REMEDIAL ACTION REPORT

for the

CONSOLIDATED IRON AND METAL SITE

CITY OF NEWBURGH, ORANGE COUNTY, NEW YORK

369812

Stantec Consulting Services Inc.
3 Columbia Circle Suite 6
Albany NY 12203-5158
Tel: (518) 452-4358
Fax: (518) 452-9234

REMEDIAL ACTION REPORT
for the
CONSOLIDATED IRON AND METAL SITE
CITY OF NEWBURGH, ORANGE COUNTY, NEW YORK

CERTIFICATION:

I, Richard Mark Dempf, certify that at all pertinent times hereinafter mentioned was currently a New York State registered professional engineer; was the individual who had primary engineering responsibility for the implementation of the subject remedial program; and that all requirements of the remedial program have been satisfied.

The data submitted to the USEPA demonstrates that the remediation requirements set forth in the October 2009 Remedial Design Report for the subject remedial program have been achieved in accordance with the time frames, if any, established in the work plan.

Any use restrictions, institutional controls, engineering controls, and/or any operation and maintenance requirements applicable to the Site are contained in an environmental easement under development that will be recorded with the Orange County Clerk's Office and that any affected local governments will be notified that such easement has been recorded.

A Site Management Plan will be developed by the City of Newburgh for the continual and proper operation, maintenance, and monitoring of any engineering controls employed at the Site including the proper maintenance of any remaining monitoring wells.

STANTEC CONSULTING SERVICES INC.

Richard Mark Dempf, P.E.
NYS License No. 067234
Senior Principal

u:\194110606\correspondence\conironrarcert.docx

Table of Contents

1.0 INTRODUCTION 1
1.1 Site Location 1
1.2 Operational History 1
1.3 Topography 1
1.4 Geology and Hydrogeology 2
1.5 Regulatory and Investigative History 2
1.6 Nature of Contamination 3
2.0 REMEDIAL MEASURES DESCRIPTION 4
2.1 Record of Decision (ROD) Requirements 4
2.2 Remedial Design 5
3.0 SUMMARY AND DOCUMENTATION OF REMEDIAL ACTION 6
3.1 Mobilization and Site Preparation 6
3.2 Excavation 7
3.2.1 Phase I 7
3.2.2 Phase II 7
3.3 Documentation Sampling and Sediment Sampling 7
3.4 Survey 9
3.5 Backfill 10
3.6 Scale Operation 10
3.7 Transportation and Disposal 11
3.8 Air Monitoring 11
3.9 Dust Controls 11
3.10 Monitor Wells 12
4.0 SITE MANAGEMENT PLAN 12
5.0 FINAL INSPECTION AND CERTIFICATION 13
5.1 Five-Year Statutory Review 13
6.0 SUMMARY OF PROJECT COSTS 13
7.0 SITE PHOTOGRAPHS 14
8.0 CONTACT INFORMATION 14
9.0 REFERENCES 14

Figures

Figure 1 Site Location Map
Figure 2 Pre-Remediation Site Plan
Figure 3 Final Excavation Plan
Figure 4 Final As-Built
Figure 5 Depth of Excavation Map
Figure 6 Post-Excavation Cross Section
Figure 7a Post-excavation Soil Sampling Map: Lead
Figure 7b Post-excavation Soil Sampling Map: Cadmium
Figure 7c Post-excavation Soil Sampling Map: Total PCBs
Figure 7d Post-excavation Soil Sampling Map: Total BTEX/MTBE

Appendices

Appendix A Site Description and History
Appendix B Daily Reports
Appendix C Post-Excavation Soil Analytical Data
Appendix D Sediment Sampling Analytical Data
Appendix E Compaction Test Reports
Appendix F Air Monitoring Data
Appendix G Monitor Well Construction Logs
Appendix H Photographs

Additional Information Regarding the Remedial Action Report Figures

Readers of this report should use the data disc provided with the narrative to navigate the various figures which accompany the report. The labeling on the disc is appropriate in identifying the figures referenced in the report and are organized accordingly. Once the figure has been opened from the disc (or referenced by hard copy printed from the disc) the labeling on the figure may or may not correspond to the figure referenced due to the figures originating from various other reports and documents. For clarification, the following key is provided:

Figure 1 Site Location Map: On the figure, this display is labeled as "Figure 1."

Figure 2 Pre-remediation Site Plan: On the figure, this display is labeled "Sheet No. EC-1" and described as "Topographic and Boundary Survey," which appropriately illustrates the Pre-remediation Site Plan.

Figure 3 Final Excavation Plan: On the figure, this display is labeled "Figure 2 and Table 1."

Figure 4 Final As-Built Drawings: There are 13 drawings provided from two different sources: seven from Chazen Engineering and six from Stantec. The content of each drawing is clearly labeled in the description box in the lower right corner of the display. The Chazen set of drawings includes a duplicate of Figure 2, "Sheet No. EC-1, Topographic and Boundary Survey," which serves as a general base map of the site. This is followed by Figures 1 through 6, containing the survey information performed by Chazen for the portion of the site where they performed the survey. The Stantec as-built drawings are labeled Sheets 1 through 6 and contain the survey information performed by Stantec for the portion of the site where they performed the survey. Information regarding the use of two contractors to perform surveying at the site is contained in the narrative report.

Figure 5 Depth of Excavation Map: This is an additional drawing generated by Stantec depicting elevation readings at the depth of the excavation and labeled "Sheet 7."

Figure 6 Post-Excavation Cross Section: This is an additional display generated by Stantec, labeled "Sheet 8."

Figure 7a Total Lead Map: This display was generated using a base map described as "Final Asbuilt Plan" and labeled "Sheet 1." On this map, the documentation sampling value for lead (i.e., the sample taken at the base of the excavation to document material left in place) is indicated at each of the survey points.

