Phase II-A, Phase II-B, and Phase III Remedial Actions (RAs; Excavation CCR) prepared by ENTACT (ENTACT 2022) in Appendix A;
- Stream and Wetland Restoration As-Built and Year 1 Monitoring Report for Operable Unit 1 (Restoration Report) prepared by WSP in Appendix B (WSP 2020); and
- Environmental Easement, Metes and Bounds description, and Proof of Recording (County Recording Receipt # 3080335) filed on September 19, 2022 (Appendix C).

WSP first submitted Restoration Report to the NYSDEC on March 6, 2018, as a separate document from the Excavation CCR submitted by ENTACT to the NYSDEC on November 20, 2018. NYSDEC Comments to the Restoration Report and Excavation CCR were combined in a comment letter issued on April 5, 2019. Following receipt of the April 5, 2019 comment letter, a meeting was held on June 11, 2019 between the NYSDEC, Ecobat, and WSP where it was decided that the Excavation CCR and Restoration Report would be combined into one CCR document.

On May 29, 2020 WSP submitted the Construction Completion Report – Operable Unit 1 (Draft Final) (Draft OU1 CCR) to the NYSDEC. This submittal consisted of an overall CCR report which incorporated the original Excavation CCR as Appendix A and the Restoration Report as Appendix B. Changes made in response to the NYSDEC’s April 5, 2019 comment letter were incorporated into the Draft OU1 CCR. The OU1 CCR was submitted to the NYSDEC on May 29, 2020 as “Draft Final” due to the environmental easement for OU1 having not been recorded, and the Site Management Plan (SMP) for OU1 being in development at the time.

On April 30, 2021 Ecobat received a comment letter from the NYSDEC related to the May 29, 2020 Draft OU1 CCR and the June 30, 2020 SMP. Included in the April 2021 comment letter was a request that the Appendix B certification page and figures be stamped by the certifying professional engineer. The Final Restoration Report in Appendix B includes the requested certification page, but is otherwise unchanged from the previous submission, and as such, the previous date on the report of May 29, 2020, has been retained. Please note that the Restoration Report in Appendix B also includes details related to the year 1 monitoring and planned “future schedule” details, which have since been superseded and documented in subsequent monitoring reports submitted to the NYSDEC.



## 2 SITE DESCRIPTION

The following sections describe the site location and land uses, geology, surface water hydrology, topography, groundwater, and freshwater wetlands present on the site.

---

### 2.1 SITE LOCATION AND DESCRIPTION

Ecobat operates a secondary lead smelting facility located at 65 Ballard Road, approximately 7 miles east of Middletown, in the Town of Wallkill, Orange County, New York (Figure 1). The site was constructed in 1970 and acquired by Ecobat in 1973. Ecobat manufactures lead and lead alloys. The major raw material is used lead acid batteries, such as the typical automotive battery. Other raw materials used in production include battery-manufacturing by-products, lead-bearing wastes from battery manufacturers, scrap metal from metal salvage yards, and virgin metal from metal brokers. In addition, Ecobat reclaims polypropylene from battery cases, and in the process, produces sodium sulfate.

The facility consists of several buildings, including the main smelter building, a crystallizer building, a containment building, a wastewater treatment building, six large storm water tanks, and employee and truck parking areas (Figure 2). In addition, a rail spur from the adjacent Norfolk and Southern Railroad right-of-way services the facility. The operational portion of the site, designated Operable Unit 4 (OU4), encompasses approximately 14.8 acres. Ecobat owns the operational property and contiguous undeveloped property to the north and east of the facility and undeveloped property south of the railroad right-of-way. The Ecobat properties consist of the tax parcels listed in the definition of OU1, which together with OU4 comprise approximately 167 acres. The undeveloped areas of OU1 are in varying degrees of past disturbance that range from second growth forest, reverted farmlands, maintained lawns, and wetlands.

The facility is located in a combined rural and industrial area of south-central New York, approximately 6,000 feet northwest of the Wallkill River. North of OU4 are open, overgrown fields, wetlands, and mature woodlands. North of the woodlands is an Exxon service station. East of OU4 is a combination of open, overgrown fields, wetlands, and mature woodlands. Old Dominion Freight Line, Inc., operates in a facility located approximately 0.25-mile southeast of OU1. Interstate Highway 84 (I-84) is located approximately 0.6 mile south of the site. A Ball Corporation aluminum can-manufacturing facility is located west across Ballard Road, and additional industrial development is located further west and south.

OU1 contains approximately 11,000 linear feet of stream comprised of seven unnamed reaches (Tetra Tech 2011). The remediation in OU1 consisted of excavation and restoration of impacted streams across four of those reaches, which have historically been named the western stream, eastern stream, pond stream, and combined stream for identification purposes (Figure 2). The

railroad pond is a man-made flow-through system with a strongly intermittent to perennial outlet stream channel (i.e. the pond stream). The pond stream converges with the western stream south of the railroad right-of-way.

---

## 2.2 OPERABLE UNIT BOUNDARIES

The 2011 Order, as modified by the 2017 Statement of Basis for the site, defines Operable Units (OUs) 1 through 4 as follows (Figure 3):

- OU1 – which is comprised of nine contiguous tax parcels (Tax Parcels 41-1-70.22, 41-1-70.232, 41-1-71.22, 41-1-73.1, 41-1-73.22, 41-1-74.82, and 41-1-76 owned- by Ecobat (OU1 Controlled Property), and two offsite parcels 60-1120 and 41-1-72.2) totaling 167 acres, less the plant facility and -groundwater (Figure 3)<sup>1</sup>
- OU2 – which represents the groundwater contamination outside the barrier wall surrounding the facility
- OU3 – which represents all offsite media, other than groundwater, impacted by site activities
- OU4 – which represents the plant facility, including groundwater within the barrier wall surrounding the facility

While tax parcels 60-1-120 and 41-1-72.2 are included in the functional definition of OU1 in the 2011 Order, these parcels are currently owned by Matrix Ballard, LLC, and Pennsylvania Lines, LLC, and are not controlled by Ecobat.

---

## 2.3 GEOLOGY

The site lies within the Great Valley physiographic region of southeastern New York State. The Great Valley region is part of the Appalachian Valley and Ridge province, which lies northwest of the Hudson Highlands. The regional hydrogeologic system underlying the facility consists of Pleistocene-age glacial till deposits which overlie Ordovician-aged bedrock consisting primarily of shale, siltstone, and greywacke horizons. The glacial tills are generally poorly sorted and

---

<sup>1</sup> The 2017 Statement of Basis modified the boundaries of OU4 to include areas where contaminated soil still remains in the vicinity of the operating plant site that were not removed during the OU1 remedial action. OU4 was also expanded to include the main driveway entering the site from Ballard Road, to extend the boundary on the eastern and southern sides of the active facility to include those areas up to and including the barrier wall, and to add the Wet Electrostatic Precipitator (WESP) building. In addition, groundwater within the barrier wall beneath the site was added to OU4. Based on these changes, OU1 and OU2 are subsequently reduced by the area added to OU4. OU1 and OU4 comprise approximately 167 acres, of which the modified OU4 is approximately 14.8 acres.

primarily consist of silt- or clay-sized particle matrix with minor sand and gravel horizons. The thickness of the till deposits in the Wallkill area may exceed 30 feet.

