Phase II Supplemental Remedial Investigation Work Plan (Revised)

Former Emerson Power Transmission Facility

Ithaca, New York

Site No. 7-55- 010

May 11, 2015

Revised: October 9, 2015

Project No. 4507-36

WSP | PARSONS BRINCKERHOFF

PHASE II SUPPLEMENTAL REMEDIAL INVESTIGATION WORK PLAN (REVISED)

Former Emerson Power Transmission Facility
Ithaca, New York
Site No. 7-55-010

May 11, 2015
Revised: October 9, 2015

Client

Emerson Electric Co.
8000 W. Florissant Avenue
St. Louis, MO 63136

Consultant

WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, VA 20171
Tel: 703 709 6500
Fax: 703 709 8505

WSP Contacts

Lisa Bryda
Lisa.Bryda@wspgroup.com

WSP | PARSONS BRINCKERHOFF

Table of Contents

1 Introduction 1
2 Site Background Information...2
2.1 Site History 2
2.2 Site Geology and Hydrogeology..3
3 Investigation Activities...5
3.1 Soil and Sediment 5
3.1.1 Restricted Residential Use...6
3.1.1.1 AOC 26 - Building 24 Area 6
3.1.1.2 AOC 27 - Former Salt Baths Area 7
3.1.1.3 AOC 31 - Upper Parking Lot 6 7
3.1.1.4 AOC 32 - Former Spray Pond Area..........................8
3.1.1.5 AOC 33 - Area West of Building 4 8
3.1.1.6 AOC 34 - Area East of Buildings 13A and 14...........9
3.1.1.7 AOC 35 - Isolated Locations 9
3.1.2 Industrial Use 10
3.1.2.1 AOC 28 - Building 30/Oil Shed Area 10
3.1.2.2 AOC 29 - Former Propane Above Ground Storage Tank Area 11
3.1.2.3 AOC 30 - Rice Paddy Area 11
3.1.2.4 AOC 35 - Isolated Locations 12
3.2 Groundwater..13
3.2.1 Historical Well Evaluation 13
3.2.2 Site Groundwater Characterization...............................14
3.2.3 VOCs 14
3.2.4 Barium 16
3.2.5 Cyanide..17
3.3 Seeps 18
3.4 Storm Water and Sanitary Sewer Systems 18
3.4.1 Storm Water Sewer System..18
3.4.2 Sanitary Sewer Systems...20
4 Sampling and Analysis Plan 22
4.1 Sampling Objectives...22

4.2 Sampling Personnel 22
4.3 Health and Safety Plan..23
4.4 Community Air Monitoring Plan 23
4.5 General Sampling Procedures 23
4.6 Monitoring Equipment 24
4.7 Decontamination 24
4.8 Soil and Sediment Sampling Procedures 24
4.9 NAPL Removal and Redevelopment..25
4.10 Borehole Geophysical Survey 25
4.11 Monitoring Well Installation Procedures 26
4.12 Groundwater Sampling Procedures 26
4.13 Sewer Sampling Procedures..27
4.14 Surveying 27
4.15 Investigation-Derived Waste..28
4.16 Sample Containers and Labels and Chains-of-Custody......28
4.17 Quality Control and Analytical Procedures 28
4.17.1 Analytical Procedures 28
4.17.2 Control Samples 29
4.17.2.1 Field Duplicate 29
4.17.2.2 Matrix Spikes/Matrix Spike Duplicates 29
4.17.2.3 Equipment Blanks 29
4.17.2.4 Trip Blanks 29
4.17.2.5 Temperature Blank..30
4.17.3 Data Validation 30
5 Schedule and Reporting 31
6 References 32
7 Acronyms..33

Figures

Figure 1 – Site Location

Figure 2 – Operable Units 1 and 2

Figure 3 – Generalized Fence Diagram A-A’

Figure 4 – Schematic Building Section

Figure 5A – Soil and Sediment Sample Results (North)

Figure 5B – Soil and Sediment Sample Results (South)

Figure 6A – Proposed Soil and Sediment Sample Delineation Locations (North)

Figure 6B – Proposed Soil and Sediment Sample Delineation Locations (South)

Figure 7 – Schematic of Building 24 Layout

Figure 8 – Site Well Network

Figure 9 – Generalized Fence Diagram A-A’

Figure 10A – Total CVOC, Barium, and Cyanide Concentrations in Groundwater (Site)

Figure 10B – Total CVOC, Barium, and Cyanide Concentrations in Groundwater (Fire Water Reservoir Area)

Figure 11 – CVOC Exceedences in Groundwater

Figure 12A – Total CVOC Groundwater Isopleths – B Hydrogeologic Zone (Fire Water Reservoir Area)

Figure 12B – Total CVOC Groundwater Isopleths – C Hydrogeologic Zone (Fire Water Reservoir Area)

Figure 13 – Barium and Cyanide Concentration Ranges in Groundwater

Figure 14A – Storm Water and Sanitary Sewer Systems (North)

Figure 14B – Storm Water and Sanitary Sewer Systems (South)

Tables

Table 1 – Summary of Soil Sample Results (2012 through 2015)

Table 2 – Summary of Sediment Sample Results (2013)

Table 3 – Soil and Sediment Sampling and Analytical Program

Table 4 – Sample Analytical Methods, Preservation, and Holding Times

Table 5 – Historical Well HISTWELL-1 NAPL Sample Results (June 23, 2015)

Table 6 – Summary of Site Well Construction Information

Table 7 – Summary of Groundwater Sample Results (1989 and 2014)

Table 8 – Groundwater Sampling and Analytical Program
Table 9 – Summary of Seep Sample Results (2013)
Table 10 – Seep and Sewer Sampling and Analytical Program
Table 11 – Summary of Residual Materials TCLP Sample Results (2013 and 2014)

Appendix A – Self-Implementing PCB Remediation Completion Report
Appendix B – Community Air Monitoring Plan
Appendix C – WSP Standard Operating Procedures

1 Introduction

On behalf of Emerson Electric Co., WSP is submitting this Phase II Supplemental Remedial Investigation (SRI) Work Plan (Revised) for the former Emerson Power Transmission (EPT) site in Ithaca, New York ("Site"; Figure 1). Pursuant to Part 375-1.8(e)(2)(iv), the goal of the Phase II SRI for Operable Unit 2 (OU2) is to delineate the nature and extent of contamination sufficient to determine the necessity for, and the proposed extent of, remediation in order to support the development and evaluation of proposed alternatives in the remedy selection process. This revised work plan has been prepared to delineate the extent of constituents of concern (COCs) present in soil, groundwater, and sediment at the Site above the New York Codes, Rules and Regulations (NYCRR) Subpart 375-6 Remedial Program Soil Cleanup Objectives (SCOs), the New York State Department of Environmental Conservation (NYSDEC) Part 703 groundwater standards, and the NYSDEC Sediment Guidance Values (SGVs). The COCs were identified during investigations conducted in 2012 and 2014 by WSP, and in 2013 and 2014 during the environmental due diligence investigations conducted by LaBella Associates, on behalf of L Enterprises, LLC; who has entered into a contract to purchase the Site. The results of the investigations indicate the following.

- Soil - Concentrations of various constituents, including volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and various metals were detected in soil samples above the NYCRR SCOs.
- Sediment - Concentrations of PAHs, PCBs, pesticides, and various metals were detected in sediment samples collected from two drainage features were above the NYSDEC Sediment Guidance Values (SGVs; NYSDEC 2014).
- Groundwater - Concentrations of chlorinated VOCs (CVOCs), barium, and cyanide were detected at concentrations above the NYSDEC Part 703 groundwater standards in samples collected from wells installed by LaBella during due diligence investigations.
- Seeps - Concentrations of CVOCs at concentrations above the NYSDEC Part 703 groundwater standards in samples collected from seeps in three locations at the site.
- Sanitary Sewers - Samples of residual material collected from two manholes associated with the sanitary sewer system in select buildings contained concentrations of barium and cadmium above the toxicity characteristic leaching procedure (TCLP) limit[1]. The sanitary sewer network ultimately discharges to the City of Ithaca municipal sewer system.

The existing data and data to be generated through implementation of this Phase II SRI Work Plan will be used to identify potential remedial alternatives for identified impacts in media consistent with the proposed future use of the property. The alternatives will be presented in the Phase II SRI Report and Feasibility Study Report and submitted to the NYSDEC.

Section 2 describes the Site history, geology, and hydrogeology. Sections 3 and 4 present the scope of work to be implemented and the protocols to be used. Section 5 describes the project schedule and reporting details.

[1] TCLP limits indicate a potential to leach to groundwater at a concentration above U.S. Environmental Protection Agency (EPA) maximum contaminant levels for groundwater.

2 Site Background Information

2.1 Site History

The original buildings at the Site were built in 1906 by Morse Industrial Corporation, which manufactured steel roller chain for the automobile industry. Morse operated the facility until approximately 1928 when the company was bought by Borg-Warner Corporation who manufactured automotive components and power transmission equipment. In 1983, Emerson acquired Morse from Borg-Warner Corporation and the Ithaca facility became part of EPT. EPT continued to manufacture industrial roller chain, bearings, and clutching for the power transmission industry until operations were ceased in 2009. The facility was subsequently decommissioned and the Site has been vacant since 2011. In December 2014, Emerson transferred the property to EMERSUB 15 LLC in anticipation of potential sale for future redevelopment.

Investigations conducted by EPT revealed on-site groundwater contamination in 1987, originating from a fire water reservoir on the western portion of the property. Subsequent to reporting these findings to NYSDEC, Emerson Electric Co. and EPT entered into a Consent Order with the NYSDEC (Index # A7-0125-87-09; July 13, 1988), which was later revised in late 2014 to make Emerson Electric Co. the responsible party. The Consent Order required Emerson to develop and implement a Remedial Investigation and Feasibility Study followed by implementing a Remedial Program to address the release of hazardous substances to the environment at the Site. The Remedial Investigation was completed in 1990 and an Interim Remedial Measure (IRM) was implemented in 1991 to address VOC-affected groundwater at the fire-water reservoir. A Feasibility Study was completed in 1994 which selected two-phase extraction as the remedial alternative for groundwater and was detailed in a Record of Decision issued by the NYSDEC in 1994. The remedy was installed and began operating in 1996. Between 2004 and 2008 a series of additional investigations were conducted including a Supplemental Remedial Investigation both onsite and offsite (WSP 2008). Based on the results of supplemental investigations performed between 2004 and 2008, and an alternatives analysis completed in 2008, NYSDEC issued a ROD Amendment in 2009 for the former fire water reservoir, (designated as OU-1); the areas of concern (AOCs) identified at the facility, designated as OU-2; and the South Hill neighborhood to the north, designated as OU-3. Figure 2 shows the locations for OU-1 and OU-2.

Supplemental activities in the area of the fire water reservoir (OU-1) included: upgrading the extraction and treatment system, decommissioning the reservoir, and evaluating the potential presence of light non-aqueous phase liquid (LNAPL) below the reservoir. The enhanced remedial system consists of 12 extraction wells screened within the B and C zone hydrogeologic units. The system is designed to contain and treat affected groundwater on the Site.

Oil product was identified in groundwater in three separate areas (AOCs 4, 12, and 15). Product removal began in 2010 and currently measurable product remains only in one area.

In OU-2, investigations also identified VOCs in groundwater near a former degreaser area (AOC 1). The extent of VOC-affected groundwater to the west of AOC 1 has been defined. Remedy evaluation for this area is on-going.

OU-3 consists of the neighborhoods, sewer lines, and residential structures to the north and west of the Site. To evaluate the potential for vapor intrusion, sub-slab and indoor air testing was conducted in homes to the north of the former EPT facility between 2004 and 2005. Based on the results of the testing, Emerson voluntarily constructed vapor mitigation systems in 59 homes with approval of NYSDEC and New York State Department of Health (NYSDOH). In October 2010, NYSDEC issued a ROD for OU-3 which incorporated the mitigation of homes previously conducted by Emerson and the removal and replacement of approximately 300 feet of sanitary sewer line (and removal of associated overburden and bedding material), along East Spencer Street. The remedial work plan for the sewer replacement was approved by NYSDEC in July 2011; however, the City of Ithaca has not approved the easement to allow for its implementation.

In 2009, the facility was decommissioned and all industrial operations were terminated. Emerson entered into a Purchase and Sale Agreement with L Enterprises LLC in July 2013. As part of the due diligence process, LaBella Associates, on behalf of L Enterprises, conducted an environmental investigation of the property and generated data on soil, groundwater, seeps, and sediment at the Site which was evaluated in preparation of this revised Phase II SRI Work Plan.

Investigations conducted by WSP in 2012 and 2014 and by LaBella Associates in 2013 and 2014 included collection and analysis of soil, groundwater, sediment, surface water, residuals in sewer manholes, soil vapor, or indoor air samples to further characterize conditions in various media at the Site. Based on the results of the sampling, 10 AOCs for soil were identified at the Site (AOC 26 through AOC 35).

- AOC 26 – Building 24 Area
- AOC 27 – Former Salt Baths Area
- AOC 28 – Building 30/Oil Shed Area
- AOC 29 – Former Propane Storage Area
- AOC 30 – Rice Paddy Area
- AOC 31 – Upper Parking Lot 6 Area
- AOC 32 – Former Spray Pond Area
- AOC 33 – Area West of Building 5
- AOC 34 – Area East of Buildings 13A and 14
- AOC 35 – Isolated Locations

In addition, CVOCs, barium, and cyanide were detected in groundwater samples collected from monitoring wells installed during the due diligence investigations and samples collected of three seeps at concentrations exceeding the NYSDEC Part 703 groundwater standards. The 10 additional AOCs and groundwater COCs are the subject of this revised Phase II SRI Work Plan.

2.2 Site Geology and Hydrogeology

The EPT Site is located on the northern edge of the Appalachian Plateau Physiographic Province, which is characterized in central New York by deeply dissected hilly uplands and glacially gouged stream valleys. The Site lies on the limits of one of the dissected hills and overlooks the Cayuga Lake basin, which is formed in a former stream valley eroded and enlarged by the advance of glaciers. Underlying the Site is a thin, discontinuous veneer of glacial till and man-made fill. The soil consists of silty or clayey gravel and ranges in depth from 2.5 to 33 feet thick, though most of the Site and the western slope of South Hill is covered by less than 15 feet of soil. Soil depths generally increase with decreasing elevation and eventually merge with glacio-lacustrine deposits of silt and clay that line the bottom of the valley floor below South Hill.

Beneath the overburden lies bedrock of the Ithaca Siltstone, a member of the Genesee Formation. The bedrock is typically well-cemented with generally non-fossiliferous beds ranging in thickness from 0.1 inch to 2.5 feet in thickness. Based on core logs recovered from boreholes during drilling investigation activities, the rock was differentiated into three zones based on the frequency of bedding plane fractures and joints: an upper “stress relief zone” (B-zone), a middle “transitional zone” (C-zone), and a lower “lithologically controlled zone” (D-zone).

The uppermost B-zone is characterized as very highly to highly fractured weathered bedrock. On the Site, the B-zone extends to a maximum depth of approximately 22 feet below ground surface (bgs) and has an average thickness of approximately 8 to 10 feet on the western portion of the EPT Site. The transitional zone (C-zone) extends from the base of the B-zone to a maximum depth of approximately 55 feet bgs. The D-zone extends from the bottom of the C-zone to a minimum depth of 145 feet bgs.

Groundwater flow direction within the overburden and underlying B-zone generally mimics surface topography, which slopes to the northwest. Groundwater flow direction within the siltstone bedrock (C- and D-zones) is significantly affected by vertical and horizontal distribution of vertical joint sets and horizontal bedding plane fractures within the upper sections of bedrock.

A generalized geologic cross-section for the Site is presented in Figure 3. Figure 4 presents a schematic cross-section through the central portion of the Site buildings illustrating the general construction of much of the facility which was constructed on steps along the bedrock slope.

3 Investigation Activities

The proposed investigation activities described in this revised Phase II SRI Work Plan include evaluations of soil, sediment, groundwater, storm water discharges, and water and residual materials in the sanitary sewer system at various locations throughout the Site. The investigation results will be validated, evaluated, and incorporated into a Phase II SRI Report for submittal to the NYSDEC.

3.1 Soil and Sediment

The soil evaluation activities include completing lateral and vertical delineation of affected soil and sediment and characterizing conditions beneath the slab in the former salt bath room in Building 14.

Tables 1 and 2 summarize the soil and sediment sample results. Both tables include results for constituents detected in one or more samples collected between 2012 and 2015. The SCOs presented in Table 1 include those for Unrestricted, Restricted Residential, and Industrial Uses, and the Protection of Groundwater; however, only the Restricted Residential and Industrial Use SCOs and the Protection of Groundwater SCOs are used for determining if further investigation is required in an AOC based on the proposed future use of the property. The comparative criteria for sediment included in Table 2 are the NYSDEC SGVs.

The planned redevelopment of the Site will create a new mixed use District consisting of residential, offices, commercial, manufacturing, and open space. The planned redevelopment project does not include OU-1 (0.977 acres), which will be retained by EMERSUB 15 LLC. The Site figures have been divided into ‘north and south’ as shown in Figures 5A and 5B where Figure 5A (north) includes the approximate area to be redeveloped as residential, offices, commercial and open space and Figure 5B (south) includes the approximate area planned for redevelopment of industrial and parking areas. The figures identify the previous soil and sediment sample locations and AOCs and present the results for COCs at each location. Figures 6A and 6B identify the proposed delineation boring locations further described in the sections below. Section 3.1.1 summarizes conditions relative to areas within the planned residential, offices, commercial, and open space area; Section 3.1.2 summarizes information for the planned industrial and parking lot areas.

The intent of the proposed soil sampling program is to further delineate the extent of COCs in surface soil to the Restricted Residential SCOs in areas proposed for residential, , commercial, and open space use and to the Industrial SCOs in areas proposed for industrial use and parking. Delineation to the Protection of Groundwater SCOs will be conducted in AOCs where CVOCs, barium, or cyanide were detected in groundwater samples at concentrations exceeding the Part 703 Groundwater Standards: CVOCs in AOCs 26, 28, 31, and 34, barium in AOC 27, and cyanide in AOCs 27, 28, and 29. The more stringent SCO (Protection of Groundwater or other) would then be used for final comparison.

Table 3 identifies sample locations and intervals and identifies the COCs based on future use. The sampling program includes:

- Surface soil sampling (0 to 2 inches bgs) in AOCs and isolated locations (i.e., not associated with an AOC) for general characterization purposes, except in areas where macadam or concrete is currently present and anticipated to remain as such.
- Borings advanced for the purpose of delineating COCs above the Restricted Residential and Industrial SCOs (i.e., shallow soil samples) will be terminated at 2 feet bgs; borings advanced for the purpose of delineating COCs above the Protection of Groundwater SCOs will be advanced and sampled to the top of bedrock or the water table, whichever is encountered first. The scope of work presented herein identifies the sample intervals to be collected for analysis or archived for potential analysis. While the discussions do not provide the anticipated total depths for every location (which are presented in Table 3), it is to be understood that the intervals established for archived samples are applicable to the total depths of the borings.

The soil samples will be screened with a photoionization detector (PID) for presence of VOCs and visually checked for evidence of staining. The sample depths identified below assume the ground surface is grass/soil, or beneath the overlying macadam or asphalt. Thus, in a parking lot, ‘0 ft’ or ground surface, indicates sample collection will begin below the macadam. The thickness of the macadam and asphalt at all locations will be recorded in the field log book.