Figure 7b Total Cadmium Map: This display was generated using a base map described as "Final Asbuilt Plan" and labeled "Sheet 1." On this map, the documentation sampling value for cadmium (i.e., the sample taken at the base of the excavation to document material left in place) is indicated at each of the survey points.

Figure 7c Total PCB Map: This display was generated using a base map described as "Final Asbuilt Plan" and labeled "Sheet 1." On this map, the documentation sampling value for total PCBs (i.e., the sample taken at the base of the excavation to document material left in place) is indicated at each of the survey points.

Figure 7d Total BTEX/MTBE Map: This display was generated using a base map described as "Final Asbuilt Plan" and labeled "Sheet 1." On this map, the documentation sampling value for total BTEX and MTBE (i.e., the sample taken at the base of the excavation to document material left in place) is indicated at each of the survey points.

1.0 INTRODUCTION

This Remedial Action Report has been prepared to document the remedial activities conducted at the Consolidated Iron and Metal site located in Newburgh, New York. References for this Report are included in Section 9.0.

1.1 Site Location

The Consolidated Iron and Metal site is located at 1 Washington Street, in the City of Newburgh, Orange County, New York. The site is a U.S. Environmental Protection Agency (USEPA) Superfund site and is listed on the National Priorities List (NPL). The site was most recently a scrap yard (from the mid-1950s to 1999) and prior to that a shipyard (from the early 1900s to the 1940s). The site is approximately 7.5 acres and is bordered by Washington Street to the north, the Hudson River to the east, an active wastewater treatment plant to the south, and CSX railroad tracks and South Water Street to the west. The site is located in a mixed industrial, commercial, and residential area. A site location map is presented as Figure 1 and a pre-remediation site plan (March 2008) is presented as Figure 2.

1.2 Operational History

Scrap metal processing and storage operations took place at the site during its period of operation as a scrap yard. Various types of scrap metal were received, including whole automobiles, automobile engines, transmissions, and batteries, keypunch machines, computer parts, white goods (appliances), and transformers. From approximately 1975 to 1995, a smelter was operated on-site to smelt aluminum waste materials into aluminum ingots. The smelting process generated a large ash or slag pile grossly contaminated with lead. Other operations included sorting ferrous and non-ferrous metal scrap, which included baling and shearing large pieces of metal, including whole cars, into smaller pieces for transport, and the flattening of cars. The owner-operator's activities to reclaim accumulated sheared metal fines from the site soils also resulted in a large "processed" soil pile which was contaminated with metals and polychlorinated biphenyls (PCBs). From 1997 to 1999, the New York State Department of Environmental Conservation (NYSDEC) conducted several inspections at the facility and cited the owner for a number of violations. Subsequent inspections by NYSDEC noted that the owner had failed to adequately correct the violations and in fall 1999, the New York State Attorney General shut down operations at the site for various violations, including illegal discharge to surface water without a permit.

1.3 Topography

The site lies in the Lower Hudson Valley, on the west bank of the Hudson River in an area of relatively low topographic relief known as the Hudson-Champlain Lowlands of eastern New York. The site is located on a relatively flat area at an elevation of approximately 40 feet above mean sea level (msl) and about 10 feet above the adjacent Hudson River (at mean low tide elevation). According to a Flood Insurance Rate Map, the eastern portion of the site next to the

Hudson River is located within Zone B, an area between the limits of 100-year floods and 500-year floods, and the western portion of the site is within Zone C, an area of minimal flooding.

1.4 Geology and Hydrogeology

As documented in the Record of Decision (ROD), geologically, the site is underlain by a stratified clay, silt and sand unit with layers of sand and gravel at the land surface and below the water table. The unconsolidated deposits are underlain by the Martinsburg Formation, which consists of shale and carbonate rocks (e.g., limestones and dolostones). The bedrock is cross-cut by faults near the site.

The unconsolidated water table aquifer, which overlies the low permeability bedrock aquifer, is comprised of fill material underlain by native sand and gravel with localized silt lenses. The water table aquifer varies in thickness across the site, averaging approximately 20 feet thick. All of the site monitor wells are installed within this aquifer.

Based on synoptic water level measurements, groundwater flows to the east/southeast toward the Hudson River. The water table at the site is generally flat, with elevations ranging from 3.18 feet above msl (14.43 feet below ground surface (bgs)) in the northwest corner of the site, to 0.44 foot above msl (11.97 feet bgs) in the southeastern part of the site.

1.5 Regulatory and Investigative History

USEPA's involvement at the site began in August 1998, with the sampling of an ash/slag pile that was generated by the aluminum smelting operation and found to be contaminated with lead and PCBs. USEPA subsequently performed a number of removal actions at the site to prevent public exposure to site contaminants and to mitigate the potential for off-site contaminant migration. The actions include the removal of a large ash/slag pile generated from the on-site smelter, the removal of a large "processed" soil pile, the installation of an 8 foot tall chain link fence with two 20 foot wide entrance gates (northwest and southwest corners of the site), the removal of drums from the site, the construction of a runoff berm at the site, and the removal of various concrete structures. These concrete structures include a large concrete block garage, poured concrete shear building, concrete block compacter structure, and the structural steel aluminum smelter. The shear, compactor, and smelter comprised the "process area" of the site. Concrete pads and footings associated with these structures have been removed. Concrete and large masses of steel were shipped off-site for recycling. Additionally, in excess of thirty-four 100 cubic yard trailers were shipped from the site containing miscellaneous size tires from the operations of the scrap yard. These tires were shipped to a power plant in Connecticut for use as a fuel to power an electric generating station.

An investigation was performed by USEPA, beginning in 1999 to determine the extent of contamination present at the site. The results of the investigation caused the site to be placed on the NPL in June 2001. USEPA began a comprehensive remedial investigation/feasibility study (RI/FS) at the site in June 2004. The RI determined site soils to be impacted with metals

contamination, particularly lead, throughout the site; additionally, volatile organic compounds (VOCs) and PCB contamination was found in the soils of the former process area of the site. The feasibility study was developed in 2005 to evaluate potential alternatives to address the widespread soil contamination at the site. A preferred alternative was presented to the public for review and comment in July 2006 and the site remedy, addressing the public comments, was selected and memorialized in a Record of Decision (ROD) issued in October 2006.