The glacial till overlies shale bedrock that has been folded and faulted during several tectonic episodes. The glacial till is generally poorly sorted with low porosity and permeability, whereas the anthropogenic and reworked materials are generally coarser in nature, and are slightly more permeable and porous. Bedrock is encountered at a minimum of 4 to 5 feet below ground surface (bgs) in the northern areas of OU1 and at depths greater than 20 to 25 feet bgs in the southern areas of OU1. The sedimentary bedrock strikes northeast-southwest and dips moderately towards the northwest. The shale, while predominantly competent, is weathered in the upper few feet.

---

## 2.4 HISTORIC LAND USE AND DEVELOPMENT TRENDS

The facility is located in a suburban industrial area east of Middletown zoned for industrial use. OU1 is bordered to the north by commercial/retail facilities and State Highway 211, to the west by light industrial properties and Ballard Road, and to the east and south by light industrial and vacant industrial zoned properties.

The facility has been operated by Ecobat as a secondary lead smelter since 1973. Prior to construction, the site was undeveloped. Operations at the facility have included battery recycling, lead refining and smelting, and manufacture of lead and lead alloys. As a result of these operations, large quantities of fill material containing lead slag, battery parts and other wastes were disposed in areas of OU1 at one time.

In the Ecological Areas subject to remediation in OU1<sup>2</sup>, the primary transport mechanism of lead and arsenic found in soils and sediments was historical air dispersion, run-off from other areas of OU1, and sediment transport within affected wetland and stream reaches. Historically, uncontrolled fugitive emissions likely contributed to the lead and arsenic deposition found in wetland areas of OU1; however, the construction of the facility's containment building to store process materials and the fact that the facility operates under negative pressure, have adequately abated this former emissions source.

The current, intended, and reasonably anticipated future use of the site is industrial. Similarly, the watershed for the area is not expected to change significantly from the current mix of commercial and residential properties upstream of the facility.

---

<sup>2</sup> Ecological Areas as described in the ROD for OU1 include areas of the site delineated as wetlands in the proximity of the western stream and railroad pond, northern areas indicated on Figure 5 of the ROD, and all offsite areas of OU1 east of Ballard Road.

---

## 2.5 GROUNDWATER

Two water-bearing horizons underlie the site, although only one results in any appreciable flow of groundwater. The uppermost, unconfined horizon is associated with the glacially deposited till and/or reworked till materials. This water-bearing zone extends to the top of the underlying bedrock surface. The glacial and reworked till deposits are hydraulically connected based on historical groundwater elevation data. The glacial till is generally poorly sorted with low porosity and permeability, whereas the anthropogenic and reworked materials are generally coarser in nature, and are assumed to be slightly more permeable and porous.

The bedrock also contains groundwater, although to a much smaller degree than the surficial unit. Fractures, jointing, and secondary openings are the primary source of groundwater from these sedimentary bedrock units. Based on observations of recharge rates following monitoring well purging, the degree of interconnectivity of these fractures is believed to be low. As a result, little flow is expected to occur through the bedrock water-bearing unit.

Ecobat routinely collects groundwater quality samples from monitoring wells installed in the unconsolidated and bedrock aquifer system in accordance with the Groundwater Monitoring Plan developed for the site (WSP 2018). Based upon historical groundwater elevation data collected from existing monitoring wells, groundwater flow in the unconsolidated aquifer is to the south–southeast towards the Wallkill River. Groundwater flow in the bedrock aquifer also appears to flow south–southeast.

Data indicate affected groundwater has not migrated beyond the limits of OU1.

---

## 2.6 FRESHWATER WETLANDS

In May 2011, Tetra Tech, Inc. of Buffalo, New York, delineated the wetlands in OU1 (Tetra Tech 2011). There are six areas (Wetland W1 through Wetland W6; NYSDEC State Wetland ID GO-47) within OU1 that meet the criteria for designation as a wetland (Figure 2), however, only three of the defined wetlands areas (Wetland W1, Wetland W2, and Wetland W6) contained soils subject to excavation under the Phase II-B Remedial Design/Remedial Action (RD/RA). Pre-excavation conditions were compiled from historical investigations conducted in OU1 and data collected as part of the vegetation, topography, and bathymetric survey completed in accordance with the specifications provided in the February 2013 *Phase II-B Wetlands Design and Restoration Plan for Operable Unit 1* (WSP 2013).

### 3 OU1 REMEDIAL ACTION HISTORY

In 1995, the NYSDEC issued Ecobat a permit to operate a treatment, storage and disposal facility pursuant to the Resource Conservation and Recovery Act (RCRA; referred to as the “Part 373 Permit”). With issuance of this permit and as modified by a Consent Order in 1998, Ecobat became subject to certain corrective action requirements at the site.

In the late 1990s, Ecobat began an interim corrective measure that included the excavation, stabilization, and removal of impacted soil behind the active facility (ENTACT 2022).

Approximately 46,500 tons of impacted soil were excavated and stabilized onsite.

Approximately 34,260 tons of the stabilized material were disposed offsite as non-hazardous waste. The remaining material was staged onsite in piles located in temporary corrective action management units (CAMU) delineated as part of the corrective measure. Ecobat ceased the work associated with the corrective measure in August 1999 before all construction activities were completed.

In 2000, the NYSDEC subsequently instructed their contractor, O’Brien & Gere Engineers, Inc. (O’Brien & Gere), to complete an interim remedial measure (IRM) involving covering the CAMUs. On September 1, 2000, Ecobat then entered into Order on Consent Index #A3-0402-99-11 (2000 Order) with the NYSDEC, to complete the corrective measure associated with OU1. At this time, four OUs were established to prioritize investigation and remediation activities at the site. OU1 was defined as all onsite areas not within OU4, the operational portion of the site, while OU2 was defined as all onsite groundwater. OU3 was defined as offsite areas.

In 2001 and 2005, O’Brien & Gere initiated fieldwork required by the 2000 Order for the remedial investigation (RI) for OU1 and OU2. This work consisted of the collection of soil and groundwater samples to determine impacts to the surrounding area and characterize the nature and extent of fill materials in OU1. The RI for OU1 was finalized on May 30, 2007 (O’Brien & Gere 2007).