The sample analytical methods and requirements are presented in Table 4.

3.1.1 Restricted Residential Use

3.1.1.1 **AOC 26 - Building 24 Area**

CVOCs, PAHs, and PCBs, or a combination thereof, were detected at concentrations above SCOs in soil samples collected from two locations at Building 24: LBA-SB-401 and LBA-MW-24. Due to the presence of CVOCs in groundwater above the applicable standards in this area (well LBA-MW-24), SCOs for the Protection of Groundwater were used to evaluate the soil data.

- LBA-SB-401 -Trichloroethene (TCE) was detected above Protection of Groundwater SCOs in soil samples collected at 1.5 feet bgs and 2.5 feet bgs in boring LBA-SB-401, completed on the second level of Building 24. No deeper samples were collected due to refusal on bedrock. TCE was either not detected or detected at concentrations one to two orders of magnitude below the SCOs in samples collected to maximum depths of 3 feet bgs (based on bedrock refusal) in nearby borings (LBA-SB-501, -503, -504, and -505) and 5 feet bgs in nearby exterior borings advanced along the southeast wall at LBA-SB-509 and LBA-SB-510 (Figure 5A).

  Building 24 was constructed in a terraced manner on the hillside with the lowest level sitting on bedrock and the level above being further cut into the hillside such that the east half sits on bedrock and the west half is above the lowest level (Figure 7). To evaluate conditions in the vicinity of LBA-SB-401, four borings will be advanced through the building slab within 15 to 20 feet of the original boring LBA-SB-401. Because bedrock is anticipated to be present within 4 feet bgs, samples will be collected from 0 to 2 feet bgs and 2 to 4 feet bgs (or total depth, if shallower than 4 feet bgs) for laboratory analysis of VOCs (Tables 3 and 4).

- LBA-MW-24 - TCE was detected at a concentration above the Protection of Groundwater SCO and PAH and PCB concentrations were above the Restricted Residential SCOs in the sample collected from 1 foot bgs at LBA-MW-24. No deeper samples were collected due to refusal on bedrock.

  Based on the finding of PCBs in concrete chip samples collected from the transformer pad adjacent to the northwest exterior wall of Building 24 and in surrounding soil samples, the transformer pad was removed and affected soil excavated pursuant to the Self-Implementing PCB Remediation Work Plan (WSP 2014) approved by EPA Region 2 on November 24, 2014. The final limits of the soil removal action are identified in Figure 7; excavation was typically to the bedrock surface (approximately 1.5 feet bgs). Restoration of the area included backfilling with gravel to the original grade, except in the asphalt areas where the backfill was placed to accommodate the subsequent placement of 4 inches of asphalt and in the former transformer pad areas where the bedrock outcrop beneath the former pad remains exposed. A small volume of concrete was placed near the man-door near the former “raised concrete pad”.

  All of the PCB results for the characterization and post-excavation samples are provided in the Self-Implementing PCB Remediation Completion Report (WSP 2015) in Appendix A and, therefore, are not presented in Table 1. The PCB results are not provided in Figure 7 because all of the results were below the Restricted Residential Use SCO.

  Results for confirmatory samples collected from the sidewalls of the excavations for analysis of CVOCs and PAHs indicate the following:

  - TCE was detected at concentrations above the Protection of Groundwater SCO in sidewall samples collected from SRI-SB-101 and -103. TCE, cis-1,2-DCE, and trans-1,2-DCE were above these SCOs in sidewall samples collected from SRI-SB-104 and -106.

  - PAHs were detected at concentrations above the Restricted Residential Use SCOs in samples collected from SRI-SB-105 and -106.

To complete delineation of the CVOCs to the Protection of Groundwater SCOs, borings will be advanced at nine locations to the top of bedrock (anticipated to range between several inches and approximately 1.5 feet bgs). Grab samples will be collected from the potentially most affected depth (based on organic vapor readings, staining, etc.) for analysis of CVOCs.

3.1.1.2 **AOC 27 - Former Salt Baths Area**

A horizontal boring was installed through the concrete wall in Building 13A for purposes of obtaining samples below the former salt baths located in Building 14. Rock was encountered in the boring and a sample of rock was collected and analyzed for metals. The rock sample (LBA-SB-410) contained barium at 4,720 milligrams per kilogram (mg/kg).

To evaluate if soils are present below the concrete slab in Building 14 (Figure 4A), where the former salt baths were housed, an approximate 3 foot by 3 foot section of concrete will be saw cut and removed from two locations in the base of the baths as well as adjacent to one salt bath. If soil is encountered, a sample will be collected from the upper 0.5 foot of soil and submitted for analysis of the Resource Conservation and Recovery Act (RCRA) metals plus cyanide based on the presence of barium and cyanide above the groundwater standards in samples collected from wells LBA-MW-18 and LBA-MW-35 (Tables 3 and 4). In addition, if the material encountered beneath the concrete within or adjacent to a salt bath contains a salt residue, the material will be sampled and analyzed for toxicity characteristic leaching procedure (TCLP) metals.

Because barium and cyanide were detected above the groundwater standards in samples collected from wells LBA-MW-18 and LBA-MW-35, the potential presence of both constituents in soil at concentrations above the Protection of Groundwater SCOs will be evaluated. Two borings will be completed through the existing building slab, near the manway along the sanitary sewer in which total barium was reported in residual materials at concentrations up to 28,000 mg/kg (LaBella 2014). The proposed boring locations are shown in Figure 6A (note that the sample location in which this concentration was reported is identified as B13A-MW-2 by LaBella and MH-A20 by WSP). The borings will be advanced to the top of bedrock and samples will be collected from 0 to 2 feet bgs and 2 to 4 feet bgs for laboratory analysis of RCRA metals plus cyanide. Thereafter, samples will be collected on 2-foot centers (i.e., 4 to 6 feet bgs, 6 to 8 feet bgs) to total depth and held for potential laboratory analysis pending the results for the shallower samples.

3.1.1.3 **AOC 31 - Upper Parking Lot 6**

PAHs and metals were detected at concentrations above Restricted Residential Use SCOs in samples collected from the western portion of Parking Lot 6 (Figure 5B). Due to the presence of TCE above the groundwater standard in well LBA-MW-15, the SCO for the Protection of Groundwater was also used to evaluate the soil data.

Benzo(a)anthracene and benzo(b)fluoranthene were detected at concentrations above the Restricted Residential Use SCOs in the sample collected from SB-124 at 0.5 to 2.5 feet bgs. Arsenic, barium, chromium, copper, nickel or a combination thereof, were detected at concentrations above the Restricted Residential Use SCOs in one or more samples collected from WSP-SB-618, -619, and -620, and LBA-TP-16 between the ground surface and 3 feet bgs.

Further delineation proximate to SB-124, relative to the Restricted Residential Use SCOs, is not necessary based on its location beneath the paved portion of the parking lot. Because the western proposed sample locations are in an area that is both paved and unpaved along the side of the parking lot, delineation of metals will be completed. Five borings will be advanced around these locations (Figure 6B). Soil samples will be collected from 0 to 2 inches bgs and 2 inches to 2 feet bgs for laboratory analysis of the PAHs, RCRA metals plus copper and nickel (Tables 3 and 4). To evaluate the presence of VOCs at concentrations above the Protection of Groundwater SCOs, samples will be collected at these locations from 0 to 2 feet bgs and 2 to 4 feet bgs and on 2-foot centers thereafter (i.e., 4 to 6 feet bgs, 6 to 8 feet bgs) to total depth and held for potential laboratory analysis of VOCs pending the results for the shallower intervals.

3.1.1.4 **AOC 32 - Former Spray Pond Area**

PAHs and metals were detected at concentrations above Restricted Residential Use SCOs in soil samples collected in the former spray pond area. PAHs, PCBs, pesticides, and certain metals were detected at concentrations above the NYSDEC SGVs in two sediment samples collected from the nearby drainage feature west of Buildings 17 and 18.

- Soil - PAHs were detected above the Restricted Residential Use SCOs in the soil sample collected from a nearby isolated sample location, LBA-TP-06, at 1 foot bgs. Arsenic and lead were detected above the Restricted Residential Use SCOs in the surface soil sample collected from LBA-SS-07. The proposed sampling and analytical programs are presented in Tables 3 and 4.
  - To delineate the extent of PAHs in this area, four borings will be advanced within 20 feet of the former test pit, LBA-TP-06 (Figure 6A). Soil samples will be collected from 0 to 2 inches bgs and 2 inches to 2 feet bgs for laboratory analysis of PAHs.
  - To delineate the extent of arsenic and lead in soil, three borings will be advanced within 15 feet of LBA-SS-7 (Figure 6A). Soil samples will be collected from 0 to 2 inches bgs and 2 inches to 2 feet bgs for laboratory analysis of RCRA metals plus copper.
- Sediment - PAHs, PCBs, pesticides or a combination thereof were detected above the SGVs in sediment samples collected from DS-13 and DS-15 (Figure 5A). Concentrations of arsenic, cadmium, chromium, mercury, and silver in DS-15 were within the Class B SGVs; the concentration of lead exceeded the Class C SGVs (the sample from DS-13 was not analyzed for metals). The proposed sampling and analytical programs are presented in Tables 3 and 4.
  - To delineate the extent of COCs in sediment above the NYSDEC SGVs in this area and to evaluate concentrations potentially elevated above the Restricted Residential Use SCOs, four borings will be advanced within 2 feet on either side of the drainage feature (Figure 5A). Samples will be collected at these three locations, the easternmost boring advanced around LBA-TP-06, and the westernmost boring around LBA-SS-07, from 0 to 2 inches bgs and 2 inches bgs to 2 feet bgs for laboratory analysis of the PAHs, PCBs, pesticides/herbicides, and RCRA metals (where not already being analyzed for).
  - To delineate conditions within the drainage feature, sediment samples (0 to 0.5 feet) will be collected at three locations: one upstream of DS-13, one downstream of DS-15, and one approximately equidistant between the original sample locations (Figure 6A). Samples will also be collected from two locations each farther upstream and farther downstream for archiving pending the results for the initial delineation samples. The sediment samples will be analyzed for PAHs, PCBs, pesticides/herbicides, and RCRA metals.

3.1.1.5 **AOC 33 - Area West of Building 4**

Arsenic and barium were detected at concentrations above the Restricted Residential Use SCOs in the sample collected from 4 feet bgs at LBA-SB-425 in the area west of Building 4 (Figure 5A).

To evaluate and delineate the potential presence of arsenic and barium in shallow soil near LBA-SB-425 to the Restricted Residential Use SCOs, three borings will be advanced within 20 feet of this boring (Figure 6A). Soil samples will be collected from 0 to 2 inches bgs and 2 inches to 2 feet bgs for laboratory analysis of RCRA metals (Tables 3 and 4).

Barium was detected above the Protection of Groundwater SCO in a sample collected by WSP from 4 feet bgs at LBA-SB-425. Because barium was also detected in groundwater above the NYSDEC standard downgradient of this area, borings will be installed to bedrock and samples will be collected from 2 to 4 feet bgs and 4 to 6 feet bgs for laboratory analysis of barium. Thereafter, samples will be collected on 2-foot centers (i.e., 6 to 8 feet bgs, 8 to 10 feet bgs) to total depth and held for potential analysis of barium pending the results for shallower samples.

3.1.1.6 **AOC 34 - Area East of Buildings 13A and 14**

CVOCs, PAHs, and metals were detected at concentrations above the Restricted Residential Use SCOs in samples collected east of Buildings 13A and 14 (Figure 5A) and CVOCs were detected above the Protection of Groundwater standards in four of the samples.

- VOCs
  - PCE was detected at concentrations above the Restricted Residential Use SCO in samples collected between 0 and 3 feet bgs from LBA-SB-223 and WSP-SB-624 and -625.
  - PCE, TCE, cis-1,2-DCE, or a combination thereof were present at concentrations above the Protection of Groundwater SCOs in samples collected between 0 and 3 feet bgs from LBA-SB-223, and WSP-SB-624, -625, and -626
- PAHs - Several PAHs were detected above the Restricted Residential Use SCOs in the soil sample collected at 0.5 to 1 feet bgs from LBA-SB-223. There were no exceedences in the split sample collected from this interval and no samples were collected at greater depth.

To delineate the extent of COCs in soils in this area, four borings will be advanced around the initial borings east of Buildings 13A and 14 (Figure 6A). Samples will be collected from 0 to 2 inches and from 2 inches to 2 feet bgs for laboratory analysis of VOCs and PAHs. Samples will also be collected from 4 to 6 feet bgs for laboratory analysis of the VOCs; thereafter, samples will be collected on 2-foot centers (i.e., 6 to 8 feet bgs, 8 to 10 feet bgs) to total depth and held for potential analysis of VOCs pending the results for shallower intervals (Tables 3 and 4).

Copper was detected above the Restricted Residential Use SCO in a soil sample collected from a depth of 5 feet bgs to the east of Building 14 (LBA-SB-303). To evaluate the potential presence of copper above the Restricted Residential Use SCO in surface soil in the area, one boring will be advanced approximately 15 feet east and west of LBA-SB-303 (Figure 5A). Samples will be collected from this location and the VOC- and PAH-related borings north and southwest of LBA-SB-303 at depths of 0 to 2 inches and 2 inches to 2 feet bgs for laboratory analysis of RCRA metals plus copper (Tables 3 and 4).

3.1.1.7 **AOC 35 - Isolated Locations**

COCs were identified in soil samples collected from 10 general areas based on exceedences of the Restricted Residential Use SCOs (Figures 5A and 5B). The following summary table identifies the general areas, sample locations in which exceedences of the Restricted Residential Use SCOs occurred, and the COCs. Additional information, such as the depths of samples in which the exceedences of the Restricted Residential Use SCOs were found, is provided in Table 3.

Areas/Locations	COCs
Building 11A - LBA-SB-250	TCE
East of Building 24 - SB-101 through SB-103/SB-103SS	As
Parking Lot 7 - SB-106, SB-108	PAHs
Medical Parking Lot - SB-109	PAHs
Near Parking Lot 4 - SS-100	PAHs
West of South Cayuga - SS-103	PAHs, Pb
South of Parking Lot 3 - LBA-B17-TSS-3	Cd, Pb
Parking Lot 3 - LBA-TP-03	PAHs
South of AOC 29 - LBA-SB-205	Ba
Former Railroad Bed	
- LBA-SB-240	As
- DS-1	PAHs

PCBs, pesticides, cadmium, chromium, and lead were detected above the SGVs in a sediment sample collected from DS-8 where water is intermittently present in Open Ditch 3.

TCE was detected above the Protection of Groundwater SCO in sample collected from 4 feet bgs at LBA-SB-250 by WSP, but not in the split sample collected by LaBella. Because TCE was also detected above the groundwater standard downgradient of this area, WSP proposes to advance one boring near LBA-SB-250 to confirm conditions in the soil. If field conditions (e.g., odors, organic vapors) or laboratory data indicate the presence of VOCs, additional borings would be advanced and sampled to complete delineation to the Protection of Groundwater SCO. Soil samples will be collected from 0 to 2 feet bgs, 2 to 4 feet bgs, and 4 to 6 feet bgs for laboratory analysis of VOCs. Thereafter, samples will be collected on 2-foot centers (i.e., 6 to 8 feet bgs, 8 to 10 feet bgs) to total depth and held for potential analysis of VOCs pending the results for shallower intervals (Tables 3 and 4).

Further delineation in the vicinities of SB-101, -102, -106, -108, and -109 is not necessary because these locations are overlain by the Site parking lots (protective covers/caps) and are unlikely to be developed for other use. Further, none of these areas are considered a source to groundwater contamination (no arsenic or PAH impacts have been identified in groundwater).[2]

To further define the extent of COCs above the Restricted Residential Use SCOs at the remaining locations, three borings will be advanced within 20 feet of each of the original borings: SS-100, SB-103/SB-103-SS, LBA-B17-TSS-3, LBA-TP-03, LBA-SB-205, LBA-SB-240, and DS-1 (Figures 6A and 6B). Samples will be collected from 0 to 2 inches bgs and 2 inches to 2 feet bgs for analysis of the appropriate parameters (RCRA metals plus copper, PAHs or both). The sampling and analytical programs are summarized in Tables 3 and 4.

Sample location DS-8 was collected in an intermittent drainage feature northwest of Building 35. Concentrations of PCBs, pesticides, cadmium, chromium, and lead in the sample exceeded the NYSDEC SGVs. One sediment sample will be collected upstream and two sediment samples will be collected downstream of the original location from 0 to 0.5 feet bgs for analysis of PCBs, pesticides/herbicides, and RCRA metals to delineate their extent above the SGVs within the drainage feature (Tables 3 and 4). To delineate the extent of COCs in sediment above the NYSDEC SGVs and potentially above the Restricted Residential Use SCOs near the drainage feature, four borings will be advanced within 2 feet on either side of the drainage feature (Figure 6B). Samples will be collected at these four locations from 0 to 2 inches bgs and from 2 inches to 2 feet bgs for laboratory analysis of the appropriate parameter lists (Tables 3 and 4).

3.1.2 Industrial Use

3.1.2.1 **AOC 28 - Building 30/Oil Shed Area**

CVOCs and metals were detected at concentrations above Protection of Groundwater and Industrial Use SCOs, respectively, in soils samples collected in the area of the former oil shed, Building 30 (Figure 5B).

- LBA-TP-10 Area - 1,1,1-Trichloroethane (TCA), PCE, and TCE were detected above the Protection of Groundwater SCOs in samples collected in the eastern portion of the AOC. 1,1,1-TCA was detected above the Protection of Groundwater SCO in the surface soil sample collected from WSP-SB-612. It was not detected in samples collected below 3 feet bgs at this location and, thus, is adequately delineated by the existing data. PCE and TCE exceedences are discussed below.
  - PCE was detected above the Protection of Groundwater SCO in a sample collected from the sidewall of LBA-TP-10 and the surface soil sample (0 to 2 feet bgs) collected from WSP-SB-612. Similar to 1,1,1-TCA, PCE concentrations in the subsurface samples collected from WSP-SB-612 below 3 feet bgs, were well below the SCOs.
  - TCE was detected above the Protection of Groundwater SCO in the sidewall sample collected from LBA-TP-10 and one or more samples collected between 0 and 4 feet bgs from WSP-SB-611, WSP-SB-612, and WSP-SB-613. The TCE concentration in the LBA-TP-10 sidewall sample and in the 0 to 2 feet bgs sample

[2] Although several other locations are also within parking lots or roadways, the borings were either completed along the perimeter of the paved area or WSP believes it reasonable to assume that the area may be redeveloped for other use. WSP therefore proposes to complete delineation to the Restricted Residential SCO in these areas.

collected from WSP-SB-612 also exceeded in the Industrial Use SCO (which is higher than that for the Protection of Groundwater). TCE concentrations in samples collected below 3 feet bgs at WSP-SB-612 were well below the SCOs.

To further define the extent of PCE and TCE in soil north of Building 30, six borings will be advanced around the perimeter of the affected location (Figure 6B). Soil samples will be collected from 0 to 2 inches bgs, 2 to 2 feet bgs, 2 to 4 feet bgs, and 6 to 8 feet bgs for laboratory analysis of VOCs (Tables 3 and 4). Thereafter, samples will be collected on 4-foot centers (e.g., 10 to 12 feet bgs, 14 to 16 feet bgs) to total depth and held for potential laboratory analysis pending the results for the shallower intervals.