To assist in the development of the remedial design, USEPA and its technical contractors performed a comprehensive surface and subsurface soil investigation to determine the percentage of hazardous and non-hazardous waste for disposal purposes. Geoprobe sampling and subsequent analysis was performed for Toxicity Characteristic Leaching Procedure (TCLP) metals. This USEPA procedure included the analysis of 8 different heavy metals. Most of the testing demonstrated TCLP concentrations of lead at or above 5 parts per million (ppm), therefore classifying the soils as Resource Conservation and Recovery Act (RCRA) Hazardous as a D008 waste. Some of the soils also had concentrations of cadmium above 1 ppm which classified the soils as RCRA Hazardous, D006. D008/D006 soils around the process area were contaminated with total PCBs up to 70 ppm. Accordingly, soils above 50 ppm of PCBs were regulated as Toxic Substances Control Act (TSCA) regulated waste.

A series of test trenches were also excavated throughout the site during this same time period. Nine test trenches were excavated to a depth of six feet or the water table, whichever came first, and to a length of 100 feet. Photographs and field notes were used to document the extensive amount of debris in the subsurface soils. Debris primarily consisted of metal parts/objects inherent to scrap yard operations: wood, rubber, plastic, concrete, rock, tires, and general construction debris. Approximately 15-40% of the excavated material was expected to be debris requiring handling and segregation.

Groundwater level monitoring and a site-wide GPS survey of topographic elevations were also performed during the March/April 2008 pre-design investigation.

1.6 Nature of Contamination

The field work and sampling performed during the RI characterized the nature and extent of contamination in the soils, surface water, sediment, and groundwater at the site. The RI report contains a more complete examination of the analytical results. This information is available at the site repositories maintained at the Newburgh Free Library and the USEPA Region 2 office.

Soils at the site are primarily contaminated with lead and cadmium above the RCRA Characteristic limits, therefore classifying most of the soils as RCRA Hazardous for lead and cadmium. The corresponding RCRA waste codes are D008 and D006, respectively. Some of the soils in the process area were found to be contaminated with PCBs. A small percentage of the soils in this area were contaminated with PCBs up to 70 ppm as total PCBs, however, most of the other soils at this site had total PCB concentrations considerably less than 50 ppm. Another area of the site was found to be contaminated with lead and cadmium at concentrations that are

less than the RCRA Characteristic levels for classification as a hazardous waste. These soils, representing approximately 15 – 20% of the total volume of soil to be excavated, required excavation and off-site disposal. These non-hazardous soils were disposed in either a RCRA Subtitle C or Subtitle D landfill as long as the selected facility was in compliance with the USEPA Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Off-Site Rule. All other RCRA hazardous soil had to be disposed of in a RCRA Subtitle C landfill with stabilization prior to disposal. A small percentage of soils, classified as RCRA/TSCA waste also had to be disposed of in a RCRA and TSCA regulated waste landfill. No on-site treatment was permitted under the design. In addition, all hazardous and non-hazardous soil and debris had to be handled, treated, and disposed of within the boundaries of the continental United States. All materials shipped for recycling/reuse (e.g., concrete, metals, tires, etc.) also had to be shipped to recycling facilities within the continental U.S.

Most of the site required excavation to a depth of six feet or the water table, whichever was encountered first. Another small area (process area) required excavation to the water table, estimated to be approximately 10 feet.

USEPA Region 2 has implemented a green remediation policy for remedial actions. The Consolidated Iron and Metal Site remedial action was implemented in accordance with USEPA Region 2 Clean and Green policy (March 2009) found at http://epa.gov/region2/superfund/green_remediation/policy.html. The remediation achieved compliance with applicable policy elements to the extent practicable. Recycling figures achieved under this remedial action are included in Section 3.1, below.

2.0 REMEDIAL MEASURES DESCRIPTION

Based upon the results of the RI and human health and ecological risk assessments, USEPA determined that the response action selected was necessary to protect the public health or the welfare of the environment from actual or threatened releases of hazardous substances into the environment. After evaluation of the alternatives and consideration of community acceptance, USEPA selected a remedy it determined to be most appropriate for the site. The selected remedy is detailed in Section 2.1, below. Anticipating future redevelopment of the site, this remedy took into consideration common architectural and building practices.

2.1 Record of Decision (ROD) Requirements

In October 2006, USEPA issued a Record of Decision for the Site that identified the following remedial measures as the cleanup remedy for the site:

1. a remedial design program to provide the details necessary for the construction and monitoring of the remedial program;
2. removal and off-site disposal of surface debris and demolition, removal, and off-site disposal of the foundations/basements of the former process area buildings and of the former garage in its entirety;

3. excavation and off-site disposal of contaminated soil exceeding the residential preliminary remediation goal (PRG) for lead (400 parts per million (ppm)) down to six feet bgs;
4. excavation and off-site disposal of contaminated soil exceeding the PRG for VOCs and PCBs in subsurface soils (10 ppm total for each) to the water table;
5. placement of a readily-visible demarcation material at the interface between the excavations and backfill;
6. backfilling the excavated soil with clean fill, meeting the PRG values, to grade;
7. imposition of institutional controls in the form of an environmental easement and/or restrictive covenant that will at a minimum require: (a) restricting any excavation below the soil cover's demarcation layer of six feet unless the excavation activities are in compliance with an USEPA approved site management plan (SMP); (b) restricting new construction at the site unless an evaluation of the potential for vapor intrusion is conducted and mitigation, if necessary, is performed in compliance with an USEPA-approved SMP; and (c) restricting the use of groundwater as a source of potable or process water unless groundwater quality standards are met;
8. development of a site management plan that provides for the proper management of all site remedy components post-construction, such as institutional controls, and that shall also include: (a) monitoring of site groundwater to ensure that, following the soil excavation, the contamination is attenuating and groundwater quality continues to improve; (b) an inventory of any use restrictions on the site; (c) necessary provisions for ensuring the easement/ covenant remains in place and is effective; (d) provision for any operation and maintenance required of the components of the remedy, and (e) the requirement that the owner or person implementing the remedy submit periodic certifications that the institutional and engineering controls are in place; and
9. periodic reviews by USEPA to ensure that the remedy continues to be protective of public health and the environment.