In June 2008, Ecobat entered into Order on Consent Index #D3-0001-11-07 with the NYSDEC to complete the feasibility study (FS) for OU1 and OU2. Ecobat had entered into a separate Order on Consent #D3-0502-12-06 to complete an RI/FS for OU3 (as previously defined)<sup>3</sup> in June 2007. Additional phases of investigation related to OU3 as previously defined were initiated in 2008. The FS for OU1 was submitted to NYSDEC on May 18, 2009, and a revision was submitted on October 30, 2009 (ENTACT 2009).

---

<sup>3</sup> Prior to the 2011 Order, OU1 was defined as all onsite areas not within OU4 and OU3 was defined as all offsite areas. The 2011 Order modified the boundaries of OU1 to include the nine contiguous tax parcels referenced in Section 2.2, which were previously defined as part of OU3.

In February 2011, Ecobat, among others, entered into Order on Consent and Administrative Settlement Agreement Index #3-20100528-80 with NYSDEC. The 2011 Order on Consent superseded all previous orders on consent for the site and presented the components of the proposed remedy for OU1. The 2011 Order also redefined the limits of OU1 and OU3 as listed in Section 2.2 of this report. An addendum to the RI was submitted by WSP in March 2011 to include data collected in areas of OU3, which subsequently became part of OU1 as a result of the definition of the OUs in the 2011 Order (WSP 2011).

In May 2011, Tetra Tech, Inc. of Buffalo, New York, delineated wetlands in OU1 (Tetra Tech 2011). Based on this delineation, lead and arsenic-contaminated soils and sediments subject to removal were located within waters and wetlands of the United States. Finally, on September 19, 2011, the ROD presenting the selected remedy for OU1 was signed by NYSDEC (NYSDEC 2011). Four Areas of Concern (AOCs) associated with cleanup objectives based on land use were established as follows:

- AOC1 – Commercial Areas
- AOC2 – Eastern Fill Area (EFA), Industrial Areas and Consolidation Area
- AOC3 – Ecological Areas & Ecological Buffers
- AOC4 – Sediment Areas and Railroad Structural Area

Key elements of the selected remedy for OU1 included:

- A remedial design program, including:
  - a treatability study to develop the appropriate additive and the specific design criteria for stabilization;
  - a jurisdictional wetland delineation of all areas to the east of Ballard Road impacted by site operations;
  - a pre-design investigation to complete delineation of site contaminants to Department Standards, Criteria, and Guidelines (SCGs); and
  - a determination of the extent of the railroad area remediation and the potential for wetland mitigation, based on a structural and geotechnical evaluation of the railroad and the extent of the Ecological Area remediation in relation to the railroad.
- Construction of a lined and capped containment cell meeting the substantive requirements of 6 New York Codes, Rules and Regulations (NYCRR) Part 360.
- Removal of source material (i.e., soil and/or waste for which toxicity characteristic leaching procedure [TCLP] levels for lead exceed 5 milligrams per liter [mg/l]) from the

- EFA, Industrial Areas, Commercial Areas, Sediment Areas, and Ecological Areas, stabilization, and placement within the containment cell.
- Backfilling the EFA excavation to the groundwater table with clean soil meeting the protection of groundwater soil cleanup objectives (SCOs), backfilling the remaining excavation with non-source soil free of visible contamination or clean fill, and placement of a site cover to allow for industrial use of the site.
  - Decontamination of oversized materials such as rock and concrete for onsite deposition or offsite disposal, and recycling of lead buttons and scrap materials.
  - Placement of soil or sediment not requiring stabilization, other than that found suitable for backfill in the EFA, in the containment cell.
  - Installation of a groundwater monitoring well network around the containment cell to monitor the effectiveness of the stabilization.
  - Excavation of Industrial Area soil to meet the industrial use SCOs of lead of 3,900 milligrams per kilogram (mg/kg) and/or arsenic of 16 mg/kg.
  - Excavation of Commercial Area soil to meet the commercial use SCOs of lead of 1,000 mg/kg and/or arsenic of 16 mg/kg.
  - Excavation of Sediment Areas up to 3 feet bgs to meet the site-specific remedial objectives for Ecological Areas of 400 mg/kg for lead and 13 mg/kg for arsenic and capping any remaining non-source soil that exceeds the site-specific remedial objectives for Ecological Areas.
  - Excavation of Ecological Areas up to 2 feet bgs to meet the site-specific remedial objectives of 400 mg/kg for lead and 13 mg/kg for arsenic.
- Backfilling of Sediment and Ecological Areas with clean soil that approximates the physical properties of the sediment or soil removed.
- Establishment of 25-foot buffers extending into Commercial/Industrial areas adjacent to Ecological Areas to prevent migration of soil from Commercial and Industrial Areas into remediated Ecological and Sediment areas.
  - Restoration of streams, stream banks, and wetlands to pre-excavation conditions.
  - Revegetation of disturbed areas.
  - Imposition of an institutional control in the form of an environmental easement for the controlled property.

- Preparation of a Site Management Plan which includes an Institutional and Engineering Control Plan and a Monitoring Plan to assess the performance and effectiveness of the remedy.

Additional details of the selected remedy are provided in the ROD for OU1 (NYSDEC 2011).



## 4 OU1 REMEDY IMPLEMENTATION

All activities addressed in this report were conducted in accordance with the NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010 (NYSDEC 2010). The remedy for OU1 was implemented in three RD/RA phases, with Phases II-A and II-B considered to be one phase, as follows:

- Phase I included the excavation of source material from a portion of the EFA, excavation of impacted soils from limited areas of the containment cell area, and excavation and grading of the containment cell footprint. Phase I was completed in October 2012 pursuant to the NYSDEC-approved with modifications *Phase I RD/RA Workplan Revision 1* dated December 2011 (ENTACT 2011).
- Phase II-A consisted of the treatment of source material present in the CAMUs and Phase I staging pile and the construction of the bottom liner system for the containment cell. Phase II-A was completed in 2012 in accordance with the NYSDEC-approved with modifications *Phase II-A RD/RA Workplan* dated August 2012 (ENTACT 2012).
- Phase II-B included the excavation of source material, non-source soil and impacted sediment with concentrations exceeding the applicable remedial criteria from the EFA, Industrial Area, Commercial Area, Ecological Areas, and Sediment Areas; construction of the containment cell; treatment and placement of excavated materials in the containment cell; and restoration of disturbed areas. Phase II-B was completed between 2013 and 2015 in accordance with the NYSDEC-approved with modifications *Phase II-B RD/RA Workplan* dated February 2013 (ENTACT 2013).
- Phase III included the placement of the cap system on the containment cell, construction of the stormwater drainage system for the containment cell and surrounding area and installation of the permanent leachate conveyance pipe system for the containment cell. Phase III was completed in accordance with the NYSDEC-approved with modifications *Phase III RD/RA Workplan Revision 1* dated March 2016 (ENTACT 2016a) and *Containment Cell Permanent Leachate Conveyance Pipe System Design Revision 1* dated August 2016 (ENTACT 2016b).