- SB-126, LBA-SB-214, and LBA-TP-12 Areas - Lead was detected at a concentration above the Industrial Use SCO in the single soil sample collected from SB-126 (3 to 3.8 feet bgs) and arsenic was detected at a concentration above the Industrial Use SCO in the single soil sample collected from LBA-TP-12 (6.5 feet bgs). To further define lead and arsenic in shallow soils at concentrations above the Industrial Use SCO in the vicinity of SB-126 and LBA-TP-12, seven borings will be advanced around the affected area (Figure 6B). Soil samples will be collected from 0 to 2 inches bgs, 2 inches to 2 feet bgs for laboratory analysis of RCRA metals plus copper (Tables 3 and 4).

  To evaluate the potential presence of cyanide at concentrations above the Protection of Groundwater SCO, based on cyanide exceedences of the groundwater standard at well LBA-MW-13, soil samples collected from 2 inches to 2 feet bgs and 2 to 4 feet bgs will be analyzed for cyanide. In addition, samples will be collected on 2-foot centers thereafter (e.g., 4 to 6 feet bgs, 6 to 8 feet bgs) to total depth and held for potential laboratory analysis of cyanide pending the results for shallower intervals.

3.1.2.2 **AOC 29 - Former Propane Above Ground Storage Tank Area**

PAHs and arsenic were detected at concentrations above the Industrial Use SCOs in samples collected in the former above ground propane storage tank area (Figure 5B).

- Benzo(a)pyrene and benzo(b)fluoranthene were detected above the Industrial Use SCOs in the soil sample collected from 0.5 to 2.5 feet bgs at SB-123; benzo(a)pyrene was also present above this SCO in the sample collected from 17 to 18 feet bgs at this location.
- Arsenic concentrations above the Industrial Use SCO were detected in samples collected from LBA-SB-200 (8.5 to 9 feet bgs), LBA-SB-203 (between 13 and 23 feet bgs), and LBA-SB-518 (4 to 6 feet bgs).

To complete delineation of PAHs and arsenic in soils in this AOC, shallow soil samples will be collected from eight borings installed in this AOC (Figure 6B). Samples will be collected at 0 to 2 inches bgs and 2 inches to 2 feet bgs for analysis of PAHs and RCRA metals plus copper (Tables 3 and 4).

3.1.2.3 **AOC 30 - Rice Paddy Area**

The Rice Paddy Area was formed by the placement of miscellaneous materials (fill, including coal) along the hillside southwest of the manufacturing buildings. The western limit is defined by a wooded area; the eastern limit narrows to approximately 50 feet in width along the access road (Figure 5B).

PAHs, PCBs, and arsenic were detected at concentrations above the Industrial Use SCOs in samples collected in this area (Figure 5B).

- Benzo(a)pyrene was detected above the Industrial Use SCO in soil samples collected from SB-125 at 0.5 to 2.5 feet bgs and 18.5 to 20 feet bgs. The concentration in the intervening sample (11 to 12 feet bgs) was well below the SCO. PAHs were not detected in the other sample collected from the area for analysis of these parameters from LBA-SB-212 at 2 feet bgs.
- PCBs were detected above the Industrial Use SCO in a sample collected from WSP-SB-617 at 8 to 8.6 feet bgs.

- Arsenic was detected above the Industrial Use SCO in the sample collected from LBA-SB-209 at 27 feet bgs.

The proposed activities to address these exceedences and groundwater conditions are described below and summarized in Tables 3 and 4.

- PAHs - To delineate the extent of PAHs at concentrations above the Industrial Use SCOs in shallow soil in this area, soil samples will be collected from 0 to 2 inches bgs and 2 inches to 2 feet bgs at three locations within 10 feet of SB-125 to the north, east, and west, for analysis of PAHs (delineation to the south is provided by data for LBA-SB-212). Soil samples (to 2 feet bgs) will also be collected from the four locations proposed below to evaluate PCBs and held for potential analysis of PAHs pending the results for the SB-125 area.
- PCBs - To evaluate the potential presence of PCBs at concentrations above the Industrial Use SCO in shallow soil in this area, aliquots will also be collected for analysis of PCBs from 0 to 2 inches bgs and 2 inches to 2 feet bgs at the three locations defined above.

  To ensure that PCBs are not present in soil at concentrations above the Toxic Substances Control Act (TSCA) limit of 50,000 micrograms per kilogram (µg/kg), four additional borings will be advanced and sampled (Figure 6B):

  - one boring will be advanced in the immediate vicinity of LBA-TP-08, where PCBs were detected at 20,000 µg/kg in the sample collected from 8 feet bgs
  - one boring will be advanced within 15 feet west of WSP-SB-617, where PCBs were detected at 32,000 µg/kg in the sample collected from 8 to 8.6 feet bgs
  - two borings will be advanced within 15 feet of LBA-TP-08 to the east and northwest, nearby WSP-SB-614 and WSP-SB-616, where PCBs were not detected above the Industrial Use SCO in samples collected to 6.5 and 8.5 feet bgs, respectively

  At all four locations, soil samples will be collected from 0 to 2 inches bgs, 2 inches bgs to 2 feet bgs, 8 to 10 feet bgs, 10 to 12 feet and on 4-foot centers thereafter (i.e., 12 to 14 feet bgs, 16 to 18 feet bgs, 20 to 22 feet bgs) for analysis of PCBs. No further evaluation is proposed to the north of LBA-TP-08/WSP-SB-617 based on the absence of PCBs above the Industrial Use SCO in samples collected to 20 feet bgs at SB-125.
- Arsenic - To evaluate the potential presence and extent of arsenic above the Industrial Use SCOs in surface soil in this area, aliquots will be collected for laboratory analysis of RCRA metals plus copper at 0 to 2 inches bgs and 2 inches to bgs to 2 feet bgs from each of the seven borings proposed above.
- Cyanide - Based on cyanide concentrations in samples collected from well LBA-MW-14 above the groundwater standard, an evaluation of the potential presence and extent of cyanide above the Protection of Groundwater SCO in this area will be performed. Soil samples will be collected for analysis of cyanide from the southernmost boring associated with SB-125 and all four of the TSCA-related borings. At each of the locations, samples will be collected from 0 to 2 feet bgs and 4 to 6 feet bgs for analysis of cyanide; thereafter, samples will be collected on 4-foot centers thereafter to total depth and held for potential analysis pending results for the shallower intervals.

3.1.2.4 **AOC 35 - Isolated Locations**

Arsenic was detected above the Industrial Use SCO in a sample collected from 10 to 12 feet bgs at LBA-SB-246, west of Building 34, within the area of the Site planned for Industrial Use and not associated with an AOC.

To delineate the extent of arsenic in the area of boring LBA-SB-246, three borings will be advanced within 20 feet of the original location (Tables 3 and 4; Figure 6B). Samples will be collected from 0 to 2 inches bgs and 2 inches to 2 feet bgs for analysis of arsenic.

3.2 Groundwater

The proposed groundwater investigation includes two general activities. The first includes the evaluation of three recently discovered deep wells whose historical uses are unknown; the second includes additional investigation and evaluation of COCs in Site groundwater. The NYSDEC has given approval to proceed with implementation of the historical well evaluation prior to submittal and approval of this revised Phase II SRI Work Plan to facilitate potential necessary modifications to the scope of the investigation activities. Figure 8 identifies the locations of all Site monitoring wells (current and abandoned), extraction wells, exploratory borings, and the three historical wells; the figure also identifies the proposed locations for 10 additional monitoring wells to be installed during the Phase II SRI.

3.2.1 Historical Well Evaluation

In June 2015, during trenching activities associated with the expansion of the interim remedial measure (IRM) near the former firewater reservoir, a historical well, designated as HISTWELL-1, was discovered (Figure 8). The well appears to be an open bedrock well with an inside-diameter (ID) of approximately 3 inches, completed with a 10-inch outer steel casing followed by 8-inch and 4-inch ID inner steel casings. All three casings appear to have been cut several feet below current grade. The total depth of the well, as measured from cut rim of the inner casing, is approximately 142 feet bgs. A protective vault was subsequently installed around the well to protect the well head.

The well contains a layer of viscous non-aqueous phase liquid (NAPL) from approximately 115 feet bgs to 122 feet bgs, along with what appears to be groundwater between the base of the NAPL and the bottom of the well. The NAPL is oily and viscous. WSP attempted to collect a groundwater screening sample from below the NAPL interval; however, the viscosity of the oily material was sufficiently high as to inhibit tooling from passing through. The sampler was eventually worked through the NAPL but subsequently fouled preventing the collection of a representative groundwater sample. A weighted bailer was used to collect a sample of the upper few inches of the NAPL for characterization purposes. The results, presented in Table 5, revealed the following:

- several VOCs were detected at concentrations above detection limits, including cis-DCE) at 34,000 µg/kg, methylene chloride at 310 µg/kg, TCE at 480 µg/kg), and vinyl chloride at 900 µg/kg
- several PAHs, were detected at concentrations between 24,000 and 120,000 µg/kg
- gasoline range total petroleum hydrocarbons (TPH; C_6-C_{10}) were detected at 100 mg/kg
- diesel range TPH (C_{10}-C_{28}) were detected at 190,000 mg/kg
- fingerprinting indicated a petroleum compound consistent with motor oil with a concentration of 560,000 mg/kg
- the NAPL sample did not contain PCBs
- most of the Target Analyte List (TAL) metals were detected

The NAPL layer in HISTWELL-1 occurs at approximately 472 feet above mean sea level (amsl) to 465 feet amsl (Figure 9). The closest downgradient monitoring wells with screened intervals at an elevation interval generally consistent with the NAPL layer present in HISTWELL-1 are wells MW-3-100 and MW-3-150 (Figures 8 and 9). These wells were most recently sampled in September 2008: NAPL was not encountered and the total VOC concentrations detected in the groundwater samples were 14,540 µg/l and 6,110 µg/l (Table 6). Well MW-16-100, which is farther downgradient, was most recently sampled in March 2014: NAPL was not encountered and the total VOC concentration detected in the groundwater sample was 161 µg/l. Site-related VOCs (TCE, cis-DCE, trans-1,2-dichloroethene, and vinyl chloride) were detected in one or more of these groundwater samples at concentrations above their respective groundwater standards.

Subsequent discussions regarding HISTWELL-1 with a former employee lead to the discovery of two additional wells, designated HISTWELL-2 and HISTWELL-3, west of Building 18 and east of Parking Lot 5 (Figure 8A). An electrical grounding pole was recently disconnected from the well head of HISTWELL-2, so diameter and depth measurements have not yet been obtained. HISTWELL-3 is approximately 10-inches in diameter and has a measured depth of approximately 214 feet bgs. This well appears to have been a backup former water supply well.

WSP is currently implementing an evaluation of the three historical wells. The scope of work is being conducted in phases to allow sufficient time to evaluate the results (e.g., down-hole geophysics, analytical data, etc.) before proceeding with additional investigation activities. The work includes:

- removing NAPL and redeveloping HISTWELL-1
- conducting a down-hole geophysical survey of HISTWELL-1 using an optical viewer to ascertain its construction and the nature of the formation below the cased interval the geology and well construction
- collecting groundwater samples from HISTWELL-1 for analysis of Target Compound List (TCL) VOCs and semi-volatile organic compounds (SVOCs), TAL metals, and cyanide
- collecting groundwater samples from HISTWELL-2 and -3 for analysis of TCL VOCs, TAL metals, and cyanide
- collecting groundwater samples from up to four existing wells (MW-3-100, MW-3-150, MW-16-100, and MW-9-100) for analysis of TCL VOCs, TAL metals, and cyanide to gather a more extensive data set in the surrounding area; the down-hole geophysical survey data, Site lithology, and the monitored intervals of these wells will be evaluated to determine if consistent bedding plane fractures are present, and, thus, these wells are appropriate for sampling

These data will be used to characterize the conditions in HISTWELL-1 and develop an approach to further address impacts (if any) in the deep bedrock aquifer.

3.2.2 Site Groundwater Characterization

The proposed groundwater characterization activities include: (1) collecting an initial round of groundwater samples from certain previously existing wells for analysis of COCs; (2) evaluating these data and data generated for the historical wells to determine if further investigation is warranted, and if warranted, to install additional monitoring wells; (3) and implementing a follow-up groundwater monitoring event inclusive of select Site monitoring wells.

The following sections summarize current conditions and identify existing site wells to be sampled to further evaluate the extent of the COCs and discuss locations for additional investigation. Table 6 identifies all known site wells, the current status of the well (e.g., abandoned), the hydrologic zone monitored, and available construction information. Table 7 summarizes groundwater analytical results for samples collected from the LBA-series wells in 2013 and 2014 as part of the due diligence activities and the most recent results for samples collected from all other site wells. Table 8 summarizes the sampling and analytical programs based on the Site COCs. The sample analytical methods and requirements are presented in Table 4.

Figures 10A and 10B provide the most recent groundwater sample results for total CVOCs, barium, and cyanide across the Site and in the vicinity of the former Fire Water Reservoir. Figure 11 highlights the wells where one or more CVOCs exceed the Part 703 groundwater standards. Figures 12A and 12B provide schematic representations of the total CVOC plume in the B- and C- hydrogeologic zones, respectively, in the former fire water reservoir area. Figure 13 illustrates the distribution of barium and cyanide in groundwater throughout the Site. The wells shaded orange and yellow depict those wells where the Part 703 groundwater standards for each were exceeded. The proposed well locations are shown in each of the figures.

3.2.3 VOCs

Previous investigations have delineated CVOCs in the fire water reservoir area as shown in Figures 12A through 12B. More recent investigations identified CVOCs in other areas of the site (Figure 11). The following investigations are tailored to further delineate the extent of CVOCs in these areas across the site. Proposed well locations are shown in Figure 11.

- Building 24 Area - CVOCs were detected at concentrations above the groundwater standards in samples collected from B-zone well LBA-MW-41, west of Building 24, and well LBA-MW-23 which is farther downgradient to the northwest (Figure 11). Vertical delineation for LBA-MW-41 is provided by data for C-zone well LBA-MW-24, with which it is co-located.

A B-zone well (WSP-MW-01B) will be installed approximately 250 feet northwest of Building 24 to evaluate conditions downgradient of LBA-MW-41 to the north-northwest.

During the initial groundwater sampling event, samples will be collected for analysis of TCL VOCs from B-zone wells MW-27B, MW-28B, and MW-29B near Building 21 to evaluate conditions downgradient of LBA-MW-23, and from B-zone wells MW-21B and MW-22B which are further downgradient near South Cayuga and West Spencer streets, respectively. There were no exceedences of the groundwater standards in the most recent samples collected from these locations for analysis of VOCs in 2005 (MW-27B, -28B, and -29B) and 2014 (MW-21B and MW-22B). If CVOC concentrations in samples collected during the initial sampling event continue to not exceed the groundwater standards, further downgradient evaluation will not be conducted. If an exceedence occurs, a downgradient B-zone well would be installed at an appropriate location based on the relative location of the exceedence, if necessary.

During the initial groundwater sampling event, a groundwater sample will also be collected from B-zone wells EB-6/MW-38T and EB-8/MW-40T, north-northeast of LBA-MW-41, for analysis of TCL VOCs to evaluate cross-gradient conditions. There were no exceedences of the groundwater standards in the most recent samples collected from EB-6/MW-38T in 2005, but there were exceedences in EB-8/MW40T. If VOC concentrations in the EB-6/MW-38T sample collected during the initial sampling event do not exceed the groundwater standards, further cross-gradient evaluation will not be conducted. If a VOC is detected above a groundwater standard, a B-zone well would be installed farther to the northeast to complete cross-gradient delineation.

During the follow-up sampling event, groundwater samples will be collected from all of the above-mentioned wells and from B-zone well LBA-MW-22, west of Building 1, to provide further characterization for CVOCs.

- Building 2 Area - CVOCs were detected at concentrations above the groundwater standards in one or more of the samples collected from B- zone wells LBA-MW-34N and LBA-MW-38 and B/C zone well LBA-MW-29, within and immediately northwest of Building 2. LBA-MW-29 was subsequently abandoned because it was screened across two zones and replaced by LBA-MW-37 (C zone) and LBA-MW-38 (B zone). Vertical delineation for CVOCs in the area is provided by data for C-zone wells LBA-MW-34S and LBA-MW-37; downgradient delineation is provided by B-zone well LBA-MW-30. Chloroform, benzene, toluene, and xylenes were detected at concentrations above groundwater standards in samples collected from well LBA-MW-34S; downgradient delineation is provided by C-zone well LBA-MW-37.

- Buildings 4 and 5 Area - CVOCs were detected at concentrations above the groundwater standards in the sample collected from B-zone well LBA-MW-39, northwest of Building 5. Vertical delineation for LBA-MW-39 is provided by data for the co-located C-zone well LBA-MW-26. To evaluate downgradient conditions, a B-zone well (WSP-MW-02B) will be installed approximately 75 feet northwest of LBA-MW-39. To evaluate a potential source area (upgradient conditions), a B-zone well will be installed in Building 5 (WSP-MW-03B) as shown on Figure 11.

  An exceedence of the groundwater standard also occurred in the C-zone well LBA-MW-27, northwest of Building 4, approximately 100 feet northeast of LBA-MW-39/LBA-MW-26, where cis-1,2-DCE was detected at 8.1 micrograms per liter. To evaluate downgradient conditions, a C-zone well (WSP-MW-02C) will be installed, co-located with WSP-MW-02B (Figure 11).

  During the follow-up sampling event, groundwater samples will be collected from all of the above-mentioned wells and C-zone well EB-12/MW-44T, north-northwest of LBA-MW-27, for analysis of TCL VOCs to provide further delineation for CVOCs.

- Building 30 Area - PCE and TCE were detected at concentrations above the Protection of Groundwater SCOs in soil samples collected northeast of Building 30. To evaluate downgradient conditions, a B-zone monitoring well (WSP-MW-04B) will be installed approximately 100 feet northwest of the building (Figure 11).

  During the follow-up sampling event, groundwater samples will be collected from WSP-MW-04B and LBA-MW-13, west of the Building 30, for analysis of TCL VOCs.

- Parking Lot 6 Area - A CVOC was detected at a concentration above the groundwater standard in the A/B-zone well LBA-MW-15 at the southwest-end of Parking Lot 6. Further downgradient evaluation is not warranted because downgradient delineation is provided by data for the A/B-zone wells LBA-MW-13 and LBA-

MW-14. To evaluate cross-gradient conditions, a B-zone well (WSP-MW-05B) will be installed approximately 150 feet southwest of LBA-MW-15, along the adjacent roadway (Figure 11).

During the follow-up sampling event, groundwater samples will be collected from all of the above-mentioned wells, for analysis of TCL VOCs.

3.2.4 Barium

- Building 24 Area - Barium was detected above the groundwater standard in the C-zone well LBA-MW-42S, within Building 24. Downgradient delineation is provided by data for C-zone well LBA-MW-24 (Figure 8B). In addition, barium was detected above the groundwater standard in B-zone well LBA-MW-41 during a sampling event in January 2014; however, a groundwater sample collected during a follow-up event in August 2014 did not contain barium at a concentration exceeding the groundwater standard. To confirm these results, a groundwater sample will be collected from well LBA-MW-41 during the initial sampling event for analysis of RCRA metals. If barium is found to exceed the standard, then the sample collected from proposed well WSP-MW-01B will be analyzed for barium (i.e., RCRA metals) during the follow-up sampling event.
- Building 2 Area - Barium was detected above the groundwater standard in B-zone well MW-4, southwest of Building 24, and downgradient B-zone wells LBA-MW-34N (Building 2) and LBA-MW-30 (Parking Lot 3). Groundwater samples were collected from four downgradient B-zone monitoring wells in November 2014: MW-8-40 and MW-9-100, along a Site access road, and MW-32B, along South Cayuga Street. The barium concentrations at these locations were below the groundwater standard.