This report discusses and certifies items 2 through 6 as listed above.

2.2 Remedial Design

In spring 2008, to prepare the remedial design, EPA and its technical contractors performed a comprehensive surface and subsurface soil investigation to determine the percentage of hazardous and non-hazardous waste for disposal purposes. Geoprobe sampling and subsequent analysis was performed for TCLP metals. This EPA procedure included the analysis of 8 different heavy metals. Most of the testing demonstrated TCLP concentrations of lead at or above 5 ppm, therefore classifying the soils as RCRA Hazardous as a D008 waste. Some of the soils also had concentrations of cadmium above 1 ppm which classifies the soils as RCRA Hazardous as a D006 waste. D008/D006 soils around the process area of the site were found to be contaminated with total PCBs from 50 to 70 ppm, classifying them as TSCA hazardous waste.

A series of test trenches were also excavated throughout the site during this same time period. Nine test trenches were excavated to a depth of six feet or the water table, whichever came first,

and to a length of 100 feet. Photographs and field notes were used to document the extensive amount of debris in the subsurface soils. Debris was primarily metal parts/objects inherent to scrap yard operations. Any material that was encountered that could be recycled was decontaminated and staged for recycling.

These field efforts enabled the development of the Remedial Design, which was completed in October 2009. A copy of the Remedial Design Report is available at the site repositories maintained at the Newburgh Free Library and the EPA Region 2 office.

3.0 SUMMARY AND DOCUMENTATION OF REMEDIAL ACTION

3.1 Mobilization and Site Preparation

Prior to the initiation of any ground disturbance, several preparatory activities were performed. In fall 2008, a concrete block garage at the site as well as the remaining building foundations at the process area of the site were demolished and removed. Scrap metal and debris was also collected from the site surface for recycling. A truck frame and large metal barges were removed from the shoreline and replaced with large boulders to stabilize the river bank. These efforts, along with the recyclable scrap material collected from the subsurface throughout the remedial action, resulted in the recycling of 20 cubic yards of concrete, approximately 313 tons of scrap steel, 156 tons of tires, and 115 cubic yards of vegetation.

Decontamination of materials that were recycled from the site (scrap steel/metal and tires) was accomplished by removing all gross solids (soil) from the materials. After all gross solids were removed, all materials were water washed to remove any remaining soil. This work was completed in areas that would not cross contaminate already clean areas. Simple washing was deemed sufficient as there would be no absorption of the primary site contaminants (lead/cadmium/metals) into the materials being recycled. Potentially recyclable materials that were recovered from sections of the site contaminated with PCBs and VOCs were not offered for recycling and disposed of. Vegetative debris generated during site operations was initially staged on-site. This material was ground in a truck mounted tub grinder to produce mulch or later chipped and integrated into waste loads for disposal. The recycling effort is consistent with USEPA's green remediation policy for remedial actions (http://epa.gov/region2/superfund/green_remediation/policy.html).

Following site preparation, USEPA Emergency Rapid Response Services (ERRS) and WRS Infrastructure & Environment Inc. initiated excavation activities in July 2009. General site support services and office trailers were set up. Existing onsite utility connections were utilized. The ERRS contractor provided the equipment, personnel, and supplies necessary to perform site operations. NY One Call Center was contacted to determine the location of buried utilities. Daily field notes provided to Stantec documenting site activities are provided in Appendix B.

The work was completed in two phases for contracting purposes. Phase I and Phase II denote a contract crossover from EPA Region 2 to EPA Region 3 to accommodate contract capacity (known as a "zone crossover"). This enabled the work to continue uninterrupted without affecting site operations. Materials from the site were disposed of during both phases; the type of material disposed of (hazardous vs non-hazardous) was dictated by site operations and not by the zone crossover.

3.2 Excavation

3.2.1 Phase I

Construction was initiated beginning at the southwest corner of the site in July 2009. Conventional excavation methods were used to excavate lead-contaminated soil to a depth of six feet bgs or to the water table if the water table was encountered at a depth less than six feet (which applied to the most downgradient portion of the site adjacent to the river). The excavated material was moved to another portion of the site where large debris was removed and segregated. Post-excavation samples were collected at the base of the excavation at 50-foot intervals at each site grid point. Post-excavation analytical results provided to Stantec are included in Appendix C.

Shallow excavations were also conducted near the Hudson River boundary as designated on the remedial design site plans. Large stone, when encountered, was cleaned and used to reinforce the existing rock wall along the eastern border of the site. The shore line was further stabilized by importing and placing shot rock.

Phase I encompassed the excavation of site soils across the southern portion of the site impacted by heavy metals contamination. Phase I was accomplished from July 2009 through October 2009 and resulted in the removal of approximately 60,000 tons of contaminated soil from the site and replacement with clean fill. The entire volume of Phase I soil removed from the site was characterized as hazardous for metals and was disposed of in a RCRA subtitle C landfill.

3.2.2 Phase II

Phase II began with the excavation of PCB and VOC contaminated soil (as well as the metals contamination inherent throughout the site) to the water table in the process area of the site and downgradient soils (i.e., towards the river) impacted through migration. With variations in water table elevation, the average depth of excavations in this area of the site was approximately 10 feet bgs. This work began in October 2009 and post-excavation samples were collected at the base of the excavation at 50-foot intervals at each site grid point. Post-excavation analytical results are included in Appendix C. Figure 3 illustrates a final excavation plan for Phase II.