Details regarding implementation of each phase of the OU1 remedy are included in Appendices A and B.

Since remaining contamination exists in OU1, institutional controls (ICs) and engineering controls (ECs) are required to protect human health and the environment.

---

## 4.1 INSTITUTIONAL CONTROLS

An IC is required by the ROD 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 and industrial uses only. Adherence to the IC in OU1 is required by the Environmental Easement included in Appendix C and will be implemented under the SMP for OU1. The ICs include the following:

- The OU1 Controlled Property as defined in the Environmental Easement and shown on Figure 2, which includes tax parcels 41-1-70.22, 41-1-70.232, 41-1-71.22, 41-1-73.1, 41-1-73.22, and 41-1-74.82, may be used for:

Industrial use as described in 6 NYCRR Part 375-1.8(g)(2)(iv) for the OU1 Industrial Environmental Easement; and

Commercial use as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and/or Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv) for OU1 Commercial/Industrial Boundary Tracts 1 and 2. The limits of the industrial boundary are included in the Environmental Easement in Appendix C and are shown on Figure 2.

All ECs within the OU1 Controlled Property must be operated and maintained as specified in the SMP;

All ECs within the OU1 Controlled Property must be inspected at a frequency and in a manner defined in the SMP;

With the exception of industrial purposes in the OU-4 Industrial Environmental Easement area, the use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the New York State Department of Health (NYSDOH) or the Orange 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; however, groundwater derived from the OU-4 groundwater extraction and treatment system and the OU-1 containment cell leachate collection system as well as groundwater purged from monitoring wells located in OU-1 and OU-4 are exempted from this (Item 4 of the Easement) and may be treated within OU-4 prior to use for industrial purposes within OU-4.

Groundwater and other environmental or public health monitoring within the OU1 Controlled Property must be performed as defined in the OU1 SMP;

Data and information pertinent to site management of the OU1 Controlled Property must be reported at the frequency and in a manner as defined in the OU1 SMP;

All future activities that will disturb remaining contaminated material within the OU1 Controlled Property must be conducted in accordance with the OU1 SMP;

Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the OU1 SMP;

Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in the OU1 SMP;

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 the Environmental Easement; and

Vegetable gardens and farming are prohibited.

---

## 4.2 ENGINEERING CONTROLS

ECs listed in the ROD include the following:

- The containment cell (referred to as the consolidation area in the ROD);
- cover systems in locations where soil SCOs were not met during remediation; and
- the 25-foot Ecological Buffers installed between Industrial/Commercial Areas and Ecological Areas.

The containment cell was constructed in OU1 northwest of the facility (Figure 2) to be a repository for the disposal of contaminated soil and sediment excavated during implementation of the remedy. Constructed between 2012 and 2017, the containment cell is approximately 4.2 acres and was designed for a capacity of 120,000 cubic yards of material. Source area soil was stabilized to meet non-hazardous concentrations prior to disposal in the containment cell. Additional details regarding construction of the containment are included in Appendix A.

Exposure to soil exceeding SCOs at the site is prevented by a cover system placed in locations where excavation to meet SCOs was not possible (the boundary between OU1 and OU4, adjacent to the railroad and roadways, and a portion of the southern boundary of the OU1 Controlled Property south of the railroad tracks). This cover system is comprised of a minimum of 12 inches of clean fill placed over a demarcation liner. Demarcation liners consist of 40-mil HDPE sheeting (between OU4 and remediated areas of OU1) or 6 mil black or white polyethylene sheeting placed along the length of the excavation sidewall to the base of the excavation. Additional details regarding construction and location of the cover systems are included in Appendix A, while procedures required for inspection and to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed are included in the SMP for OU1.

25-foot wide Ecological Buffers were established as a boundary between Commercial/Industrial areas of OU1 and Ecological Areas. The Ecological Buffers were constructed to extend a minimum of 25 feet into Commercial/Industrial areas, but were remediated and restored to the same standards as Ecological Areas. The purpose of the 25-foot Ecological Buffer is to prevent the migration of soil from Commercial and Industrial areas into remediated Sediment and Ecological Areas.

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the RAOs identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

The containment cell, cover systems, and the 25-foot Ecological Buffer are permanent controls, and the quality and integrity of these system will be inspected at defined, regular intervals in accordance with the SMP for OU1 in perpetuity.

## 5 REFERENCES

- ENTACT. 2009. Feasibility Study. Revere Smelting & Refining Site, Operable Unit 1, NYSDEC Site No. 3-36-053, 65 Ballard Road, Middletown, New York. Revision 1.0. October 30.
- ENTACT. 2011. Phase I Remedial Design/Remedial Action Workplan. Revere Smelting & Refining Site, Operable Unit 1, NYSDEC Site No. 3-36-053, 65 Ballard Road, Middletown, New York. Revision 1.0. December.
- ENTACT. 2012. Phase II-A Remedial Design/Remedial Action Workplan. Revere Smelting & Refining Site, Operable Unit 1, NYSDEC Site No. 3-36-053, 65 Ballard Road, Middletown, New York. August.
- ENTACT. 2013. Phase II-B Remedial Design/Remedial Action Workplan. Revere Smelting & Refining Site, Operable Unit 1, NYSDEC Site No. 3-36-053, 65 Ballard Road, Middletown, New York. February.
- ENTACT. 2016a. Phase III Remedial Design/Remedial Action Workplan. Revere Smelting & Refining Site, Operable Unit 1, NYSDEC Site No. 3-36-053, 65 Ballard Road, Middletown, New York. March.
- ENTACT. 2016b. Containment Cell Permanent Leachate Conveyance Pipe System Design for the Revere Smelting & Refining Site, Operable Unit 1, NYSDEC Site No. 3-36-053, 65 Ballard Road, Middletown, New York. August.
- ENTACT. 2022. Construction Completion Report for the Phase I, Phase II-A, Phase II-B, and Phase III Remedial Actions at the Revere Smelting & Refining Site, Operable Unit 1, NYSDEC Site No. 3-36-053, 65 Ballard Road, Middletown, New York. Revision 2. June 17.
- NYSDEC. 2010. DER-10 Technical Guidance for Site Investigation and Remediation. May.
- NYSDEC 2011. Record of Decision. Revere Smelting & Refining Operable Unit Number: 01, State Superfund Project, Town of Wallkill, Orange County, Site No. 336053. September.
- O’Brien & Gere. 2007. Remedial Investigation, Revere Smelting & Refining Site, Middletown, New York (Site #336053). May 30.
- Tetra Tech, Inc. 2011. Aquatic Resources Survey Report for Operable Unit 1. Revere Smelting and Refining Corporation, Middletown, New York Plant. Final. May.
- WSP. 2011. Remedial Investigation Report Addendum, Revere Smelting & Refining Corporation, Middletown, New York, Operable Unit 1, Site No. 3-36-053. March 31.
- WSP. 2013. Phase II-B Wetlands Design and Restoration Plan for Operable Unit 1, Revere Smelting & Refining Corporation, Middletown, New York. February 7.
- WSP. 2018. Groundwater Monitoring Plan, Revere Smelting & Refining Corporation, Middletown, New York, EPA ID No. NYD030485288. Revision No. 1 November 30.