  During the initial groundwater sampling event, groundwater samples will be collected from upgradient well MW-04 for analysis of RCRA metals to confirm the historical barium result (the well was last sampled in 1990) and from MW-20B (near MW-8-40 and MW-9-100) and MW-32B.[3] If barium concentrations in samples collected from the downgradient wells confirm the absence of exceedences of the groundwater standard, further evaluation will not be warranted. If barium is detected above the groundwater standard, a B-zone well would be installed farther downgradient to complete delineation at an appropriate location based on the relative location of the exceedence.

  Vertical delineation for LBA-MW-34N is provided by data for the co-located C-zone well LBA-MW-34S. However, barium was also detected above the groundwater standard in B/C-zone well LBA-MW-29, immediately downgradient of the 34-series wells. LBA-MW-29 was subsequently abandoned because it was screened across two zones; it was replaced by C-zone well LBA-MW-37 which was not sampled for analysis of barium. To confirm the impact observed in well LBA-MW-29 is representative of the B-zone, well LBA-MW-37 will be sampled for analysis of RCRA metals during the initial groundwater sampling event (Figure 8B).

  During the follow-up sampling event, groundwater samples will be collected from all of the above-mentioned wells for analysis of RCRA metals.
- Western Property Boundary - Barium was detected at concentrations above the groundwater standard in samples collected from existing B-zone well MW-5-40 and abandoned B-zone wells MW-3-31 and MW-6-40, northwest of Buildings 3 and 4, in 1989.

  During the initial sampling event, groundwater samples will be collected from the following existing wells for analysis of RCRA metals:

  - B-zone well MW-5-40 east of the fire water reservoir

[3] At LBA-MW-30 and LBA-MW-34N the screen/open lengths are 16.5 and 10 feet and the total depths are 20.5 and 21 feet bgs. At MW-20B and MW-32B the well screens are 5 and 6 feet and the total depths are 20 and 11 feet bgs. Because the well screens for MW-8-40 and MW-9-100 are longer (25 to 32 feet) and the total depths greater (40 and 43 feet bgs) than LBA-MW-34N and LBA-MW-30, they will not be resampled during the initial sampling event.

- B-zone well MW-17B and C-zone well MW-16C in Building 3
- B-zone well MW-31B downgradient of the affected area;[4] data for this location will complement the results for samples collected from MW-30B and MW-32B in November 2014 in which barium concentrations did not exceed the groundwater standard
- C-zone wells MW-15C, on a lateral gradient with MW-5-40
- B-zone wells MW-4B, near the former location of MW-6-40
- B-zone wells MW-3B and MW-5B, on a lateral gradient with the former location of MW-3-31

Based on the absence of barium above the groundwater standard in samples collected from C-zone well MW-30-100, nested with MW-3-31, further vertical delineation is not necessary.

If barium is detected above the groundwater standard in samples collected from the downgradient wells, a B-zone well would be installed farther downgradient to complete delineation at an appropriate location based on the relative location of the exceedence. The results for the remaining wells proposed for inclusion in the initial groundwater sampling event will be used to determine the need for additional sampling or well installation in the area.

During the follow-up sampling event, groundwater samples will be collected for analysis of RCRA metals from a portion of the above-mentioned wells which will be identified based on the results of the initial sampling event and in consultation with the NYSDEC.

- Former Salt Baths Area - Building 14 - Barium was detected at concentrations above the groundwater standard in the two B-zone wells in Building 13A and immediately northwest of the former salt baths in Building 14 (LBA-MW-18 and LBA-MW-35). There were no exceedences of the groundwater standard in samples collected from the A/B- and B-zone wells to the north and northwest of these wells; however, exceedences did occur in the three C-zone wells to the southwest-west inside the building and further north outside the building (LBA-MW-26, LBA-MW-43S, and LBA-MW-44W). To evaluate the presence of barium to the west, a C-zone well (WSP-MW-06C) will be installed approximately 50 west of Building 6A (Figure 12). To evaluate conditions to the north, two wells (WSP-MW-07B and WSP-MW-07C) will be installed in Building 8 as shown on Figure 12. In addition, a sample for analysis of RCRA metals will also be collected from proposed B- and C-zone wells WSP-MW-02B and WSP-MW-02C to evaluate downgradient conditions outside the buildings.

  During the follow-up sampling event, groundwater samples will be collected from all of the above-mentioned wells for analysis of RCRA metals, excluding LBA-MW-18, because the well screens/open intervals for LBA-MW-18 and LBA-MW-35 overlap and the reported concentrations are similar.

3.2.5 Cyanide

- Former Salt Baths Area - Building 14 - Cyanide was detected at concentrations above the groundwater standard in the two B-zone wells in Building 13A (Figure 12) and immediately northwest of the former salt baths in Building 14 (LBA-MW-18 and LBA-MW-35). Cyanide concentrations in the A/B-, B-, and C-zone wells to the west and northwest of the salt baths exceeded the groundwater standard. There were no exceedences of the standard in samples collected from downgradient B- and C-zone wells outside the building to the north (LBA-MW-28, LBA-MW-27, LBA-MW-26, and LBA-MW-39). To evaluate conditions to the north inside the building and to the west outside the building, a sample for analysis of cyanide will be collected from well LBA-

[4] The well screens for all three of the affected wells were approximately 20 feet in length and extended from approximately 20 to 40 feet. The wells proposed for characterization during the initial groundwater sampling event were selected based on monitored depths and intervals similar to and deeper than the affected wells.

MW-04, proposed B- and C-zone wells WSP-MW-07B/WSP-MW-07C (Building 8), and proposed C-zone well WSP-MW-06C during the follow-up groundwater sampling event.

Cyanide concentrations in B-zone well LBA-MW-17, approximately 100 feet northeast of the salt baths, also exceeded the standard. Downgradient delineation is provided by the data for samples collected from nearby downgradient B-zone wells LBA-MW-05 and LBA-MW-06.

- Building 30 and Rice Paddy Areas - Cyanide was detected at concentrations above the groundwater standard in samples collected from A/B-zone wells in the southwestern portion of the Site: LBA-MW-13, near Building 30, and LBA-MW-14, in the Rice Paddy Area. To evaluate downgradient conditions, a B-zone well (WSP-MW-08B) will be installed approximately 150 feet north of LBA-MW-14 (Figure 12). All three wells will be sampled during the follow-up groundwater sampling event along with proposed well WSP-MW-04B (Figure 12) for analysis of cyanide.

3.3 Seeps

During due diligence environmental investigations, seep samples were collected at three locations at the site and analyzed for VOCs: from a pipe emanating from the transformer pad at Building 24 (B24-ext-seep), two locations beneath Building 18 (B18-Seep-1 and B18-Seep-2), and along the retaining wall north of Building 4 (LD-Seep-3). The locations are shown in Figure 11. The analytical results presented in Table 9 indicate exceedences of the groundwater standards for cis-1,2-DCE, TCE, vinyl chloride or a combination thereof in samples collected from B24-ext-seep, B18-Seep-1, and LD-Seep-3.

As part of the supplemental investigation activities, samples of the seepage will be collected at each of the above referenced locations and analyzed for VOCs in conjunction with the initial round of groundwater sampling. The sample associated with Building 24 will be collected from the remaining portion of the pipe not removed during completion of the Self-Implementing PCB Remediation Work Plan (WSP 2014). It is believed that this pipe is part of a foundation drain system based on its location; it continues to discharge to the storm water collection system (discussed below). If accessible, a video survey will be conducted inside the pipe to confirm its direction and location beneath the building. In addition, the sump located to the east, inside the building, will also be inspected to determine if the pipe is connected to the sump. As a temporary measure, WSP installed a carbon treatment sock at the discharge point for the pipe beneath Building 24, prior to discharge to the nearby drainage ditch.

3.4 Storm Water and Sanitary Sewer Systems

Figures 14A and 14B illustrate current and historical storm water and sanitary sewer systems and the open ditch present along much of the western portion of the Site. The locations are approximate as they are based on schematic and not-to-scale historical drawings.

3.4.1 Storm Water Sewer System

A predominantly open ditch system is present along the northwest perimeter of the Site (Figure 14A). The ditch drains south along the former railroad bed and is, consequently, frequently referred to as the “railroad ditch”. The ditch receives point discharges of storm water from the Site and from offsite. Figure 14A illustrates the approximate locations of the ditch and identified discharges from the Site. Point discharges to the ditch include the following (from north to south) which are identified in Figures 14A and 14B using the corresponding numbers listed below:

- Open Ditch 1 receives discharges from:

- (1) storm water[6] from in the eastern portion of the Site is captured in a catch basin east of the guard house discharging to the ditch via an underground pipe
- (2) storm water from a parking area north of Building 1 accumulates in a culvert west of the building and discharges to the ditch via a pipe
- (3) storm water south of Buildings 17 and 18 is captured in a catch basin east of Building 17 and discharges west of Building 17 to the ditch via a pipe

Water accumulating in Open Ditch 1 is diverted from the ditch via an open culvert which conveys the water to below Outfall 001.

- Open Ditch 2 receives discharges from:
  - (4) water discharges to the ditch via a pipe west of Building 18 which is believed to have historically discharged compressor and blow down water from the boiler; the ditch conveys the water to the sluice and weir system upstream of State Permitted Discharge Elimination System (SPDES) Outfall 001
  - (5) historically, water from the compressor and boiler in Building 18 and storm water from within the facility were conveyed to a catch basin on the east side of Building 19 which discharged to the former Fire Water Reservoir; overflow from the reservoir was directed to the ditch via a sluice and weir system; the pipe was subsequently capped and the reservoir abandoned; currently, water accumulating in the catch basin discharges directly to the sluice and weir system upstream of Outfall 001
  - (6) treated groundwater is pumped from the IRM treatment building and discharges to the sluice and weir system upstream of Outfall 001
- Open Ditch 3 receives storm water (7), primarily comprised of water from the roof drains, which discharges to the ditch via a pipe west of Buildings 6A and 33, and general storm water runoff and groundwater along the slope of the hill. The water discharges from the Site at Outfall 003 (Figure 14B).

Water in both Open Ditch 1 and 2 is conveyed via the wooden sluice along South Cayuga Street eventually discharging to Six Mile Creek as does water from Open Ditch 3 which discharges at Outfall 003.

An additional storm water system (labeled as No. 8 on Figure 14B) collects significant contributions from offsite. The water discharges to a culvert near Building 34 and is then directed off site.

The NYSDEC requested the following actions related to various water discharges identified throughout the site during a site visit and these will be included in the Phase II SRI:

- confirm discharge from (2), noted above, is diverted to the Open Ditch 1
- verify the purpose of the open culvert diversion
- confirm (4), noted above, was historically compressor blow down water from the boiler
- identify the source of water observed near (5), noted above
- determine the source of the continuous discharge to Open Ditch 3
- collect samples of discharges for analysis of CVOCs, barium, and cyanide, unless the source of the discharges can be verified to be storm water only

During the Phase II SRI, steps will be taken to confirm: the discharge from (2) and that the upstream/downstream discharges at point discharges (1) and (3), are diverted to the open culvert[7] consistent with the SPDES permit. It will be confirmed that the discharge pipe observed at (4) was historically associated with the boiler, and that the

[6] "Storm water" includes both runoff and water from the roof drains. Storm water emanating from (1) includes water that discharges from beneath Building 24 to the open ditch along the western portion of the building near the former transformer pad area (sample B24-ext-seep).
[7] The open diversion ditch is part of the SPDES permit design to facilitate the conveyance of water strictly from storm water sources in non-process areas to below Outfall 001.

overflow line from the fire water reservoir has been capped. In addition, the source of the continuous discharge to Open Ditch 3 will be identified. If (4) is not associated with the boiler or the continuous discharge to Open Ditch 3 is not associated with storm water, and if the purpose of the pipe(s) cannot be determined, WSP may further evaluate the pipes by performing a video survey.

Grab samples of water discharging to Open Ditch 1 at points labeled (1), (2), (3) on Figure 14A will be collected because they are not sampled pursuant to the SPDES permit. The samples will be submitted for analysis of CVOCs, RCRA metals, and cyanide. As a conservative approach, the samples will be collected during relatively drier conditions when the discharges should be most representative of potential inputs from groundwater. Sampling will also be conducted at the remaining point discharges labeled as (4), (5), and (6) at Outfall 001 (Figure 14A), and (7) and (8) at Open Ditch 3 (Figure 14B). These samples will also be analyzed for CVOCs, RCRA metals, and cyanide.

3.4.2 Sanitary Sewer Systems

As shown in Figure 14A, all process-related water, was conveyed through the sanitary sewer system to one of three main sewer trunks: two along Turner Place and one along South Cayuga Street.

During the 2013 due diligence environmental investigations, samples of residual material were collected from four manways (larger than a manhole and located inside a building) in a portion of the sanitary sewer network located in Buildings 4, 8, and 13A: B13A-MH-1, B13A-MH-2, B13-MW-3, B4-MW-1, and B8-MW-1 (Figure 14A). The samples were analyzed for TCLP metals and general chemistry parameters; the analytical results are presented in Table 11. Barium was detected at a concentration above the TCLP limit in the B13A-MH-2, west of the Pickling Room in Building 13A.

In 2014, WSP evaluated these locations, mapped the relationships between these and other locations, and developed a schematic diagram which is shown in Figure 14A. WSP collected confirmatory samples from the four manways sampled in 2013 (now identified as MH-A1, MH-A20, MH-A4, MH-D2, and MH-D1, respectively) and seven additional manways, for analysis of TCLP metals and general chemistry parameters. The results, shown in Table 10, confirmed the earlier findings for barium at manway MH-A20. In addition, results for sample MH-D-1 indicated that cadmium was present at a concentration above the TCLP limit.

WSP proposes to further characterize the sewer system. Initially, all trench drains, manholes, and manways within buildings historically associated with manufacturing operations will be located, accessed, and inspected, and a video survey will be conducted of the sewer lines. The findings will be documented in a field logbook and the locations and layout will be shown on a diagram. Samples of water and residuals, where present, will be collected from the locations along the sanitary sewer system identified below for analysis of RCRA metals and cyanide (Figure 14A).[7]

- West of the Main Building - Five locations were selected for characterization based on their close proximity to the final access points prior to the sewer discharging to the City of Ithaca municipal system (Figure 10):
  - SRI-SN-01 - The manhole is along the northwest wall of Building 3 and received water associated with pickling lines/drains northeast of Building 14. Samples will be collected directly from the single line discharging to this manhole.
  - SRI-SN-02 - The manhole is within Building 4 and southwest of SRI-SN-01. Samples will be collected from the line discharging into the manhole from the northeast. This line may also be conveying water via SRI-SN-01 (see note on pipe elevations in Figure 14A).
  - SRI-SN-03 - The manhole is along the northwest wall of Building 4 and approximately 80 feet west-southwest of SSRI-02. The manhole received water associated with the cyanide drain. Samples will be collected directly from the southern line (associated with the cyanide drain) discharging to this manhole.

[7] If the total concentration of any metal in the residuals is greater than 20 times the TCLP limit, the residual sample will resubmitted for TCLP metals.

- SRI-SN-04 - The manhole is approximately 170 feet southwest of the former IRM. The manhole received sanitary discharges from Buildings 6A, 6, and 34. Samples will be collected directly from the single line discharging to this manhole from the west.
- SRI-SN-05 - The manhole is approximately 700 feet northeast and downstream of SRI-SN-01. The manhole received sanitary discharges from Buildings 6A, 6, 10, 10A, 11A, 24, and 34. Samples will be collected from the culmination of two lines discharging to this manhole.

- Previous locations - Water was present in most of the manholes evaluated in 2013 and 2014, but was not characterized. Each of the following access points will be revisited to collect samples of water, if present, for analysis:
  - MH-A-series locations, including MH-A5 which is currently sealed shut
  - MH-B2 only (because MH-B1 no longer exists and there are no pipes connected to MH-B3)
  - MH-C1, -C2 (which is also currently sealed shut) -C3, and -C4 (MH-C5 is not connected to the sewer)

  A sample of residual material observed at the bottom of MH-A6 will be collected. This is the only location in which residuals are present but not characterized.

- New locations - Samples of water and residuals will be collected, where present, from all newly identified access points along the sewer within the former manufacturing areas. The former trench system in Building 13A (Figure 14A) will be inspected, and samples of water and residuals, if present, will be collected for analysis of RCRA metals and cyanide.

Table 4 identifies the sample analytical methods and requirements.

4 Sampling and Analysis Plan

The following section details the elements of the sampling and analysis plan (SAP).

4.1 Sampling Objectives

The primary objective in collecting and analyzing environmental samples is to produce results which are representative of the matrix material from which the samples were collected. This requires the following:

- Appropriate measures to be taken to ensure that samples are not contaminated during the process of collecting, transporting, and analyzing the samples.
- Analysis of the actual samples which were collected from the Site, and for which data was reported.
- Appropriate holding times and adequate storage methods for samples are maintained in order to minimize degradation between the time of sample collection and the time of sample analysis.
- A laboratory quality assurance and quality control (QA/QC) program is implemented that is sufficient to ensure that data reported by the laboratory are a reasonable indication of conditions in the samples at the time of analysis, and, therefore, assuming the preceding criteria are met, are representative of matrix conditions at the time of sampling.

To meet the sampling objectives outlined above, procedures were developed in accordance with accepted industry standards to ensure that appropriate and acceptable sampling and analysis techniques and equipment are consistently applied during the course of sampling at the Site.

4.2 Sampling Personnel

The field sampling crew will be trained and qualified to perform the tasks necessary to collect representative samples. Before beginning field activities, the site-specific Health and Safety Plan (HASP) will be modified, if appropriate, in accordance with the Occupational Safety and Health Administration 29 Code of Federal Regulations (CFR) 1910.120 and 40 CFR 311. The HASP will provide information on the objectives, project organization, and specific procedures that will be required for all activities conducted during the field work. All personnel are required to review the HASP before beginning work, and a safety meeting will be held at the beginning of each work day. Key responsibilities and tasks which must be completed by field personnel are identified below.

- Reviewing the SAP and the HASP; field sampling personnel will develop an understanding of sampling locations, methods, sample quantities, and personal protective measures required on site.
- Ensuring that a copy of the SAP and the HASP is available for reference at the Site each time samples are collected.
- Ensuring that samples are representative of the site conditions and the matrix from which the sample was collected by following the procedures outlined in the SAP.
- Ensuring that only equipment specified in the sampling and analysis plan is used to collect samples.
- Properly decontaminating non-dedicated sampling equipment.
- Properly preserving, packaging, sealing, and shipping samples to ensure that the samples arrive at the laboratory unchanged.
- Implementing chain-of-custody procedures and properly documenting field conditions.

4.3 Health and Safety Plan

WSP will update, as necessary, the site-specific HASP before starting the work specified in this plan. The HASP will comply with 29 CFR 1910.120, the Hazardous Waste Operations, and Emergency Response regulations. All subcontractors will also be required to prepare and adhere to their own HASP that is substantially consistent with WSP's HASP, and is commensurate with the work and activities that will be completed.