A buried underground storage tank containing residual gasoline was unearthed during the second phase of excavation. The contents of the tank were removed and transported offsite for disposal. The decontaminated tank was then transported offsite for recycling.

Once the PCB and VOC impacted soils were excavated and backfilled with clean fill, Phase II resumed with the excavation of metals impacted soils to a depth of six feet (or to the water table if encountered at a depth shallower than six feet) to the north property line of the site. Phase II work continued through August 2010, resulting in the removal of approximately 66,000 tons of additional contaminated soil. Of these 66,000 tons of soil removed from the site under Phase II, 47,500 tons were characterized as hazardous and 18,500 tons were characterized as non-hazardous. Together, with Phase I operations, a total of approximately 126,000 tons of impacted soil was removed and backfilled with clean fill from the site.

Additionally, as Phase II operations approached completion, approximately two feet of soil (or until utilities were encountered) was removed from the grassy areas extending beyond the north and south property boundaries. These areas were also backfilled with clean fill. Also, an additional two samples were taken of Hudson River sediments at the boat ramp immediately to the north of the site to ensure that site contamination had not impacted this area. Appendix D contains the results of this sampling event. Finally, as part of the final grading of the site, a drainage channel was included along the northern site boundary to prevent the buildup of standing water in this part of the site. Final as-built drawings are provided as Figure 4. Additionally, Figure 5 displays contours on the site map showing the actual depth to excavation, indicating the areas of the site where the six foot excavation goal was reached, those areas where the water table was encountered prior to reaching the six-foot excavation goal, and those areas where the excavation was made to the water table in excess of the six-foot excavation goal to ensure that process-area contaminants were removed to protect site groundwater. Figure 6 is a cross section display of the site, from west to east, illustrating post-construction conditions.

The construction of the remedial action followed the remedial design with few exceptions. These were decisions made in the field to improve the overall performance of the remedial action. Deviations from the design included the inclusion of a swale along the northern site boundary to improve surface water drainage. As backfill operations progressed toward the northern end of the site, it was determined that most surface run-off from the site would exit at the north end, directly impacting the municipal parking lot and Hudson River. Simple changes to the surface contour were made to include the installation of the drainage swale to capture run-off at the site's northern border. The swale channels water toward the eastern edge of the site into the drainage area specified in the original design. Finally, a reinforcement of riprap was placed along the shoreline to ensure against flooding and erosion by the Hudson River. This included the installation of riprap on an area of the shoreline where a large metal barge was removed, creating a small peninsula. This additional riprap stabilizes this area of the shoreline and will maintain the integrity of the clean fill.

EPA published a Preliminary Site Close Out Report for the site on September 2, 2010 signifying that construction had been completed.

3.3 Documentation Sampling and Sediment Sampling

Following the excavation of contaminated soils and prior to the placement of the demarcation barrier, soil samples were taken at the base of the excavation at 50 foot grid points to document the contaminant composition of the soils left in place. This database will be included in the Site Management Plan to record the characterization of soils left in place for the purpose of future development activities at the site. Figures 7a through 7d display the site map with analytical results affixed to each 50-foot grid sample point for the principal contaminants lead, cadmium, total PCBs, and total BTEX/MTBE. (BTEX, or benzene, toluene, ethylbenzene, and xylenes, are the primary constituents of gasoline, while MTBE was used as a gasoline additive). Concentrations of the primary contaminants of concern ranged from 16.4 to 12,700.00 ppb of lead, 0.01 to 244.0 ppb of cadmium, 323.0 to 31,220.0 ppb of PCBs and 13.5 to 258,995.9 ppb of BTEX/MTBE.

Four sediment samples were also taken and analyzed at the request of the New York State Department of Health (NYSDOH). The purpose was to ensure these areas had not been impacted by site contaminants. On September 14, 2010, at the request of the NYSDOH, EPA collected 4 sediment samples from the Hudson River adjacent to the Consolidated Iron Site. Samples were collected from the municipal boat launch located just outside the northern site border and from a small sandy area located along the southern shoreline of the site. Two samples were collected at each area.

The NYSDOH had expressed concerns regarding potential public exposure to contaminants that may have migrated from the site. The boat launch is used on a daily basis during the spring, summer and fall months and, prior to the initiation of construction activities at the site, people had been witnessed fishing and wading at the sandy area at the southern end of the site. The samples collected were analyzed for polychlorinated biphenyls (PCB), volatile organic compounds, semivolatile organic compounds and metals.

The analytical results showed these sediment samples to be commensurate with background. These results are provided in Appendix D.

3.4 Survey

Surveying was performed during excavation activities by a New York State licensed surveyor. Excavation elevations were verified to +/- 0.5 feet of the specified cut elevation. Verification of proper elevations included measurement of actual excavation elevations at site grid point locations identified prior to commencing excavation activities as well as four measurements taken on a 25-foot radius from the specified grid point.

Surveying was also performed during backfilling activities to ensure that the lift layer depths specified were achieved to within +/- 0.5 feet. Verification of proper elevations was performed using the same criteria as during excavation operations.

3.5 Backfill

Backfilling of an excavation was performed concurrently with the excavation operations. According to the *Preliminary Site Close-Out Report* an adequate buffer zone was maintained between the backfill and contaminated soil to prevent cross contamination of the clean area. Backfill material was sampled prior to acceptance as suitable for use at the site. In addition, backfill was sampled weekly as a quality control measure.

Backfilling included the installation of a non-woven geotextile fabric to demarcate the interface between the base of the excavation and backfill. Backfilling was completed with dense graded aggregate, grading in one-foot lifts, compaction with a vibratory roller, compaction testing, and final grading (in accordance with the grading plan submitted with the Remedial Design Report). Backfill material used to produce the dense grade aggregate, bank run, and top soil was virgin material obtained from a local supplier.