- WSP. 2020. Stream and Wetland Restoration As-Built and Year 1 Monitoring Report for Operable Unit 1, Revere Smelting & Refining, Middletown, New York. May 29.

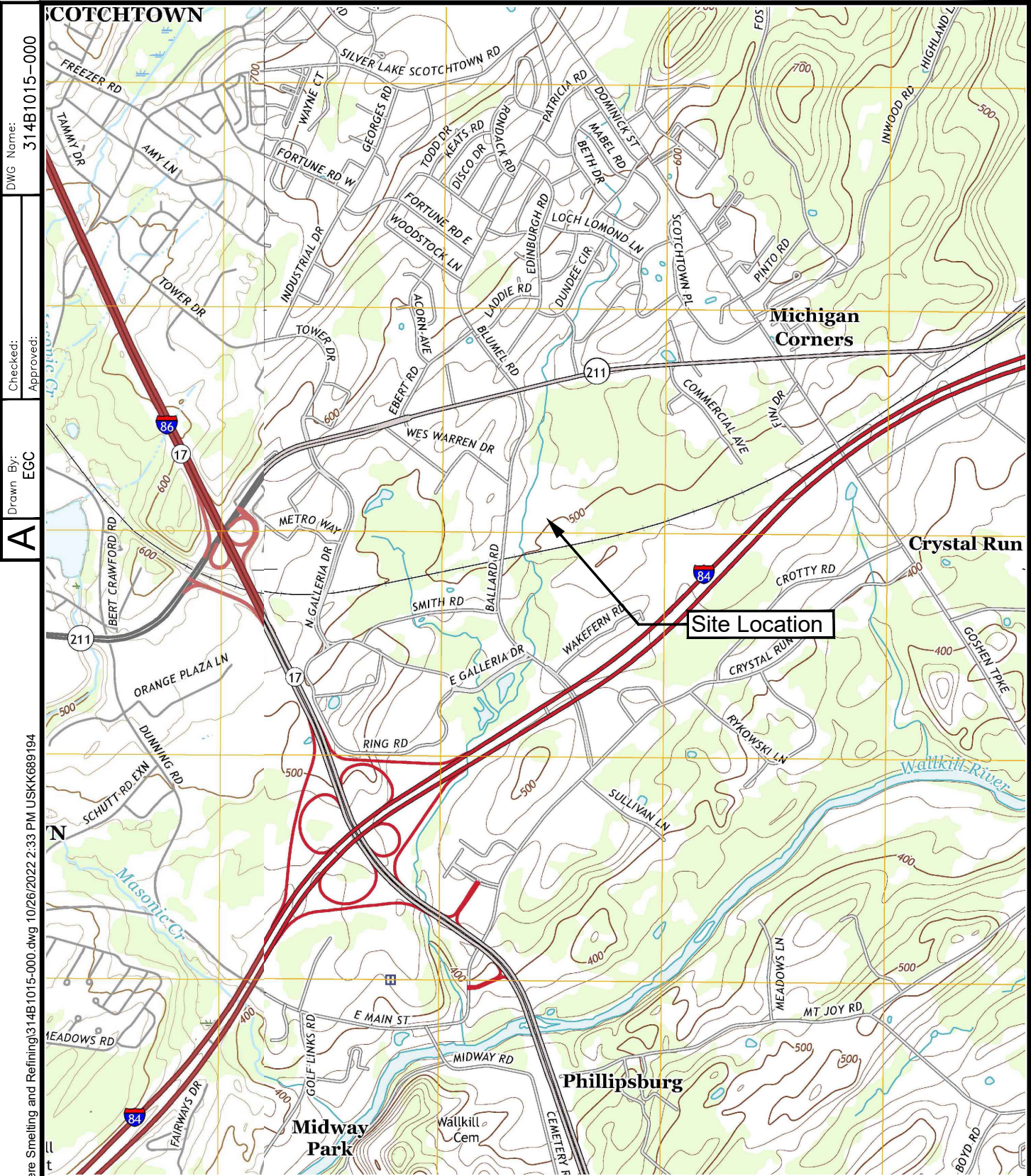
## 6 ACRONYMS

AOC	Area of Concern
bgs	below ground surface
CAMU	Corrective Action Management Unit
CCR	Construction Completion Report
COCs	constituents of concern
DER	Division of Environmental Remediation
EFA	Eastern Fill Area
FS	feasibility study
IRM	Interim Remedial Measure
I-84	Interstate Highway 84
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
OU	Operable Unit
RA	remedial action
RCRA	Resource Conservation and Recovery Act
RD/RA	remedial design/remedial action
RI	remedial investigation
ROD	Record of Decision
SCGs	standards, criteria, and guidelines
SCOs	soil cleanup objectives
TCLP	toxicity characteristic leaching procedure
WSP	WSP USA Inc.

# FIGURES



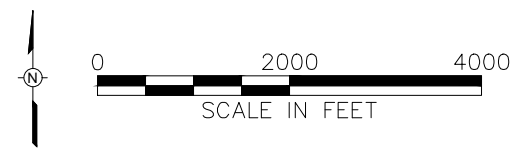




DWG Name: 314B1015-000  
 Checked: Approved:  
 Drawn By: EGC  
 A

Z:\US\CentralData\DCAMEB00\CAD\Revere Smelting and Refining\314B1015-000.dwg 10/26/2022 2:33 PM USKK689194