The primary anticipated hazards include potential worker and public exposure to construction hazards and potential chemical exposure. Worker and public safety hazards will include those typically found at a construction site using heavy equipment. Potential chemical exposures are anticipated to derive from inhalation of particulates. The following engineering controls will be established to minimize these exposures: work zones will be established and workers will wear personal protective equipment as specified in the HASP; air monitoring will be conducted while work is being performed to reliably measure airborne contaminants and to verify that control measures are adequate.

A copy of WSP's HASP will be made available at the Site.

4.4 Community Air Monitoring Plan

A community air monitoring plan (CAMP) identifies measures and/or actions to ensure that the public living and working near the Site as well as employees or visitors to any facility on the Site are protected from exposure to site contaminants during intrusive activities. In general, a CAMP typically requires air monitoring programs to measure airborne particulates or VOCs in the vicinity of site work. Although the soil delineation activities (direct-push drilling by Geoprobe® or equivalent) and groundwater sampling will not be generating any dust, dust will be generated and VOCs may be encountered during advancement of the proposed monitoring wells. Consequently, a project-specific CAMP has been prepared and is included in Appendix B.

4.5 General Sampling Procedures

All sampling will be conducted in accordance with WSP's Standard Operating Procedures (SOPs; Appendix C) and the NYSDEC's Draft Department of Environmental Remediation (DER) Technical Guidance (DER-10) for Site Investigation and Remediation (NYSDEC 2010). All field activities will be conducted using cleaned equipment; decontamination of non-disposable equipment will be conducted in accordance with WSP's SOPs and manufacturer specifications.

The location of each proposed boring and well will be finalized in the field; locations may be adjusted based on underground utilities information and surface conditions (e.g., topography, trees, and heavy vegetation); limited clearing of vegetation is expected at some locations. Each location will be marked using a stake with fluorescent tape tied to the top or white marking paint (on asphalt or concrete).

Underground lines will be located and marked by utility locators prior to beginning any intrusive work. A state public utility locating service will be contacted to identify utilities along the public rights-of-way adjacent to the site. A private locator will be contracted to identify all on-site lines in the vicinity of those areas to be investigated. Specific steps to be taken are identified in WSP's SOP, provided in Appendix C.

In accordance with the HASP, proper personal protective equipment will be selected and used during the sampling activities. Standard procedures will be followed to prevent cross contamination and contamination of the environment when collecting samples. In accordance with WSP's SOPs, a new pair of disposable gloves will be donned immediately before each sample is collected to limit the possibility of cross-contamination from accidental contact.

4.6 Monitoring Equipment

During the sampling effort, various types of monitoring and sampling equipment will be used to assess the surrounding environment (air) or collect samples. An inspection of sampling and monitoring equipment integrity will be conducted prior to sampling in order to assess the operating condition of the sampling equipment. The condition of sampling equipment will be documented in the field log book, and necessary maintenance will be performed on the equipment prior to sampling. WSP will follow the manufacturer's operation manuals for calibration, use, and decontamination procedures.

Manufacturer's guidelines will be consulted before beginning the calibration process and the manufacturer's technical support will be contacted if problems or questions arise. Air and water quality monitoring equipment will be tested and calibrated daily before use and will be recalibrated every 20 samples. All calibration procedures performed will be documented in the field book and will include the date/time of calibration, name of person performing the calibration, reference standard used, temperature at which the readings were taken, and the calibration readings.

- Before calibrating and using air quality monitoring equipment in the field, the sensors will be inspected to ensure that they are clean, installed properly, and are not damaged.
- Field calibration will be conducted in an area sheltered from wind, dust, and temperature/sunlight fluctuations, such as inside a room or vehicle in which the ambient temperature of the standards are maintained at a temperature >40 degrees Fahrenheit (^{o}F) and < 100°F.
- The air quality monitoring equipment will be allowed to warm up for at least 10 minutes after being turned on and the display will be set to read the appropriate measurement units.
- The brand, concentration, lot numbers and expiration dates of standard calibration products will be recorded in the field book.

Following calibration, the air quality monitoring equipment will be used to collect field parameters and the field measurements will be recorded on sampling forms and in the field book; conditions that may affect the quality of the data (e.g., changes in weather) will also be noted.

4.7 Decontamination

Non-dedicated equipment must be adequately decontaminated between locations. Where possible, each individual piece will be individually decontaminated in accordance with the manufacturer's specifications. Specifically, the decontamination process will include the following steps:

1. physical removal of debris
2. bucket wash with non-phosphate soap such as Alconox®, or equivalent and scrub brush
3. distilled water wash and rinse

The project geologist may also elect to use a pesticide-grade solvent rinse (e.g., hexane or isobutyl alcohol), followed by air drying and a final distilled water rinse, in instances where notable impact from organic compounds (e.g., oil) is present in the sample or associated non-dedicated equipment.

4.8 Soil and Sediment Sampling Procedures

Soil samples will be collected at 109 locations (Figures 5A and 5B, and Table 3). At each location borings will be advanced using direct-push drilling equipment (e.g., Geoprobe®, or equivalent). Borings will be advanced to 2-inches, 2 feet, or to bedrock, as previously described in Section 3.1, to permit potential characterization and delineation.

Soil cores will be collected continuously from the ground surface to the total depth using 4-foot-long samplers fitted with single-use liners. Upon recovery, soils will be screened for organic vapors using a PID and visually checked for evidence of staining. Borings will be terminated (and no samples submitted for analysis) when PID readings for locations evaluated due to the presence of VOCs are above 10 parts per million. If a boring is terminated in this manner, a new boring will be advanced at offset locations approximately 10 feet farther away for screening and sample collection. All pertinent soil observations, such as odors, presence of fill, staining, and moisture content will be recorded in the field logbook along with the PID readings.

A small diameter coring device will be used to penetrate the concrete slab and the base of former salt baths in Building 14. If soil is encountered beneath the concrete, soil samples will be collected by macrocore or other means deemed appropriate.

Sediment samples in the railroad ditch will be collected using a trowel, shovel, or hand auger as deemed appropriate.

After completing the sampling activities, the open boreholes will be backfilled with the soil cuttings to a maximum depth of 3 feet bgs. The remainder of the boreholes will be backfilled with bentonite pellets or coarse bentonite chips and the bentonite material will be hydrated with potable water; concrete and asphalt locations will be repaired, where appropriate. Soil cuttings which are not returned to the boreholes will be managed as investigation-derived waste (IDW; Section 4.14).

4.9 NAPL Removal and Redevelopment

NAPL will be removed from HISTWELL-1 using a multi-state sludge and sediment sampler (i.e., AMS® Multi-Stage Sludge and Sediment Sampler, or equivalent). The sampler uses a vent at the top of the device to first dissipate any air pressure that builds during insertion and then, upon retrieval, closes to create a suction that lifts the material. The sampler will be repeatedly inserted and emptied (into an appropriate container on the surface) until the majority of the viscous NAPL is removed.

Next, heated, pressurized water will be added to the well and on the sidewalls of the well casing and borehole to dislodge residual viscous NAPL. The heated water will be generated using a steam jenny or other similar device and delivered into the well using a truck-mounted drill rig fitted with a 360-degree spray apparatus connected to an appropriate length of hose. The apparatus will be repeatedly pulled up and pushed down within the target interval to remove viscous NAPL adhering to the walls of the borehole. The emulsified material will be simultaneously extracted using a submersible pump, or, if the water column can be raised sufficiently, a vacuum truck. The process will continue until the viscous NAPL have been removed and the extracted water becomes clear.

Once the oil removal efforts are completed, WSP will redevelop the well using a combination of surging (using a down-hole surge block fitted to drilling rods) and pumping, as appropriate, to remove any sediment or debris. Extracted water will be monitored during the development process for visual appearance (clarity) and stability parameters (turbidity, pH, temperature, oxidation-reduction potential [ORP], specific conductance, and dissolved oxygen [DO]) to ensure that the groundwater in the well is representative of the formation water.

The emulsified liquid and the development water extracted from the well will be managed as IDW.

4.10 Borehole Geophysical Survey

The down-hole geophysical survey of HISTWELL-1 will be performed approximately two weeks after redevelopment. The survey, which will use optical/acoustical, mechanical, thermal/conductivity, and radiation-based methods, is predicated on the assumption that HISTWELL-1 was completed with an open borehole at a depth below the surface steel casing and, for the thermal testing methods, sufficient groundwater is present within the well. The optical/acoustical survey will be performed using an optical/high resolution acoustic televiewer (OPTV/HRAT). The OPTV uses a down-hole camera equipped with a hyperbolic mirror to examine the borehole walls. This device uses successive image scans (0.5 millimeter in length) to build a continuous optical record that is ultimately transferred to a paper log for analysis. In wells with low visibility (due to groundwater with a high particle load), the HRAT is substituted for the OPTV. The HRAT uses an acoustical signal to build a similar log of the borehole. Onboard magnetometers measure the orientation of the OPTV/HRAT during its descent allowing the strike and dip of fractures or bedding planes to be measured directly from the output log.

The optical/acoustical survey will be followed by a mechanical survey, using a three-arm caliper, a fluid probe, and gamma logging. The three-arm caliper will be utilized to provide a mechanical measurement of the borehole wall diameter and identify the depth of any fractures within the well. The fluid probe will be used to measure changes in temperature and conductivity of the undisturbed water column in the borehole. The gamma logging device, which detects natural gamma radiation emitted by the rock, will be used identify lithological changes in the borehole (useful for stratigraphic correlation between boreholes within a study area). Logs from all three devices will be compared with the OPTV/HRAT survey to build up a comprehensive interpretation of the lithology, bedding plane, fractures that may be controlling the vertical and horizontal movement of groundwater.

A heat pulse flow meter will then measure the rate of groundwater flow across identified bedrock fractures.

4.11 Monitoring Well Installation Procedures

Seven bedrock groundwater monitoring wells will be installed to evaluate groundwater in the B-zone (WSP-MW-01B through WSP-MW-05B, WSP-MW-07B, and WSP-MW-08B); three wells will be installed to evaluate groundwater in the C-zone (WSP-MW-02C, WSP-MW-06C, and WSP-MW-07C).

An 8-inch borehole will be advanced approximately 3 feet into the top of bedrock. A 4-inch steel casing will be installed in the borehole and sealed with granular bentonite to prevent collapse of the unconsolidated overburden. After minimum of 12 hours following hydration of the bentonite, the bedrock will be cored through the outer casing into the B-zone or C-zone, as appropriate. If fractures are not observed during rock coring, the depth of a well may be extended to a deeper zone in an effort to obtain a representative groundwater sample. Once the final depth is determined, the borehole will be reamed using a nominal 6-inch diameter air rotary bit. The wells will be constructed using 10 feet of 2-inch inner diameter polyvinyl chloride (PVC) 0.01-inch slot well screen with the appropriate length of PVC riser pipe. A clean sand filter pack will be placed from the bottom of the borehole to approximately 2 feet above the top of the screen. A 3-foot-thick bentonite seal (hydrated pellets) will be placed on top of the sand filter pack. The remaining annular space will be backfilled with a cement-bentonite grout mixture (tremie-piped from the bottom to the top). The monitoring wells will be completed with a steel stickup assembly or flush mount well cover and will be equipped with lockable watertight caps. The covers will be set in a hole at least 4 to 8 inches larger than the assembly and secured in a 2-foot by 2-foot concrete pad. Construction information will be recorded in a field book, and as-built diagrams will be prepared after completion of the field activities.

The monitoring wells will be developed to remove sediments and ensure effective communication between the monitoring well screen and the surrounding saturated zone. Development will continue until the turbidity of the recovered groundwater is less than 50 NTUs or asymptotic conditions have been reached. Field parameters, including pH, conductivity, and temperature, will be measured during well development activities. Development will cease when the turbidity has dropped below the 50 NTUs and/or field parameters have stabilized as follows for three consecutive readings: within +/- 0.1 for pH, +/- 3% for conductivity, and +/- 10% for turbidity. There will be a minimum of at least 1 week between well development and well sampling. Well development documentation, including development method(s), time spent on development, volume of water removed, depth of the well, depth to top of the screen, diameter of the well, visual appearance (clarity), and stability parameters, will be recorded in the field book. The water level and total depth of the well will be periodically checked during the mechanical surging and pumping process to assess changes in the well condition.

Soil cuttings, rock cores, development water, and decontamination water, will be managed as investigation-derived waste (IDW) (Section 4.12).

4.12 Groundwater Sampling Procedures

Four groundwater sampling events are proposed:

- the historical wells will be sampled approximately 2 weeks after completing the well cleaning and redevelopment and after the geophysical survey is completed
- MW-3-100, MW-3-150, MW-16-100, and MW-9-100 (or as otherwise determined based on the survey data, Site lithology, and the monitored intervals of these wells) will be sampled within 2 weeks of completing the historical well sampling and down-hole geophysical survey
- the wells proposed for inclusion in the initial groundwater sampling event will be sampled within 2 weeks of approval of the revised Phase II SRI Work Plan
- the wells proposed for inclusion in the follow-up groundwater sampling event will be sampled 1 week or more after completing installation and development of the new wells.

Prior to sampling, the groundwater level in the wells will be measured to the nearest 0.01-foot using an electronic water level indicator of oil-water level indicator, as appropriate. In the event that NAPL is observed, groundwater samples will not be collected from that well.

Groundwater purging and sampling will adhere to NYSDEC-approved low flow sampling procedures, except at HISTWELL-2 and HISTWELL-3. Grab groundwater samples will be collected from HISTWELL-2 and HISTWELL-3 using dedicated, disposable bailers without purging. All other wells will be purged and sampled at a rate of less than 500 milliliters per minute using a submersible bladder pump equipped with dedicated tubing and a disposable polyethylene bladder or peristaltic pump equipped with dedicated tubing. The pump intake depth for HISTWELL-1 will be set to be consistent with historical sampling depths or to coincide with the primary flow pathway identified during the geophysical survey. The intake depths for the monitoring wells will be set to coincide with the approximate mid-point of the screened interval or with the identified primary flow pathways. All pump intake depths will be documented in the field books.

During purging, field measurements of temperature, pH, specific conductance, DO, ORP, and turbidity, will be monitored using a multi-parameter water quality meter equipped with a flow through cell to minimize atmospheric interference. Depth to water measurements will be collected throughout sampling to track and minimize water column drawdown. In accordance with WSP's SOPs, groundwater samples will be collected following the stabilization of the field parameters.

The groundwater sampling and analytical program is summarized in Table 6. Analyses will be performed for TCL VOCs, TCL SVOCs, RCRA metals, cyanide or a combination thereof. Table 4 presents the analytical requirements.

Purge water and decontamination water will be managed as IDW.

4.13 Sewer Sampling Procedures

Grab samples of water within the sanitary sewers and water discharging from the storm water system to Open Ditch 1 will be collected in unpreserved laboratory-supplied plastic bottles and emptied into appropriately preserved sample bottles.

Samples of the residual materials present along the sanitary sewer will be collected using stainless steel spoons, trowels, or shovels, as appropriate to each location, and placed in to laboratory-supplied bottles (no preservatives are required for the solid samples).

4.14 Surveying

Following completion of the Phase II SRI field investigations, the locations of completed borings and all new wells will be surveyed to an accuracy of 0.1 foot; the ground surface elevations for borings and wells and top-of-casing elevations for the wells will be surveyed to an accuracy of 0.01 foot. In addition, wells installed by LaBella and discussed in Section 3, will be similarly surveyed and tied into the existing Site datum. Finally, all manholes/manways will be surveyed and placed on the Site base map.

4.15 Investigation-Derived Waste

IDW, including drill cuttings, decontamination water, and personal protective equipment, will be contained in Department of Transportation-compliant 55-gallon steel drums, tanks or totes, as appropriate. The containers will be labeled and moved to or stored in a temporary storage area on the Site for subsequent management and disposal. Investigation-derived waste will be promptly characterized and disposed of in accordance with state and federal requirements.

4.16 Sample Containers and Labels and Chains-of-Custody

All containers used for the collection of laboratory samples will be new containers. Temperature control will be achieved by placing the samples in a cooler immediately after collection. The cooler will be packed with sufficient ice to cool the samples to approximately 4° Celsius and maintain the temperature until arrival at the laboratory. The temperature will be measured upon receipt at the laboratory. Adhesive, waterproof labels, which will be placed on each sample container, will include the following information:

- Project location
- Sample identification number (which will reflect the sample location)
- Date and time of sample collection
- Parameters requested for analysis
- Type of preservative added (if applicable)

This information will be written on the label with an indelible, waterproof pen or marker.

Sample custody will be controlled and maintained through the chain-of-custody procedures. Chain-of-custody procedures will allow for the tracing of possession and handling of samples from the field to the laboratory. A sample is considered to be in a person's custody if it is in the person's possession or it is in the person's view after being in his or her possession or it was in that person's possession and that person has locked it up to prevent tampering. Items to be used to document the possession and handling of samples and protect their integrity include sample labels, custody seals, a logbook, and chain-of-custody forms.

In accordance with WSP’s SOPs, the chain-of-custody form will be used to trace sample possession from the time of collection to receipt at the laboratory. Dated and signed adhesive seals will be affixed to the shipping containers so that the containers cannot be opened without breaking the seal to demonstrate that they have not been opened during shipment.

4.17 Quality Control and Analytical Procedures

The Quality Control and Analytical Procedures are provided to ensure that controls are initiated and maintained throughout sample collection and analysis. Field QA/QC procedures, such as the use of proper sampling technique and decontamination procedures, were discussed in earlier sections of this plan. Additional QA/QC measures include the use of standardized methods (Section 4.17.1), control samples (Section 4.17.2), and data validation (Section 4.17.3).

4.17.1 Analytical Procedures

Laboratory analyses will be performed by Accutest Laboratories, Inc., which is accredited by the New York State Department of Health under its Environmental Laboratory Accreditation Program.

The laboratory analytical for all media and parameters are U.S. EPA SW-846 methods which are identified in Table 4, along with the sample preservation and holding time requirements. The analytical method used, extraction date, and date of actual analysis will be recorded by the laboratory.

Laboratory QC checks such as lab blanks, spikes, calibration standards, duplicates, and reference samples will be used to provide a measure of accuracy and precision. Laboratory reference QC samples and spikes will be integrated into the analytical scheme at a frequency of one for every 20 samples analyzed to assess accuracy. Laboratory duplicates will be analyzed at the same frequency to assess precision. The laboratory will select one field sample to be analyzed as a matrix spike/matrix spike duplicate sample to determine the bias (accuracy) and precision of a method in a given sample matrix and the effect of the sample matrix on the analytical protocol.

Analytical results submitted to the NYSDEC for review will include, at a minimum, signed chain-of-custody sheets, sampling dates, analysis dates, analytical methods used, reporting limits, and QC results. Raw data consisting of chromatograms, recorder outputs, mass spectrum reports, computer printouts, charts, graphs, bench sheets, or any other hard copy data generated during sampling and analysis will be available on request by NYSDEC.

4.17.2 Control Samples

Control samples are introduced into the train of actual samples as a monitor on the performance of the sampling procedures and the analytical system. A control sample may consist of a standard or natural matrix. Control samples for this monitoring plan include field duplicates, equipment blanks, trip blanks, and temperature blanks. Each type provides a different form of QC for the analytical system.

4.17.2.1 **Field Duplicate**

Field duplicates are useful in documenting the precision of the sampling process. One field duplicate will be collected per media at an approximate ratio of 1 to 20. The duplicate sample will be collected at the same time from the same sample aliquot and in the same order as the corresponding field sample. The field duplicate identity will not be provided to the laboratory, but will be recorded in the field logbook.