The drainage area was backfilled with a layer of geotextile fabric followed by three feet of dense grade aggregate (drainage areas are identified on Figure 4). Each one-foot lift of the dense grade aggregate was compacted using a vibratory roller, and each lift was tested for proper compaction prior to placing the next lift. A six inch layer of 2.5-inch clean quarry stone was placed over the dense grade aggregate. A second layer of fabric was placed over the stone and followed by 2.5 feet of bank run. The final layer of backfill consisted of approximately 4 to 6 inches of screened topsoil. To prevent erosion the topsoil was hydroseeded.

Backfill layers in the main excavation area consisted of dense grade aggregate fill only. A layer of geotextile fabric was placed in the base of the excavation prior to placing the first lift. Backfill was placed in one-foot lifts and compacted using a vibratory roller. Each lift was tested for proper compaction prior to placing the next one-foot lift. Final grade was met as specified in the final grade plan of the Remedial Design Report.

3.5.1 Compaction Testing

Density measurements were determined with a Troxler 3430, Troxler 3411B or Instro Tex Xplorer moisture density gauge and performed by Atlantic Testing Laboratories of Highland, New York. A minimum 90% proctor was attained for the initial one foot lift and 93% proctor was maintained for all subsequent lifts. Measurements were taken after each backfill lift at or near each site grid point and in a perimeter around a grid point. Verification included measurement and written documentation of actual density measurements at specified locations on design drawings as well as three measurements taken on a 25-foot radius from the specified location. All compaction test reports are included in Appendix E.

3.6 Scale Operation

An on-site scale was used to estimate the amount of waste material transported from the site for disposal. The B-Tek scale used to determine tare weight and gross vehicle weight is accurate to +/- 20 pounds.

3.7 Transportation and Disposal

According to the daily logs and disposal documentation, soil and debris contaminated with lead and cadmium above the RCRA Characterization limits were classified as RCRA Hazardous waste. These materials were either transported to Envirosafe Services of Ohio for stabilization then to the Envirosafe Services Subtitle C landfill for disposal, or transported to Heritage Environmental Services of Indianapolis, Indiana for stabilization and then transported to Heritage Environmental Services Subtitle C landfill for disposal.

Soil and debris contaminated with PCBs with concentrations up to 200 ppm were classified as RCRA/TSCA waste. These materials were transported to US Ecology Idaho, Inc.'s Grand View Idaho Subtitle C and TSCA regulated landfill for disposal. Non-hazardous soil and debris were transported by American Waste Management Services, Inc. to the Ontario County Landfill for use as alternate daily cover as allowed by NYSDEC.

Material was transported by truck and rail from the site to the various disposal facilities. Vehicles used to carry contaminated material were lined and sealed prior to exiting the site. Due care was given to minimizing truck traffic as much as possible. During Phase I, waste material was trucked to a rail transfer facility less than ¼ mile from the site, minimizing local road use. During Phase II, waste was trucked to a rail transfer facility in the nearby community of Middletown; the route was planned with input from local officials to minimize traffic impacts in the community.

3.8 Air Monitoring

Air monitoring was conducted by the U.S. Coast Guard and USEPA's Removal Support Team (RST). Particulate monitoring was conducted as needed. Monitoring locations were changed as needed depending on site conditions. Exact locations were not recorded. Monitoring was conducted using a Thermo Electron Dataram 4. Additional air monitoring for volatile organic compounds was conducted using a RAE Systems portable air monitor. Air monitoring data are included in Appendix F.

3.9 Dust Controls

Dust suppression at the site was implemented at the start of excavation operations and continued during all site operations. The site is bordered to the north by a municipal parking lot, boat launch and small businesses. To the south, the site is bordered by an active sewage treatment facility. To the west the site is bordered by an active rail road and a main thoroughfare and to the east by the Hudson River. Excavation operations were expected to produce a dusty environment and migration of material off-site was to be kept at a minimum. In addition to the excavation operations, the extreme amount of truck traffic across the site during disposal shipping would have produced a particulate load that would have exceeded the guidelines in the NYSDOH Community Air Monitoring Plan.

Dust suppression was implemented by the use of a water truck, which sprayed a uniform mist over dusty surfaces and was operated daily. However, it should be noted that during inclement weather (rain or snow) it was not necessary to utilize the water truck.

Particulate monitoring was performed, as required in the NYSDOH Community Air Monitoring Plan, on a daily basis with the exception of periods of inclement weather.

3.10 Monitor Wells

Ten monitor wells were installed following soil excavation to monitor site groundwater quality. The locations of the monitor wells approximated the locations of the original monitor wells installed during the RI. Minor modifications were made to a few locations to place the wells in areas where greater impact to groundwater might be expected. Monitor well locations are identified on Figure 5. Post-remediation groundwater monitoring is a component of the Site Management Plan. Well construction logs provided to Stantec are included in Appendix G.

4.0 SITE MANAGEMENT PLAN

The SMP specifies the procedures required to ensure that the institutional and engineering controls put in place at the site continue to protect human health and the environment after remedial construction is complete. To that end, the SMP includes a post-remedial operation, maintenance, and monitoring (OM&M) plan, a Soil/Fill Management Plan identifying proper management of residual impacted subsurface soil that might be encountered during redevelopment of the site, and an Institutional and Engineering Controls Plan to account for the proper filing of an easement on the property and a mechanism to continually implement, maintain, monitor, and enforce the controls. In accordance with the terms of the judicial Consent Decree (Civil Action No. 08 Civ. 7378 (SCR) (SDNY)) for the site between EPA and the potentially responsible parties, the City of Newburgh will develop the SMP.

4.1 Operation, Maintenance, and Monitoring

Operation, maintenance, and monitoring (OM&M) will include routine site maintenance such as cutting grass, repairing erosion damage from storm events, and maintaining the integrity of the fence around the site. A groundwater quality monitoring program will also be included and detailed in SMP to ensure that any contamination in the groundwater aquifer is attenuating and groundwater quality continues to improve.