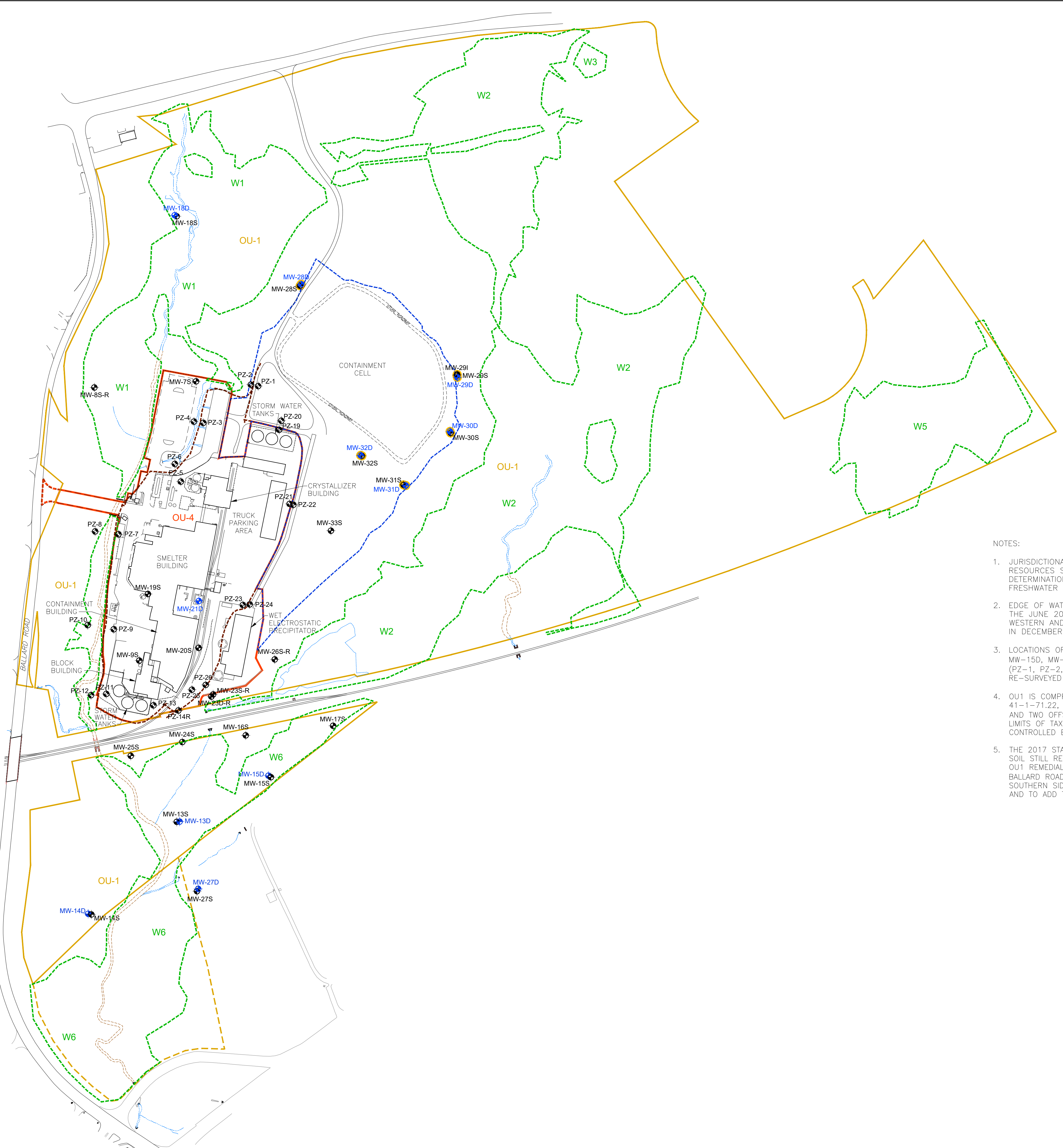
REFERENCE:  
 7.5 MINUTE SERIES TOPOGRAPHIC QUADRANGLE  
 GOSHEN, NEW YORK  
 PHOTOREVISED 2013 SCALE 1:24,000




WSP USA Inc.  
 100 SUMMER STREET  
 13th FLOOR  
 BOSTON, MA 02110  
 TEL: +1 617.426.7330

FIGURE 1  
 SITE LOCATION MAP

REVERE SMELTING & REFINING  
 MIDDLETOWN, NEW YORK  
 PREPARED FOR  
 ECOBAT RESOURCES NEW YORK, LLC  
 MIDDLETOWN, NEW YORK



**LEGEND**

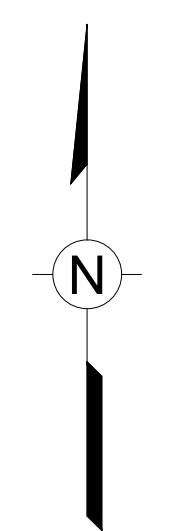
- MONITORING WELL
- BEDROCK MONITORING WELL
- CONTAINMENT CELL MONITORING WELL
- PIEZOMETER
- EDGE OF WATER
- 2019 TOP OF BANK
- OU1 BOUNDARY LINE (SUBJECT TO ENVIRONMENTAL EASEMENT)
- OU1 BOUNDARY LINE (NOT CONTROLLED BY REVERE OR SUBJECT TO ENVIRONMENTAL EASEMENT)
- OU4 BOUNDARY LINE (SEE NOTE 5)
- OU1 INDUSTRIAL BOUNDARY LINE
- BARRIER WALL
- W2 WETLAND AREA (SEE NOTE 1)

**NOTES:**

- JURISDICTIONAL WETLAND LIMITS (W1, W2, AND W6) AS DELINEATED IN TETRA TECH'S MAY 2011 AQUATIC RESOURCES SURVEY REPORT FOR OPERABLE UNIT 1 AND APPROVED BY THE USACOE JURISDICTIONAL DETERMINATION DATED OCTOBER 25, 2011. WETLAND LIMITS VALIDATED BY THE NYSDEC AS NY STATE FRESHWATER WETLAND GO-47 IN SIGNED MAPS DATED JUNE 20, 2011.
- EDGE OF WATER OUTSIDE RESTORED SECTIONS OF STREAM AND ON THE POND STREAM IS BASED ON THE JUNE 2011 TOPOGRAPHIC SURVEY REFERENCED BELOW. WITHIN THE RESTORED SECTIONS OF THE WESTERN AND EASTERN STREAMS, THE STREAM IS DEFINED BY THE TOP OF BANK AS SURVEYED BY WSP IN DECEMBER 2019.
- LOCATIONS OF MONITORING WELLS (MW-7S, MW-8S-R, MW-13S, MW-13D, MW-14S, MW-14D, MW-15S, MW-15D, MW-17S, MW-18S, MW-18D, MW-19S, MW-21D, MW-24S, MW-27S, AND MW-27D), PIEZOMETERS (PZ-1, PZ-2, PZ-3, PZ-4, PZ-6, PZ-7, PZ-8, PZ-9, PZ-10, PZ-11, PZ-12, AND PZ-13) WERE RE-SURVEYED IN JANUARY AND FEBRUARY 2020.
- OU1 IS COMPRISED OF NINE CONTIGUOUS TAX PARCELS (TAX PARCELS 41-1-70.22, 41-1-70.232, 41-1-71.22, 41-1-73.1, 41-1-73.22, 41-1-74.82, AND 41-1-76 OWNED BY ECO-BAT NEW YORK, LLC, AND TWO OFFSITE PARCELS 60-1-120 AND 41-1-72.2) LESS THE PLANT FACILITY AND GROUNDWATER. THE LIMITS OF TAX PARCEL 60-1-120 AS SHOWN ON THIS FIGURE ARE APPROXIMATE; ALL OTHER TAX PARCELS CONTROLLED BY REVERE HAVE BEEN SURVEYED.
- THE 2017 STATEMENT OF BASIS MODIFIED THE BOUNDARIES OF OU4 TO INCLUDE AREAS WHERE CONTAMINATED SOIL STILL REMAINS IN THE VICINITY OF THE OPERATING PLANT SITE THAT WERE NOT REMOVED DURING THE OU1 REMEDIAL ACTION. OU4 WAS ALSO EXPANDED TO INCLUDE THE MAIN DRIVEWAY ENTERING THE SITE FROM BALLARD ROAD (DASHED AS NOT CONTROLLED BY REVERE), TO EXTEND THE BOUNDARY ON THE EASTERN AND SOUTHERN SIDE OF THE ACTIVE FACILITY TO INCLUDE THOSE AREAS UP TO AND INCLUDING THE BARRIER WALL, AND TO ADD THE WET ELECTROSTATIC PRECIPITATOR.