4.17.2.2 **Matrix Spikes/Matrix Spike Duplicates**

Matrix spikes/matrix spike duplicates (MS/MSDs) are used to determine laboratory bias and precision for a given method and matrix. One MS/MSD will be collected for every 20 aqueous samples. Due to the heterogeneous nature of solid aliquots, MS/MSD results are not reliable indicators of bias or precision. The laboratory's internal, method-specific MS/MSDs will suffice for evaluating these parameters in the solid aliquots. The MS/MSDs will be collected at the same time from the same sample aliquot and in the same order as the corresponding field sample. The sample identification will be identical to the field sample and include an "MS" and "MSD" (GW-MW-13-100MS and GW-MW-13-100MSD).

4.17.2.3 **Equipment Blanks**

Equipment blanks are useful in documenting adequate decontamination of sampling equipment. One equipment blank will be collected each sampling day per type of equipment. A blank will prepared by collecting rinsate from non-dedicated equipment after the equipment has been decontaminated; laboratory-provided deionized water will be used for rinsing. The equipment blank will be analyzed for all analytes for which sample collection was performed on a given date. The unique sample identification will indicate that the sample is an equipment blank and will include the sampling date (e.g., EB-MMDDYY).

4.17.2.4 **Trip Blanks**

Trip blanks are used to document contamination attributable to shipping and field handling procedures. Trip blank(s) will be prepared at the laboratory and will accompany the sample bottles in the field and with each cooler returned to the laboratory for analysis of the VOC COCs. The trip blank(s) will be labeled in the field: the unique sample identification will indicate that the sample is a trip blank and will include the shipping date (e.g., TB-MMDDYY).

4.17.2.5 **Temperature Blank**

Temperature blanks are used to determine if proper sample thermal preservation has been maintained by measuring the temperature of the sample container upon arrival at the laboratory. Laboratory-provided temperature blank(s) will be returned to the laboratory in each cooler.

4.17.3 Data Validation

The laboratories will supply electronic data deliverables that will be downloaded into the project files. The data packages for the conventional chemical parameters will be Level III with deliverables similar to those required by the U.S. Environmental Protection Agency (EPA) contract laboratory program. To ensure the quality and utility of the data, approximately 20 percent of the data packages will be validated by a third party consistent with the U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review (EPA 2014a and 2014b).

5 Schedule and Reporting

Based on the proposed scope of work, the field investigation is anticipated to require 8 weeks to complete. If additional borings or wells are determined to be appropriate based on the initial soil and groundwater sampling events, additional weeks will be needed to complete these additional activities. On completion of the field work, WSP will prepare the Phase II SRI Report which will require 6 to 8 weeks to complete.

Pursuant to NYSDEC's *Technical Guidance for Site Investigation and Remediation* (DER-10), the format of the SRI will follow the remedial investigation report template. While the template is currently "in Development", WSP anticipates that the report will include such supporting information as laboratory analytical deliverables, data validation reports, lithologic logs, well construction details, and other pertinent information to the investigation, and at a minimum the following key elements.

- Site Background - Site history, environmental setting, geology, and hydrogeology.
- Regulatory Background - Regulatory history during Emerson/EPT's tenure, a summary of pertinent information on Site conditions as reported in previous RI reports, and a description of interim remedial measures taken to date.
- Investigation Activities - A summary of the work performed will be provided.
- Soil, Sediment, Groundwater, Seep, and Sewer Findings - The results (including those previously reported for the areas of interest), will be presented in tabulator format.
  - Soil sample results will be compared to the Restricted Residential, Industrial, and Protection of Groundwater SCOs as appropriate to the AOC. Results for soil samples collected in the vicinity of the AOC 32 drainage feature will also be compared to the SGVs.
  - Sediment sample results will be compared to the SGVs.
  - Groundwater, seep, and sewer water sample results will be compared to the groundwater standards.
  - Residual materials sample results for total metals will initially be compared to the TCLP limits. If a concentration is greater than 10 times the limit, the sample will be resubmitted for analysis of TCLP metals. The total metals concentrations will also be compared to the Protection of Groundwater SCOs.
  - Figures illustrating the analytical results will be prepared; exceedences will be highlighted; groundwater figures will include isopleths and flow directions.
  - The sources and extents of contamination will be identified.
- Contaminant Fate and Transport - The environmental fate and transport of the COCs will be described.
- Conceptual Site Model - A CSM will be developed based on the fate and transport model, the Phase II SRI findings, and planned future use of the Site. The model will include the soil vapor intrusion pathway and will identify human and ecological exposure pathways and identify those that may pose unacceptable risk.
- Conclusions - The conclusions will identify the extents of contamination, any remaining data gaps, and exposure pathways that pose unacceptable risk.

6 References

New York State Department of Environmental Conservation (NYSDEC). 1988. Order on Consent #A7-0125-87-09 between the New York State Department of Environmental Conservation and Emerson Power Transmission Company and Emerson Electric Co.. July 13, 1988.

New York State Department of Environmental Conservation (NYSDEC). 2009. Record of Decision Amendment, Morse Industrial Corporation, Town of Ithaca, Tompkins County, New York, Site Number 755010. June 2009.

New York State Department of Environmental Conservation (NYSDEC). 2010. DRAFT DER-10 Technical Guidance for Site Investigation and Remediation.

New York State Department of Environmental Conservation (NYSDEC). 2014. Screening and Assessment of Contaminated Sediment. Division of Fish, Wildlife and Marine Resources, Bureau of Habitat. June 24, 2014.

U.S. Environmental Protection Agency (EPA). 2014a. Contract Laboratory Program National Functional Guidelines for Organic Data Review.

U.S. Environmental Protection Agency (EPA). 2014b. Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.

U.S. Environmental Protection Agency (EPA). 2014c. Letter to Emerson approving the Self-Implementing PCB Cleanup and Disposal at the EPT site in Ithaca, New York. November 24, 2014.

WSP. 2008. Final Supplemental Remedial Investigation Report, Emerson Power Transmission Facility, Ithaca, New York, Site No. 7-55-010. April 4, 2008.

WSP. 2014. Self-Implementing PCB Remediation Work Plan, Emerson Power Transmission Site, Ithaca, New York, Site No. 7-55-010. October 28, 2014.

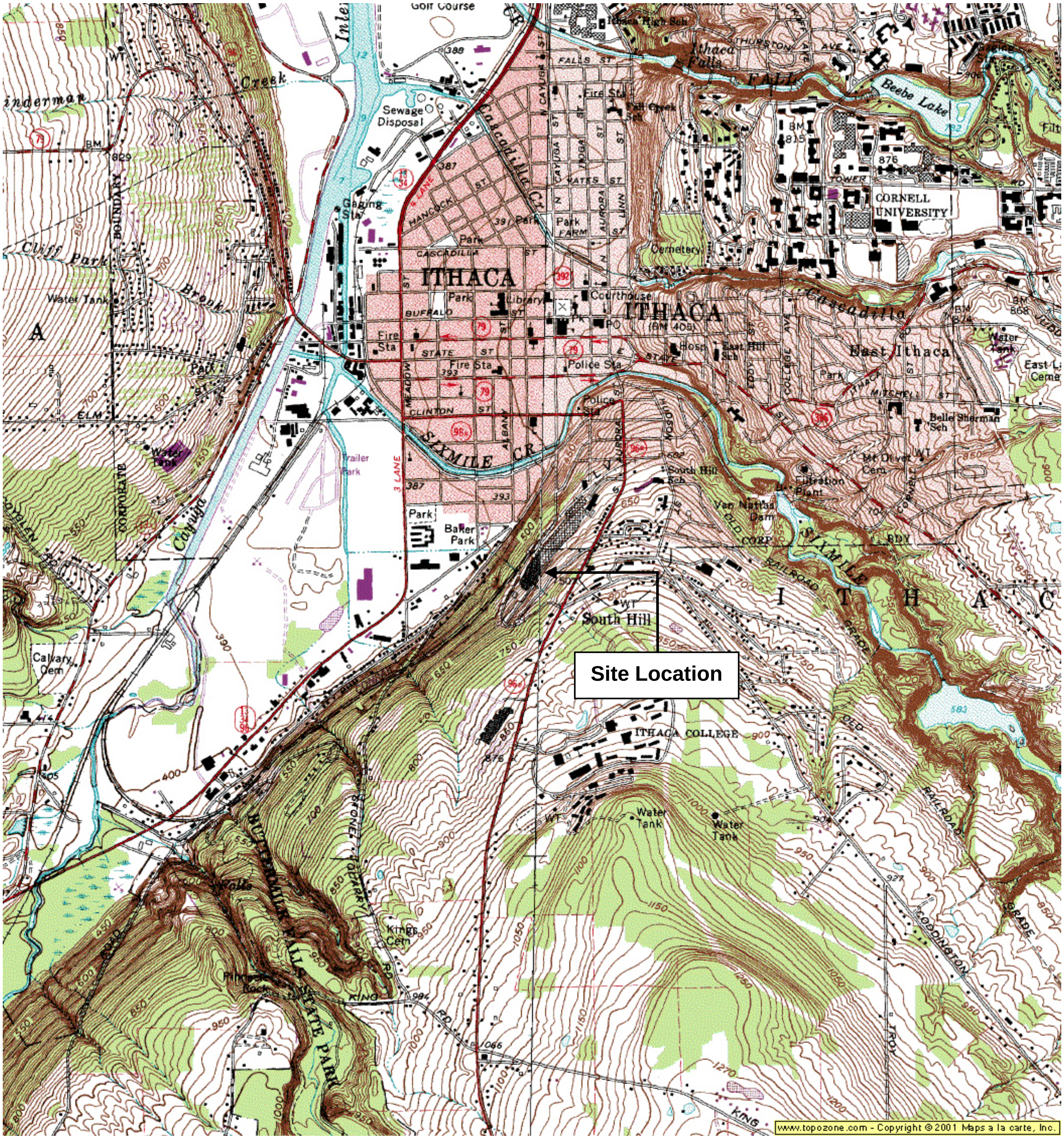
7 Acronyms

°F	Degrees Fahrenheit
AOC	Area of Concern
BGS	Below ground surface
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
COC	constituent of concern
CP-51	Commissioner Policy 51
CVOC	chlorinated volatile organic compound
DCE	Dichloroethene
DER	Department of Environmental Remediation
DER-10	NYSDEC Department of Environmental Remediation Technical Guidance for Site Investigation and Remediation
DO	dissolved oxygen
EPA	Environmental Protection Agency
EPT	Emerson Power Transmission
HASP	Health and Safety Plan
IDW	investigation-derived waste
IRM	interim remedial measure
LNAPL	Light non-aqueous phase liquid
MCL	maximum contaminant level
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
ORP	oxidation-reduction potential
OU	Operable Unit (1, 2, 3)
PAH	polynuclear aromatic hydrocarbon
PCBs	polychlorinated biphenyls
PCE	Tetrachloroethene
PID	photoionization detector
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act

ROD	Record of Decision
SAP	Sampling and Analysis Plan
SCO	soil cleanup objective
SGV	Sediment Guidance Value
SOP	standard operating procedure
SRI	Supplemental Remedial Investigation
TCA	1,1,1-trichloroethane
TCE	Trichloroethene
TCLP	Toxicity Characteristic Leaching Procedure
VOC	volatile organic compound

.

Figures



Reference
7.5 Minute Series Topographic Quadrangle
Ithaca East, New York
Photorevised 1976 Scale 1:25,000 Metric

N

Quadrangle Location

Scale in Meters
0 500 1000
0 1000 2000
Scale in Feet

WSP | PARSONS BRINCKERHOFF

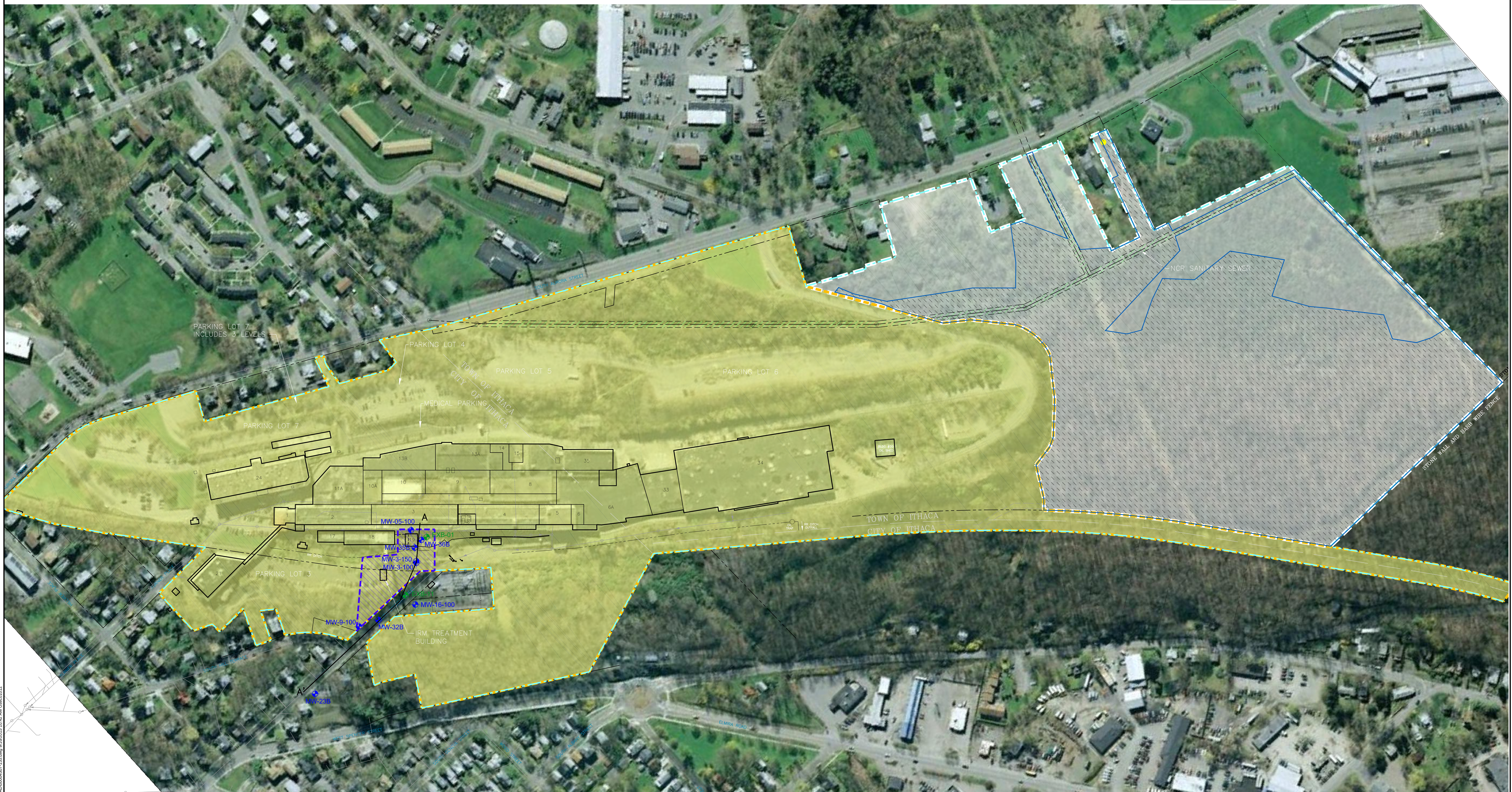
WSP USA Corp.
13530 Dulles Technology Drive
Suite 300
Herndon, Virginia 20171
703-709-6500

Figure 1
Site Location
Former Emerson Power Transmission
Ithaca, New York

NOTE: FOR CROSS SECTION, SEE FIGURES 3 AND 9.

LEGEND

- SANITARY SEWER
- 34 BUILDING NUMBER
- PROPOSED BOUNDARY FOR OU-1
- PROPOSED NEW BOUNDARY FOR SITE NO. 755010 (OPERABLE UNIT 2)
- AREA PROPOSED FOR REMOVAL FROM SITE NO. 755010 (34.02 ACRES)
- SLOPES GREATER THAN 15%
- PROPOSED EASEMENT FOR NCR SEWER
- PROPERTY BOUNDARY
- MONITORING WELL



0 150 300
SCALE IN FEET

D

REVISIONS

REV	DESCRIPTION

SEAL

DATE

DRAWN BY	EGC
CHECKED	
APPROVED	9/16/2015

OPERABLE UNITS 1 AND 2

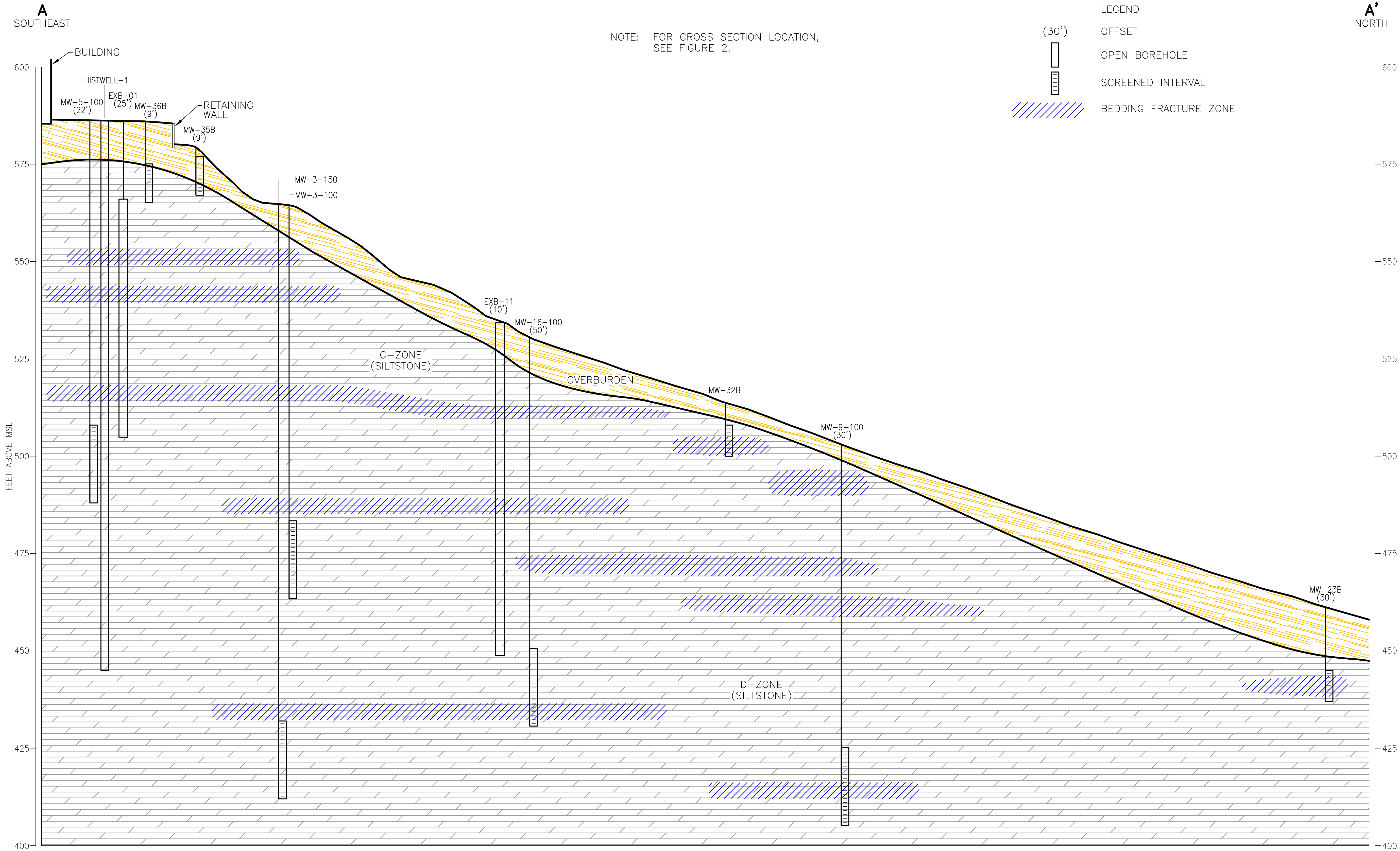
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

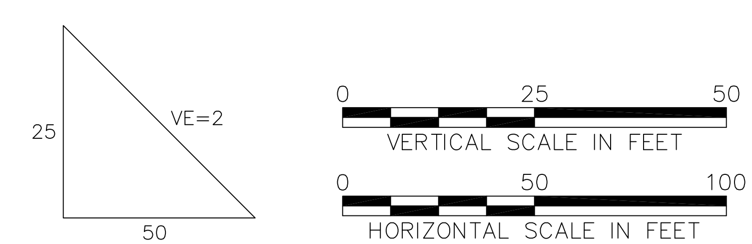
PREPARED FOR
EMERSON

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 2

Drawing Number
00004507-155





NOTICE: THIS DRAWING HAS BEEN PREPARED UNDER THE DIRECTION OF A PROFESSIONAL. DO NOT ALTER THIS DOCUMENT IN ANY WAY WITHOUT THE WRITTEN CONSENT OF WSP USA CORP.