4.2 Soil/Fill Management

This element of the SMP will address those impacted soils left in place at the site below the demarcation barrier, generally at a depth greater than 6 feet bgs. Redevelopment of the site will

likely leave these soils undisturbed, but in the event that they are encountered in future site use, a plan for their proper handling, disposal and/or treatment, and backfilling is required.

4.3 Institutional and Engineering Controls

The ROD requires the implementation of institutional controls in the form of an environmental easement/restrictive covenant to be filed in the property records of the Orange County Clerk's Office. The easement/covenant restrictions will be in compliance with the SMP to address soils that are left in place below the demarcation barrier, generally at depths greater than 6 feet bgs, a groundwater use restriction, and a vapor intrusion evaluation for all new construction.

5.0 FINAL INSPECTION AND CERTIFICATION

A final site inspection was held at the site on August 18, 2010 with USEPA, NYSDEC, NYSDOH, and primary and secondary contractors in attendance. Following completion of the final inspection, on September 2, 2010, USEPA issued a Preliminary Site Close-Out Report (PCOR), which concluded that construction activities at the Consolidated Iron and Metal site were completed in accordance with the *Close-Out Procedures for National Priorities List Sites (OSWER Directive 9320.2-09A-P, January 2000).* The PCOR specifically states "Cleanup activities at the site, consisting of the excavation and off-site disposal of contaminated soil exceeding the cleanup goal for lead to a depth of six feet from the surface and the excavation and off-site disposal of contaminated soil exceeding the cleanup goals for VOCs and PCBs in the subsurface soils to the water table and backfilling of the excavated areas with clean fill to grade, were consistent with the ROD, Remedial Design, and work plans prepared for design and construction of the remedial action."

5.1 Five-Year Statutory Review

Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, Section 121(c), USEPA must conduct five-year reviews if chemical concentrations at a Superfund Site remain above levels that would allow for unlimited use and unrestricted exposure. The first Five-year Review Report will be completed by July 6, 2014, which is five years from the initiation of construction for the remedy.

6.0 SUMMARY OF PROJECT COSTS

The original cost estimate (capital cost) to implement the remedial action (RD and RA) described in the ROD was $19.8 million. Approximately $24.3 million have been spent by USEPA to complete the project. The ROD estimate for annual maintenance costs is $376,000. The current projected annual cost of maintenance is expected to be less than this amount due to minor remedy modifications (e.g., improved shoreline construction, topsoil and seeding entire site, etc.) made by USEPA during construction.

7.0 SITE PHOTOGRAPHS

Photographs illustrating the various stages of the remedial action are presented in Appendix H.

8.0 CONTACT INFORMATION

Post-remedial operations, maintenance, and monitoring requirements are the responsibility of the site owner, currently the City of Newburgh. The USEPA will serve as the regulating agency for these efforts. The contact persons for these parties are listed below.

USEPA
Michael Negrelli
Consolidated Iron and Metal Site Remedial Project Manger
USEPA Region 2
290 Broadway, 20th Floor
New York, NY 10007-1866

City of Newburgh
City Engineer
83 Broadway
Newburgh, NY 12550

9.0 REFERENCES

USEPA Region II, October 2006. *EPA Superfund Record of Decision – Consolidated Iron and Metal Site, City of Newburgh, Orange County, New York.*

USEPA Region II, October 2009. *Remedial Design – Consolidated Iron and Metal Site, Orange County, City of Newburgh, New York.*

USEPA Region II, September 2010. *EPA Preliminary Site Close Out Report – Consolidated Iron and Metal Site, City of Newburgh, Orange County, New York.*

This page intentionally left blank.

APPENDIX A

SITE DESCRIPTION AND HISTORY

Site Description and History

The Consolidated Iron and Metal site is a former car and scrap metal junk yard located at the foot of Washington Street in the City of Newburgh, Orange County, New York. The facility operated from the 1950's until 1999. The site occupies about 7 acres of land bordering the Hudson River in a mixed industrial, commercial, and residential area.

Scrap metal processing and storage operations took place at the site for approximately 40 years, during which time various types of scrap metal were received, including whole automobiles, automobile engines, transmissions, and batteries, keypunch machines, computer parts, white goods (appliances), and transformers. From approximately 1975 to 1995, a smelter was operated on-site to smelt aluminum waste materials into aluminum ingots. The smelting process generated a large ash or slag pile grossly contaminated with lead. Other operations included battery cracking, sorting ferrous and non-ferrous metal scrap for sale, baling and shearing large pieces of metal, including whole cars, into smaller pieces for transport, and flattening of cars. The owner-operator's activities to reclaim accumulated sheared metal fines from the site soils also resulted in a large "processed" soil pile which was contaminated with metals and polychlorinated biphenyls (PCBs).

From 1997 to 1999, the New York State Department of Environmental Conservation (NYSDEC) conducted several inspections at the facility and cited the owner for a number of violations. Subsequent inspections by NYSDEC noted that the owner had failed to adequately correct the violations and in 1999, the New York State Attorney General shut down operations at the site for various violations, including illegal discharge to surface water without a permit.

In August 1998, EPA sampled an ash/slag pile at the site that was generated by the aluminum smelting operation and found it to be contaminated with lead and PCBs. The scrap metal in the pile was segregated out and the resulting fine pile, estimated at 6,600 tons, was removed from the site in 1999 and placed in an approved treatment, storage, and disposal facility (TSDF) for stabilization and landfilling. Also in 1999, EPA sampled other processed soil piles at the site which were also found to be contaminated with lead and PCBs; these soil piles, too, were transferred to an approved TSDF. Additionally in 1999, EPA constructed a berm from site soils to prevent storm water from carrying site contaminants into the Hudson River.