**D** REFERENCES:  
 JURISDICTIONAL WETLAND BOUNDARIES FROM TETRA TECH'S FIGURE 1 AQUATIC RESOURCES DRAWING DATED SEPTEMBER 20, 2011, AS MODIFIED VIA NATIONWIDE PERMIT NAN-2011-00720 COMPLIANCE CERTIFICATION LETTER TO THE USACOE ON SEPTEMBER 20, 2017. OU BOUNDARIES FROM DRAWING NO. 060107-2016-02-27\_BOUNDARY\_REV ENTITLED "RSR CORPORATION NYSDEC ENVIRONMENTAL EASEMENT SURVEY" BY BORBAS SURVEYING & MAPPING, LLC REVISED FEBRUARY 27, 2018.

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK AND WHITE COPIES MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.



REVISIONS		DESCRIPTION
REV	ISSUED FOR CONSTRUCTION COMPLETION REPORT	
	10-26-2022	JG
		JAS



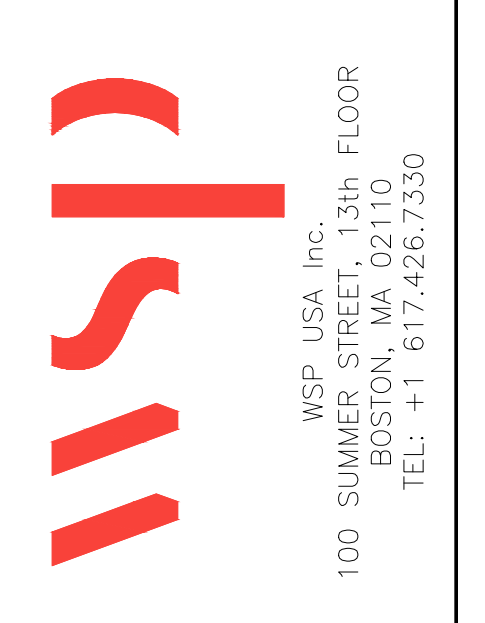
DRAWN BY	CHECKED	APPROVED	ECG/KMK/MS	JG/JAS

NOTICE: THIS DRAWING HAS BEEN PREPARED UNDER THE VIOLATION OF STATE LAW FOR ANY PERIODS, UNLESS ACTING ENGINEERS TO ALTER THIS DOCUMENT IN ANY WAY.