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

B

R:\ACAD\CADD\00004507-Ithaca\CADD\00004507-171.dwg 9/16/2015 10:44 AM Usec01012

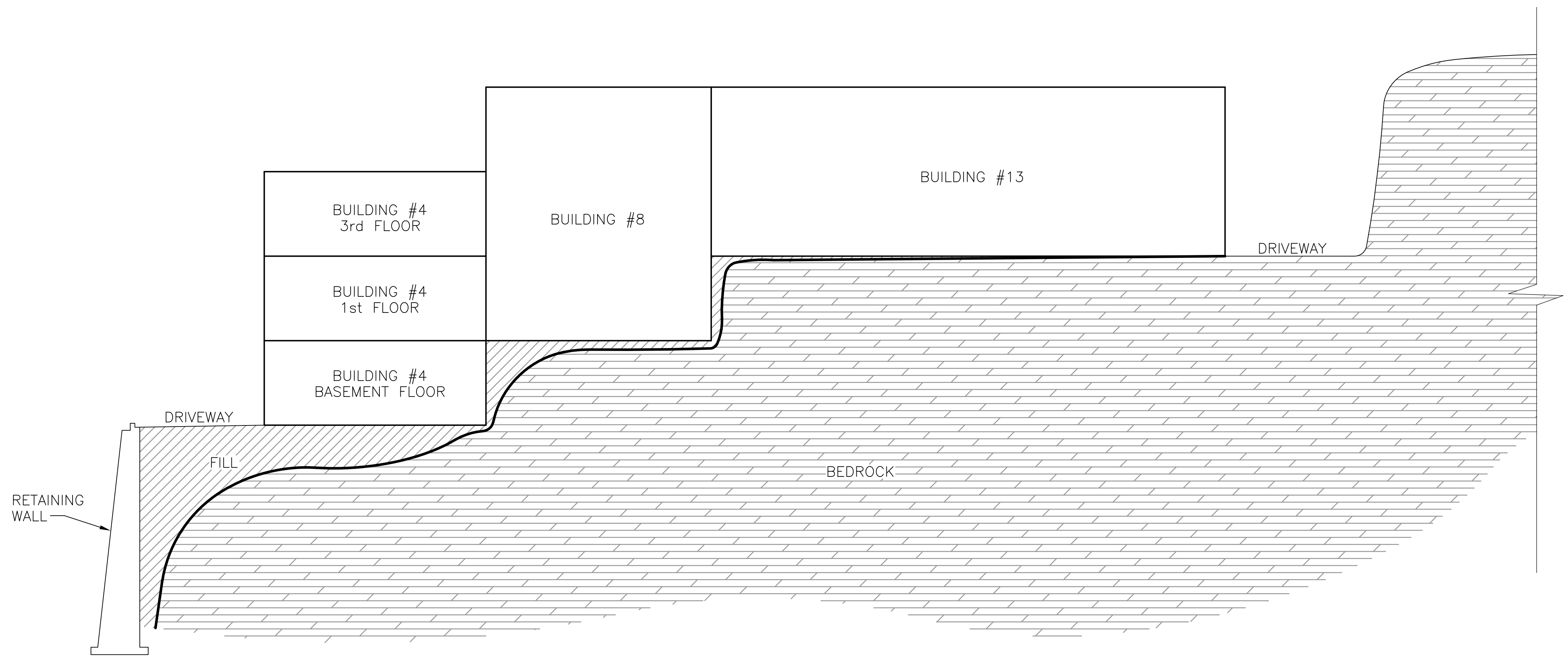
Drawn By: EGC
Checked:
Approved: 8/12/2015
DWG Name: 00004507-171

FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK
PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

Figure 3
GENERALIZED FENCE DIAGRAM A–A'

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herdon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

NORTHWEST ELEVATION



0 20 40
APPROXIMATE SCALE IN FEET

Drawn By: EGC
Checked: SPH 8/25/2015
Approved:
DWG Name: 00004507-163

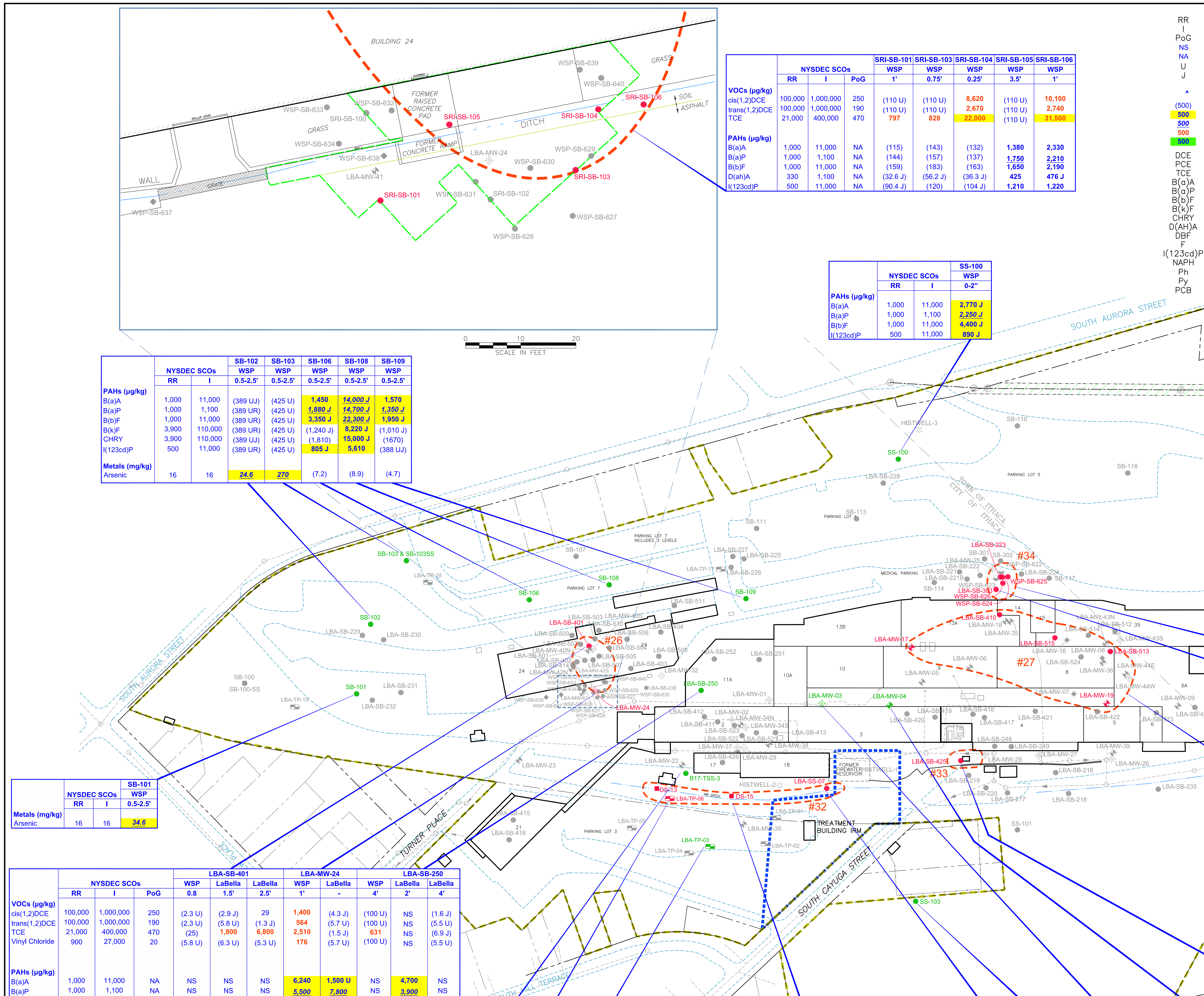
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK
PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

Figure 4
SCHEMATIC BUILDING SECTION

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herdon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

B

R:\ACAD\CADD\00004507-Ithaca\CADD\00004507-163.dwg 9/18/2015 3:32 PM Usec01012



	NYSDEC SCOs			SRI-SB-101	SRI-SB-103	SRI-SB-104	SRI-SB-105	SRI-SB-106
				WSP	WSP	WSP	WSP	WSP
	RR	I	PoG	1'	0.75'	0.25'	3.5'	1'
VOCs (µg/kg)								
cis(1,2)DCE	100,000	1,000,000	250	(110 U)	(110 U)	8,620	(110 U)	10,100
trans(1,2)DCE	100,000	1,000,000	190	(110 U)	(110 U)	2,670	(110 U)	2,740
TCE	21,000	400,000	470	797	828	22,000	(110 U)	31,500
PAHs (µg/kg)								
B(a)A	1,000	11,000	NA	(115)	(143)	(132)	1,380	2,330
B(a)P	1,000	1,100	NA	(144)	(157)	(137)	1,750	2,210
B(b)F	1,000	11,000	NA	(159)	(183)	(163)	1,650	2,190
D(ah)A	330	1,100	NA	(32.6 J)	(56.2 J)	(36.3 J)	425	476 J
I(123cd)P	500	11,000	NA	(90.4 J)	(120)	(104 J)	1,210	1,220

	NYSDEC SCOs		SS-100
			WSP
	RR	I	0-2"
PAHs (µg/kg)			
B(a)A	1,000	11,000	2,770 J
B(a)P	1,000	1,100	2,250 J
B(b)F	1,000	11,000	4,400 J
I(123cd)P	500	11,000	890 J

	NYSDEC SCOs		SB-102	SB-103	SB-106	SB-108	SB-109
			WSP	WSP	WSP	WSP	WSP
	RR	I	0.5-2.5'	0.5-2.5'	0.5-2.5'	0.5-2.5'	0.5-2.5'
PAHs (µg/kg)							
B(a)A	1,000	11,000	(389 UJ)	(425 U)	1,450	14,000 J	1,570
B(a)P	1,000	1,100	(389 UR)	(425 U)	1,880 J	14,700 J	1,350 J
B(b)F	1,000	11,000	(389 UR)	(425 U)	3,350 J	22,300 J	1,950 J
B(k)F	3,900	110,000	(389 UR)	(425 U)	(1,240 J)	8,220 J	(1,010 J)
CHRY	3,900	110,000	(389 UJ)	(425 U)	(1,810)	15,000 J	(1670)
I(123cd)P	500	11,000	(389 UR)	(425 U)	805 J	5,610	(388 UJ)
Metals (mg/kg)							
Arsenic	16	16	24.6	270	(7.2)	(8.9)	(4.7)

	NYSDEC SCOs		SB-101
			WSP
	RR	I	0.5-2.5'
Metals (mg/kg)			
Arsenic	16	16	34.6

	NYSDEC SCOs			LBA-SB-401			LBA-MW-24		LBA-SB-250		
				WSP	LaBella	LaBella	WSP	LaBella	WSP	LaBella	LaBella
	RR	I	PoG	0.8	1.5'	2.5'	1'	-	4'	2'	4'
VOCs (µg/kg)											
cis(1,2)DCE	100,000	1,000,000	250	(2.3 U)	(2.9 J)	29	1,400	(4.3 J)	(100 U)	NS	(1.6 J)
trans(1,2)DCE	100,000	1,000,000	190	(2.3 U)	(5.8 U)	(1.3 J)	564	(5.7 U)	(100 U)	NS	(5.5 U)
TCE	21,000	400,000	470	(25)	1,800	6,800	2,510	(1.5 J)	631	NS	(6.9 J)
Vinyl Chloride	900	27,000	20	(5.8 U)	(6.3 U)	(5.3 U)	176	(5.7 U)	(100 U)	NS	(5.5 U)
PAHs (µg/kg)											
B(a)A	1,000	11,000	NA	NS	NS	NS	6,240	1,500 U	NS	4,700	NS
B(a)P	1,000	1,100	NA	NS	NS	NS	5,500	7,800	NS	3,900	NS
B(b)F	1,000	11,000	NA	NS	NS	NS	4,770	11,000	NS	5,600	NS
B(k)F	3,900	110,000	NA	NS	NS	NS	4,600	4,000	NS	(2,000)	NS
CHRY	3,900	110,000	NA	NS	NS	NS	5,980	8,900	NS	5,000	NS
D(ah)A	330	1,100	NA	NS	NS	NS	1,070	1,100	NS	630 J	NS
I(123cd)P	500	11,000	NA	NS	NS	NS	2,980	4,900	NS	2,600	NS
PCBs (µg/kg)											
Total PCBs	1,000	25,000	NA	NS	NS	NS	11,300	6,100	NS		NS

	NYSDEC SCOs		LBA-B17-TSS-3	LBA-TP-06	LBA-TP-03	
			LaBella	LaBella	WSP	LaBella
	RR	I	-	1'	-	2'
PAHs (µg/kg)						
B(a)A	1,000	11,000	NS	5,300	NS	23,000
B(a)P	1,000	1,100	NS	4,900	NS	17,000
B(b)F	1,000	11,000	NS	6,800	NS	24,000
B(k)F	3,900	110,000	NS	(2,700)	NS	9,400
CHRY	3,900	110,000	NS	5,100	NS	21,000
D(ah)A	330	1,100	NS	970	NS	2,900 J
I(123cd)P	500	11,000	NS	3,800	NS	12,000
Metals (mg/kg)						
Cadmium	4	60	4.8	NS	NS	(0.75)
Lead	400	3,900	405	NS	NS	(33)

	NYSDEC SGVs	DS-13	DS-15
		LaBella	LaBella
PAHs (µg/kg)			
B(a)A	16,820	(13,000 J)	31,000
B(a)P	19,280	(12,000 J)	30,000
B(b)F	19,580	(14,000 J)	44,000
CHRY	16,860	(10,000 J)	34,000
F	14,160	28,000	73,000
Ph	11,940	17,000 J	47,000
Py	13,960	23,000	76,000
Total PAHs	Class C	150,920	429,900
PCBs (µg/kg)			
Total PCBs	Class C	(0)	1,590
Pesticides (µg/kg)			
4,4'-DDT	Class A,B	38	97 J
Total BHC isomers	Bio(A)	61	219
Metals (mg/kg)			
Arsenic	Class A,B	NS	10.7
Cadmium	Class A,B	NS	2.8
Chromium	Class A,B	NS	83
Lead	Class C	NS	240
Mercury	Class A,B	NS	0.3
Silver	Class A,B	NS	1.1

	NYSDEC SCOs			LBA-SS-07	SS-103	LBA-MW-03			LBA-MW-04		LBA-SB-425		
				LaBella	WSP	LaBella	LaBella	LaBella	LaBella	WSP	LaBella	WSP	WSP
	RR	I	PoG	0-2"	0-2"	0.5'	2'	6'	6'	6'	4'	4'	10'
PAH (µg/kg)													
B(a)A	1,000	11,000	NA	NS	1,630	NS	NS	7,000	(640)	(873)	NS	NS	NS
B(a)P	1,000	1,100	NA	NS	1,790 J	NS	NS	6,400	(560)	(801)	NS	NS	NS
B(b)F	1,000	11,000	NA	NS	2,930 J	NS	NS	9,900	(870)	(957)	NS	NS	NS
B(k)F	3,900	110,000	NA	NS	(1,290 J)	NS	NS	(3,700 J)	(320 J)	(706)	NS	NS	NS
CHRY	3,900	110,000	NA	NS	(1,900)	NS	NS	7,500	(810)	(999)	NS	NS	NS
D(a,h)A	330	1,100	NA	NS	NS	NS	NS	1,200 J	(120 J)	(228)	NS	NS	NS
I(123cd)P	500	11,000	NA	NS	841 J	NS	NS	4,700	(490)	674	NS	NS	NS
Metals (mg/kg)													
Arsenic	16	16	NA	69.8	(14.7 U)	18	18	NS	17	(11.8)	(15.7)	20.5	NS
Barium	400	10,000	820	(291)	(243)	(75 J)	NS	NS	(81 J)	(93.1)	543	969	NS
Lead	400	3,900	NA	420	617	1,100 J	1,100	NS	(80 J)	(74.5)	(161)	(208)	NS

	NYSDEC SCOs			LBA-SB-223		WSP-SB-624		WSP-SB-625		WSP-SB-626			
				WSP	LaBella	WSP		WSP		WSP	WSP	WSP	LaBella
	RR	I	PoG	0.5-1'		0-2'	2-2.5'	0-2'	2-2.5'	0-2'	2-3'	6-7'	7'
VOCs (µg/kg)													
cis(1,2)DCE	100,000	1,000,000	250	3,740	(100)	11,300	(2.3 J)	11,900	(0.75 J)	(28 U)	(32 U)	(25 U)	NS
PCE	19,000	300,000	1,300	75,200	1,500	116,000	(9.5)	66,600	(2.3)	2,320	1,400	(838)	(11 JL)
TCE	21,000	400,000	470	1,960	(56 J)	5,060	(0.33 U)	4,980	(0.24 U)	(15 U)	(17 U)	(14 U)	(4.8 U)
PAHs (µg/kg)													
B(a)A	1,000	11,000	NA	(535)	29,000								
B(a)P	1,000	1,100	NA	(402)	19,000								
B(b)F	1,000	11,000	NA	(424)	27,000								
B(k)F	3,900	110,000	NA	(293)	12,000								
CHRY	3,900	110,000	NA	(488)	27,000								
D(ah)A	330	1,100	NA	(84.4)	3,000 J								
I(123cd)P	500	11,000	NA	(196)	13,000								

	NYSDEC SCOs		LBA-SB-303
			LaBella
	RR	I	5
Metals (mg/kg)			
Copper	270	10,000	460

	NYSDEC SCOs			LBA-SB-410		LBA-SB-513		LBA-SB-515		LBA-MW-17	LBA-MW-19	
				WSP	LaBella	WSP	LaBella	WSP	LaBella	LaBella	WSP	LaBella
	RR	I	PoG	Bedrock Sample		6.5-7.5'	6'	1'	0-1.7'	2'	0-1.9'	
Metals (mg/kg)												
Arsenic	16	16	NA	NS	NS	(8.9)	(10.5)	19.7	23.8	19	26.2	26
Barium	400	10,000	820	NS	4,720	3,020	(322)	(148)	(92)	540 J	927	(110 J)
Lead	400	3,900	NA	NS	NS	403	(95.9 ^)	(264)	(221)	(280)	(88.5)	(51)