In September 1999, EPA conducted an Integrated Assessment (IA) at the site to determine the horizonal and vertical extent of contamination. Surface and subsurface soil and ground water samples were collected and analyzed, indicating the presence of volatile organic compounds

(VOCs), semivolatile organic compounds (SVOCs), pesticides, PCBs, and metals at concentrations greater than background in the surface and subsurface soils. Further, elevated concentrations of PCBs and metals have been detected in the Hudson River, which is a fishery and ecologically sensitive environment. Accordingly, the site was placed on the National Priorities List on June 14, 2001.

In August 2002, EPA responded to local concerns about trespassing and scavenging taking place at the site and began the construction of a security fence. The fence was completed in September 2002. Concurrently, EPA initiated the development of a work plan for the performance of the RI/FS, which was completed in 2003.

On February 10, 2003, EPA sent special notice letters to approximately 25 potentially responsible parties (PRPs) requesting that they perform or finance the RI/FS but none of the PRPs agreed to do so.

Prior to conducting the RI, it was necessary to clear the site of the debris and some of the structures located on-site. Accordingly, from June to September 2003, EPA conducted a site clearing which included the following tasks:

- the removal of 32 truckloads of tires (approx. 30,000 tires total) to be used as fuel at a Connecticut power plant;
- the removal of 58 truckloads (1450 tons) of scrap metal for recycling (including a surficial "metal sweep" to remove and dispose of the ferrous metal pieces integrated into the surface soils);
- the removal of 19 roll-offs (380 tons) of concrete for recycling;
- the disposal of 68 truckloads (1962 tons) of lead-hazardous soil and debris;
- the demolition and removal of an office building and 3 process buildings (converted to wood mulch and recycled concrete);
- the pumping and removal of approximately 6,000 gallons of hydraulic oil and 22,000 gallons of oily water from a process building basement for recycling; and
- rough grading of the site surface.

Completion of the site clearing enabled the initiation of the RI sampling program, which began in June 2004. The RI report, FS report, and Risk Assessment report were completed in 2006.

EPA issued a Proposed Plan in July 2006. After consideration of comments received from the public on its Proposed Plan, EPA issued a Record of Decision on October 4, 2006. The site remedy includes:

- a remedial design program to provide the details necessary for the construction and monitoring of the remedial program;

- removal and off-site disposal of surface debris and demolition, removal, and off-site disposal of the foundations/basements of the former process area buildings and of the former garage in its entirety;

- excavation and off-site disposal of contaminated soil exceeding the residential preliminary remedial goal (PRG) for lead (400 ppm) down to six feet below ground surface (bgs);

- excavation and off-site disposal of contaminated soil exceeding the PRG for VOCs and PCBs in subsurface soils (10 ppm total for each) to the water table;

- placement of a readily-visible demarcation material at the interface between the excavations and backfill;

- backfilling the excavated soil with clean fill, meeting the PRG values, to grade;

- imposition of institutional controls in the form of an environmental easement and/or restrictive covenant that would at a minimum require: (a) restricting any excavation below the soil cover's demarcation layer of six feet unless the excavation activities are in compliance with an EPA-approved site management plan; (b) restricting new construction at the site unless an evaluation of the potential for vapor intrusion is conducted and mitigation, if necessary, is performed in compliance with an EPA-approved site management plan; (c) restricting the use of groundwater as a source of potable or process water unless groundwater quality standards are met;

- development of a site management plan that provides for the proper management of all site remedy components post-construction, such as institutional controls, and that shall also include: (a) monitoring of site groundwater to ensure that, following the soil excavation, the contamination is attenuating and groundwater quality continues to improve; (b) an inventory of any use restrictions on the site; (c) necessary provisions for ensuring the easement/covenant remains in place and is effective; (d) provision for any operation and maintenance required of the components of the remedy; and (e) the

requirement that the owner or person implementing the remedy submit periodic certifications that the institutional and engineering controls are in place; and

- periodic reviews by EPA to ensure that the remedy continues to be protective of public health and the environment.

On October 16, 2006, EPA sent out *de minimis* settlement offers to 25 parties who were determined to have contributed no more than 0.5% of the tracked waste sent to the site, based on a waste-in list in which tracked waste was revised to include tires. EPA finalized a *de minimis* settlement on November 1, 2008 with nine of the parties, in which the total cost recovery will be $304,916.

Following negotiations with the potentially responsible parties (PRPs) identified for the site, which was initiated with the issuance of special notice on February 13, 2007, EPA agreed to a cashout settlement with the PRP group. A Consent Decree to finalize the settlement was entered with the court on February 3, 2009 and payments totaling $12,062,000 were received from the PRPs and placed in a special account to fund the remedial action.

EPA conducted remedial design field activities at the site beginning in April 2008. The remedial design field work consisted of a topographic survey, a geophysical survey, test pit excavations, and a geoprobe sampling program. Additionally, an off-property surface soil sampling event was conducted in June 2008. The results of the remedial design field work have been compiled into a draft remedial design report in September 2008.

In September 2008, preliminary remedial action work commenced at the site. This preparatory work included the following activities: installation of an eight foot high chain link fence on the northern property boundary after the removal of the garage building; the repair of other breaches in the fence; installation of an eight foot high fabric privacy screen on the northern fenceline to replace the existing deteriorated screen; breaking up the concrete garage building (~100' X 50') and breaking up the concrete floor/slab and shipping the concrete off-site for recycling; breaking up the concrete footings from the former shear structure, smelter structure, compactor building, and office foundation and shipping the concrete off-site for recycling; the removal of the metal truck trailer and other miscellaneous debris from the northeast corner of the site; the removal a metal barge (in two sections ~35' X 35' X 10') from the southeast shoreline of the site; the off-site shipment for recycling of all metal encountered; and the restoration of the river bank using on-site boulders. In November and December 2008, a truck weigh scale was installed at the site and 1,000 tons of contaminated soil associated with the demolition and removal of the former shear and compactor buildings was disposed of. Operations were suspended for the winter. Construction of the remedial action commenced on July 6, 2009.