**SITE LAYOUT**

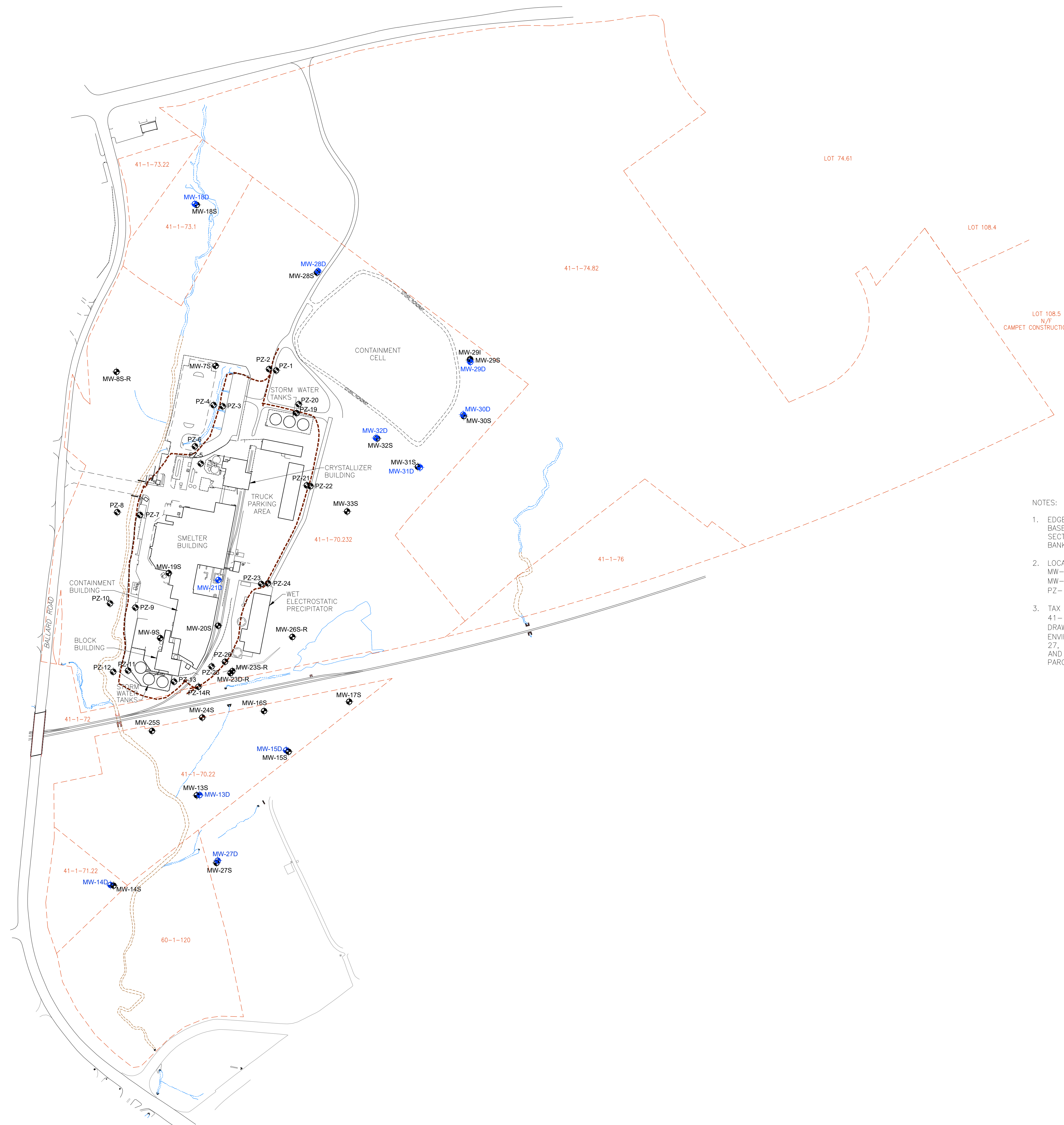
**REVERE SMELTING & REFINING**  
 MIDDLETOWN, NEW YORK

PREPARED FOR  
**ECOBAT RESOURCES NEW YORK, LLC**  
 MIDDLETOWN, NEW YORK



**FIGURE 2**

Drawing Number  
**314B1015-001**



**LEGEND**

- MONITORING WELL
- BEDROCK MONITORING WELL
- PIEZOMETER
- EDGE OF WATER
- 2019 TOP OF BANK
- TAX PARCEL
- BARRIER WALL

**NOTES:**

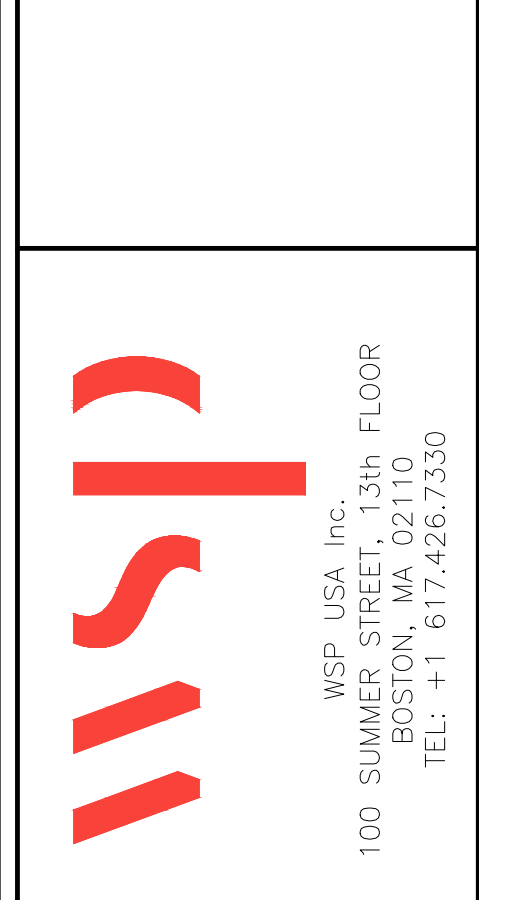
1. EDGE OF WATER OUTSIDE RESTORED SECTIONS OF STREAM AND ON THE POND STREAM IS BASED ON THE JUNE 2011 TOPOGRAPHIC SURVEY REFERENCED BELOW. WITHIN THE RESTORED SECTIONS OF THE WESTERN AND EASTERN STREAMS, THE STREAM IS DEFINED BY THE TOP OF BANK AS SURVEYED BY WSP IN DECEMBER 2019.
2. LOCATIONS OF MONITORING WELLS (MW-7S, MW-8S-R, MW-13S, MW-13D, MW-14S, MW-14D, MW-15S, MW-15D, MW-17S, MW-18S, MW-18D, MW-19S, MW-21D, MW-24S, MW-27S, AND MW-27D), PIEZOMETERS (PZ-1, PZ-2, PZ-3, PZ-4, PZ-6, PZ-7, PZ-8, PZ-9, PZ-10, PZ-11, PZ-12, AND PZ-13) WERE RE-SURVEYED IN JANUARY AND FEBRUARY 2020.
3. TAX PARCELS WITHIN THE CONTROLLED PORTION OF U01 (TAX PARCELS 41-1-70.22, 41-1-70.232, 41-1-71.22, 41-1-73.1, 41-1-73.22, 41-1-74.82, AND 41-1-76) FROM DRAWING NO. 060107\_2018-02-27\_BOUNDARY\_REV ENTITLED "RSR CORPORATION NYSDEC ENVIRONMENTAL EASEMENT SURVEY" BY BORBAS SURVEYING & MAPPING, LLC REVISED FEBRUARY 27, 2018. TAX PARCEL 60-1-120 BOUNDARIES AS SHOWN ON THIS FIGURE ARE APPROXIMATE AND ONLY INCLUDE THE PORTION THAT FALL WITHIN THE U01 CORRECTIVE ACTION LIMITS. TAX PARCEL 41-1-72 IS THE RAILROAD PROPERTY OWNED BY PENNSYLVANIA LINES LLC.

REV	REVISIONS	DESCRIPTION
1	ISSUED FOR CONSTRUCTION	COMPLETION REPORT
2	10-26-2022	CHG JCS
3	10-26-2022	CHG JCS



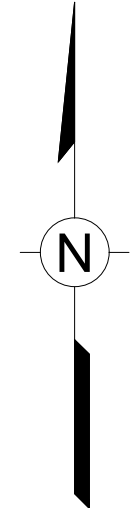
DRAWN BY	CHECKED	APPROVED
ECG/KMK/MS	JG	JAS

**OU1 TAX PARCELS**  
**REVERE SMELTING & REFINING**  
 MIDDLETOWN, NEW YORK  
 PREPARED FOR  
**ECOBAT RESOURCES NEW YORK, LLC**  
 MIDDLETOWN, NEW YORK



**FIGURE 3**  
 Drawing Number  
**314B1015-001**

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK AND WHITE COPIES MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.



**D**

# APPENDIX

# A CONSTRUCTION COMPLETION REPORT FOR THE PHASE I, PHASE II-A, PHASE II-B, AND PHASE III REMEDIAL ACTIONS

Provided separately.

# APPENDIX

## **B** STREAM AND WETLAND RESTORATION AS-BUILT AND YEAR 1 MONITORING REPORT FOR OPERABLE UNIT 1

Provided separately.

# APPENDIX

## C ENVIRONMENTAL EASEMENT, METES AND BOUNDS DESCRIPTION, AND PROOF OF RECORDING

Provided separately.