RR	RESTRICTED RESIDENTIAL USE
I	INDUSTRIAL USE
PoG	PROTECTION OF GROUNDWATER
NS	NOT SAMPLED
NA	NOT APPLICABLE
U	NOT DETECTED ABOVE REPORTING LIMIT
J	ESTIMATED BELOW REPORTING LIMIT BUT ABOVE METHOD DETECTION LIMIT
^	INSTRUMENT–RELATED QC EXCEEDS THE CONTROL LIMITS
(500)	"( )" INDICATES NO EXCEEDENCE OF CRITERION
500	EXCEEDS RR
500	EXCEEDS I
500	EXCEEDS PoG
500	EXCEEDS SGV
DCE	DICHLOROETHENE
PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
B(a)A	BENZO(a)ANTHRACENE
B(a)P	BENZO(a)PYRENE
B(b)F	BENZO(b)FLUORANTHENE
B(k)F	BENZO(k)FLUORANTHENE
CHRY	CHRYSENE
D(ah)A	DIBENZO(a,h)ANTHRACENE
DBF	DIBENZOFURAN
F	FLUORANTHENE
I(123cd)P	INDENO(1,2,3–cd)PYRENE
NAPH	NAPHTHALENE
Ph	PHENANTHRENE
Py	PYRENE
PCB	POLYCHLORINATED BIPHENYLS

LEGEND

- HISTORICAL WELL
- A/B HYDROGEOLOGIC ZONES
- B HYDROGEOLOGIC ZONE
- B/C HYDROGEOLOGIC ZONES
- C HYDROGEOLOGIC ZONE
- SOIL BORING
- SEDIMENT SAMPLE
- TEST PIT (2013)
- 34 BUILDING NUMBER
- PROPERTY BOUNDARY
- SANITARY SEWER
- #26 AREA OF CONCERN
- AREA PROPOSED FOR REMOVAL FROM SITE NO. 755010
- PROPOSED NEW BOUNDARY FOR SITE NO. 755010
- PROPOSED BOUNDARY FOR OU–1
- PCB EXCAVATION BOUNDARY
- RED: SAMPLE LOCATION WITH EXCEEDENCE AND ASSOCIATED WITH AOCs #26 – #34
- GREEN: SAMPLE LOCATION WITH EXCEEDENCE AND ASSOCIATED WITH AOC #35 (ISOLATED AREAS)
- GRAY: SAMPLE LOCATION WITH NO EXCEEDENCE

NOTE:

RESULTS WERE ONLY COMPARED TO THE PROTECTION OF GROUNDWATER SCOs IN AOCs WHERE CVOCs, BARIUM, OR CYANIDE ARE PRESENT IN GROUNDWATER ABOVE THE STANDARDS:
CVOCs – AOCs 26
BARIUM – AOCs 27
CYANIDE – AOCs 27
ALTHOUGH CVOCs ARE NOT PRESENT IN GROUNDWATER ABOVE NYSDEC STANDARDS IN AOC 34, THE PROTECTION OF GROUNDWATER SCOs ARE PROVIDED HEREIN FOR COMPARISON.

ALTHOUGH CVOCs AND BARIUM ARE NOT PRESENT IN GROUNDWATER ABOVE THE NYSDEC STANDARDS NEAR LBA–SB–250 AND AOC #33, RESPECTIVELY, THEY ARE PRESENT ABOVE THE STANDARDS IN DOWNGRADIENT MONITORING WELLS. CONSEQUENTLY, THE PROTECTION OF GROUNDWATER SCOs ARE PROVIDED HEREIN FOR COMPARISON AT THESE LOCATIONS.

MATCH LINE – SEE FIGURE 5B

0 100 200 300
SCALE IN FEET

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

REVISIONS

DRAWN BY: EGC
CHECKED
APPROVED
9/16/2015

IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS AND SUPPLIERS WITHOUT THE WRITTEN CONSENT OF WSP USA CORP.

NOTICE: THIS DRAWING HAS BEEN PREPARED UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. IT IS A VIOLATION OF STATE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT IN ANY WAY.

SOIL AND SEDIMENT SAMPLE RESULTS (SITE NORTH)

FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON

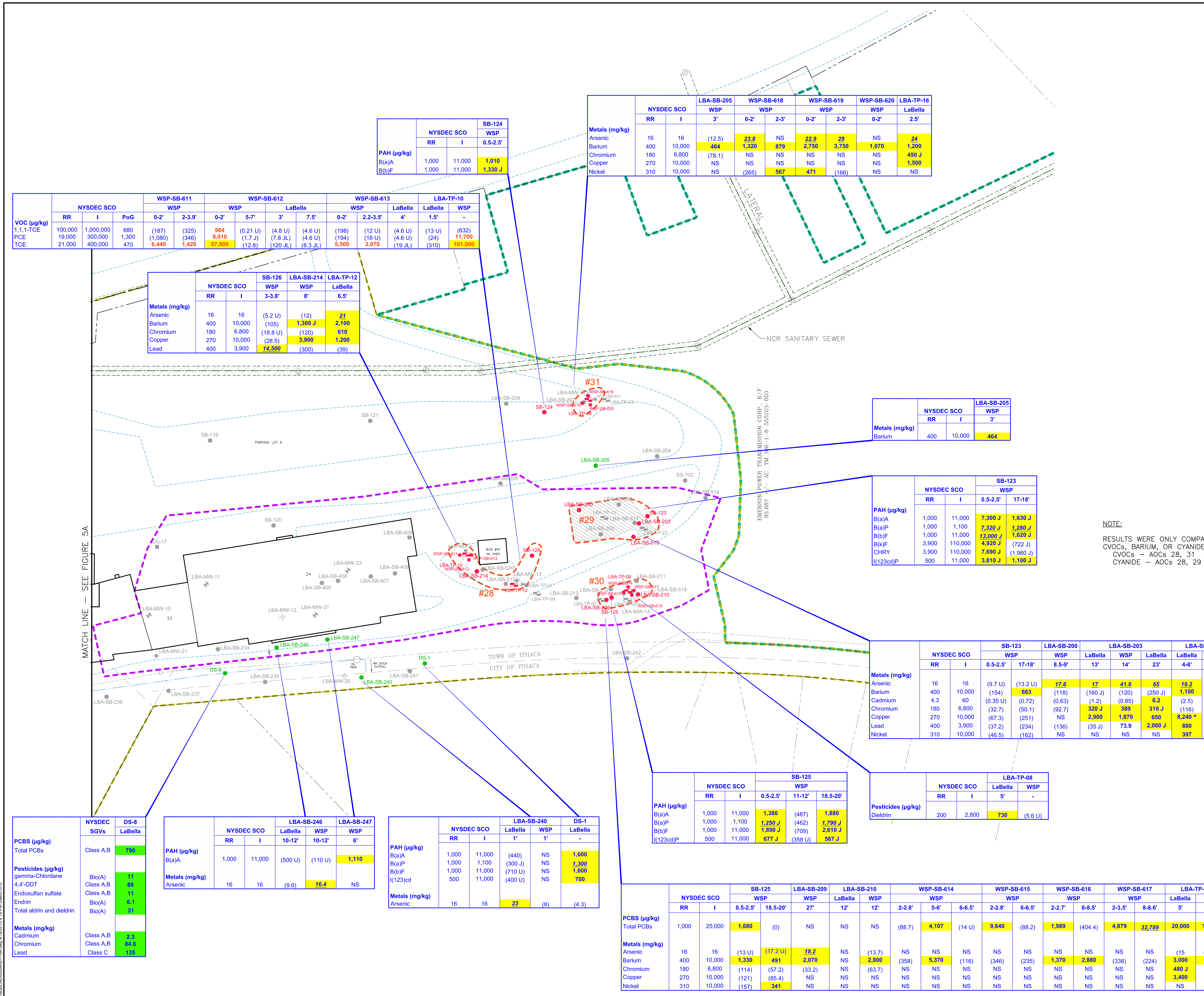
WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 5A

Drawing Number
00004507–164

D

R:\ACAD\CAD\00004507-Ithaca\CAD\00004507-164.dwg 9/18/2015 3:52 PM Usec01012



VOC (µg/kg)	NYSDEC SCO RR	I	PoG	WSP-SB-611 WSP 0-2'	WSP-SB-611 WSP 2-3.9'	WSP-SB-612 WSP 0-2'	WSP-SB-612 WSP 5-7'	WSP-SB-612 LaBella 3'	WSP-SB-612 LaBella 7.5'	WSP-SB-613 WSP 0-2'	WSP-SB-613 WSP 2.2-3.5'	WSP-SB-613 LaBella 4'	LBA-TP-10 LaBella 1.5'	LBA-TP-10 WSP -
1,1,1-TCE	100,000	1,000,000	680	(187)	(325)	984	(0.21 U)	(4.8 U)	(4.6 U)	(198)	(12 U)	(4.6 U)	(13 U)	(632)
PCE	19,000	300,000	1,300	(1,080)	(346)	9,010	(1.7 J)	(7.8 JL)	(4.6 U)	(194)	(18 U)	(4.6 U)	(24)	11,700
TCE	21,000	400,000	470	6,440	1,420	57,900	(12.8)	(120 JL)	(8.3 JL)	5,500	2,070	(19 JL)	(310)	101,000

PAH (µg/kg)	NYSDEC SCO RR	I	SB-124 WSP 0.5-2.5'
B(a)A	1,000	11,000	1,010
B(b)F	1,000	11,000	1,330 J

Metals (mg/kg)	NYSDEC SCO RR	I	LBA-SB-205 WSP 3'	WSP-SB-618 WSP 0-2'	WSP-SB-618 WSP 2-3'	WSP-SB-619 WSP 0-2'	WSP-SB-619 WSP 2-3'	WSP-SB-620 WSP 0-2'	LBA-TP-16 LaBella 2.5'
Arsenic	16	16	(12.5)	23.8	NS	22.9	29	NS	24
Barium	400	10,000	464	1,320	879	2,750	3,750	1,070	1,200
Chromium	180	6,800	(78.1)	NS	NS	NS	NS	NS	450 J
Copper	270	10,000	NS	NS	NS	NS	NS	NS	1,500
Nickel	310	10,000	NS	(265)	567	471	(166)	NS	NS

Metals (mg/kg)	NYSDEC SCO RR	I	SB-126 WSP 3-3.8'	LBA-SB-214 WSP 8'	LBA-TP-12 LaBella 6.5'
Arsenic	16	16	(5.2 U)	(12)	21
Barium	400	10,000	(105)	1,300 J	2,100
Chromium	180	6,800	(18.8 U)	(120)	610
Copper	270	10,000	(28.5)	3,900	1,200
Lead	400	3,900	14,500	(300)	(39)

Metals (mg/kg)	NYSDEC SCO RR	I	LBA-SB-205 WSP 3'
Barium	400	10,000	464

PAH (µg/kg)	NYSDEC SCO RR	I	SB-123 WSP 0.5-2.5'	SB-123 WSP 17-18'
B(a)A	1,000	11,000	7,300 J	1,630 J
B(a)P	1,000	1,100	7,320 J	1,280 J
B(b)F	1,000	11,000	13,000 J	1,620 J
B(k)F	3,900	110,000	4,920 J	(722 J)
CHRY	3,900	110,000	7,690 J	(1,980 J)
I(123cd)P	500	11,000	3,810 J	1,100 J

Metals (mg/kg)	NYSDEC SCO RR	I	SB-123 WSP 0.5-2.5'	SB-123 WSP 17-18'	LBA-SB-200 WSP 8.5-9'	LBA-SB-203 LaBella 13'	LBA-SB-203 WSP 14'	LBA-SB-203 LaBella 23'	LBA-SB-518 LaBella 4-6'	LBA-SB-518 WSP 4-6'
Arsenic	16	16	(9.7 U)	(13.2 U)	17.6	17	41.6	65	19.2	(10.4)
Barium	400	10,000	(154)	663	(118)	(160 J)	(120)	(250 J)	1,100	(196)
Cadmium	4.3	60	(0.35 U)	(0.72)	(0.63)	(1.2)	(0.85)	6.2	(2.5)	(1)
Chromium	180	6,800	(32.7)	(50.1)	(92.7)	320 J	389	310 J	(116)	(33.5)
Copper	270	10,000	(67.3)	(251)	NS	2,900	1,870	650	8,240 ^	NS
Lead	400	3,900	(37.2)	(234)	(136)	(35 J)	73.9	2,000 J	880	(181)
Nickel	310	10,000	(46.5)	(162)	NS	NS	NS	NS	397	NS

PAH (µg/kg)	NYSDEC SCO RR	I	SB-125 WSP 0.5-2.5'	SB-125 WSP 11-12'	SB-125 WSP 18.5-20'
B(a)A	1,000	11,000	1,380	(487)	1,880
B(a)P	1,000	1,100	1,250 J	(462)	1,790 J
B(b)F	1,000	11,000	1,890 J	(709)	2,610 J
I(123cd)P	500	11,000	677 J	(358 U)	567 J

Pesticides (µg/kg)	NYSDEC SCO RR	I	LBA-TP-08 LaBella 5'	LBA-TP-08 WSP -
Dieldrin	200	2,800	730	(5.6 U)

	NYSDEC SGVs	DS-8 LaBella
PCBS (µg/kg)		
Total PCBs	Class A,B	790
Pesticides (µg/kg)		
gamma-Chlordane	Bio(A)	11
4,4'-DDT	Class A,B	89
Endosulfan sulfate	Class A,B	11
Endrin	Bio(A)	6.1
Total aldrin and dieldrin	Bio(A)	31
Metals (mg/kg)		
Cadmium	Class A,B	2.3
Chromium	Class A,B	84.6
Lead	Class C	135

	NYSDEC SCO RR	I	LBA-SB-246 LaBella 10-12'	LBA-SB-246 WSP 10-12'	LBA-SB-247 WSP 6'
PAH (µg/kg)					
B(a)A	1,000	11,000	(500 U)	(110 U)	1,110
Metals (mg/kg)					
Arsenic	16	16	(9.6)	16.4	NS

	NYSDEC SCO RR	I	LBA-SB-240 LaBella 1'	LBA-SB-240 WSP 1'	DS-1 LaBella -
PAH (µg/kg)					
B(a)A	1,000	11,000	(440)	NS	1,600
B(a)P	1,000	1,100	(300 J)	NS	1,300
B(b)F	1,000	11,000	(710 U)	NS	1,600
I(123)cd	500	11,000	(400 U)	NS	700
Metals (mg/kg)					
Arsenic	16	16	23	(8)	(4.3)

	NYSDEC SCO RR	I	SB-125 WSP 0.5-2.5'	SB-125 WSP 18.5-20'	LBA-SB-209 WSP 27'	LBA-SB-210 LaBella 12'	LBA-SB-210 WSP 12'	WSP-SB-614 WSP 2-2.8'	WSP-SB-614 WSP 5-6'	WSP-SB-614 WSP 6-6.5'	WSP-SB-615 WSP 2-2.8'	WSP-SB-615 WSP 6-6.5'	WSP-SB-616 WSP 2-2.7'	WSP-SB-616 WSP 8-8.5'	WSP-SB-617 WSP 2-3.5'	WSP-SB-617 WSP 8-8.6'	LBA-TP-08 LaBella 5'	LBA-TP-08 WSP -
PCBS (µg/kg)																		
Total PCBs	1,000	25,000	1,680	(0)	NS	NS	NS	(88.7)	4,107	(14 U)	9,640	(88.2)	1,989	(404.4)	4,879	32,789	20,000	18,900
Metals (mg/kg)																		
Arsenic	16	16	(13 U)	(17.2 U)	18.2	NS	(13.7)	NS	NS	NS	NS	NS	NS	NS	NS	NS	(15	(11.2)
Barium	400	10,000	1,330	491	2,070	NS	2,800	(358)	5,370	(116)	(346)	(235)	1,370	2,880	(338)	(224)	3,000	2,740
Chromium	180	6,800	(114)	(57.2)	(33.2)	NS	(63.7)	NS	NS	NS	NS	NS	NS	NS	NS	NS	480 J	(168)
Copper	270	10,000	(121)	(85.4)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3,400	NS
Nickel	310	10,000	(157)	341	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

LEGEND

- HISTORICAL WELL
- A/B HYDROGEOLOGIC ZONES
- B HYDROGEOLOGIC ZONE
- B/C HYDROGEOLOGIC ZONES
- C HYDROGEOLOGIC ZONE
- SOIL BORING
- SEDIMENT SAMPLE
- TEST PIT (2013)
- 34 BUILDING NUMBER
- PROPERTY BOUNDARY
- SANITARY SEWER
- #26 AREA OF CONCERN
- AREA PROPOSED FOR REMOVAL FROM SITE NO. 755010
- PROPOSED NEW BOUNDARY FOR SITE NO. 755010
- PROPOSED INDUSTRIAL USE OR PARKING

RED — SAMPLE LOCATION WITH EXCEEDENCE AND ASSOCIATED WITH AOCs #26 – #34
GREEN — SAMPLE LOCATION WITH EXCEEDENCE AND ASSOCIATED WITH AOC #35 (ISOLATED AREAS)
GRAY — SAMPLE LOCATION WITH NO EXCEEDENCE

RR — RESTRICTED RESIDENTIAL USE
I — INDUSTRIAL USE
PoG — PROTECTION OF GROUNDWATER
NS — NOT SAMPLED
U — NOT DETECTED ABOVE REPORTING LIMIT
J — ESTIMATED BELOW REPORTING LIMIT BUT ABOVE METHOD DETECTION LIMIT
^ — INSTRUMENT–RELATED QC EXCEEDS THE CONTROL LIMITS
(500) — "( )" INDICATES NO EXCEEDENCE OF CRITERION
500 — EXCEEDS RR
500 — EXCEEDS I
500 — EXCEEDS PoG
500 — EXCEEDS SGV

DCE — DICHLOROETHENE
PCE — TETRACHLOROETHENE
1,1,1–TCE — 1,1,1–TRICHLOROETHANE
TCE — TRICHLOROETHENE
B(a)A — BENZO(a)ANTHRACENE
B(a)P — BENZO(a)PYRENE
B(b)F — BENZO(b)FLUORANTHENE
B(k)F — BENZO(k)FLUORANTHENE
CHRY — CHRYSENE
D(AH)A — DIBENZO(a,h)ANTHRACENE
DBF — DIBENZOFURAN
F — FLUORANTHENE
I(123cd)P — INDENO(1,2,3–cd)PYRENE
NAPH — NAPHTHALENE
Ph — PHENANTHRENE
Py — PYRENE

NOTE:

RESULTS WERE ONLY COMPARED TO THE PROTECTION OF GROUNDWATER SCOs IN AOCs WHERE CVOCs, BARIUM, OR CYANIDE ARE PRESENT IN GROUNDWATER ABOVE THE STANDARDS:
CVOCs – AOCs 28, 31
CYANIDE – AOCs 28, 29

0 100 200 300
SCALE IN FEET

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

REVISIONS
REV | DESCRIPTION

DRAWN BY EGC
CHECKED
APPROVED
9/16/2015

SOIL AND SEDIMENT SAMPLE RESULTS (SITE SOUTH)

FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

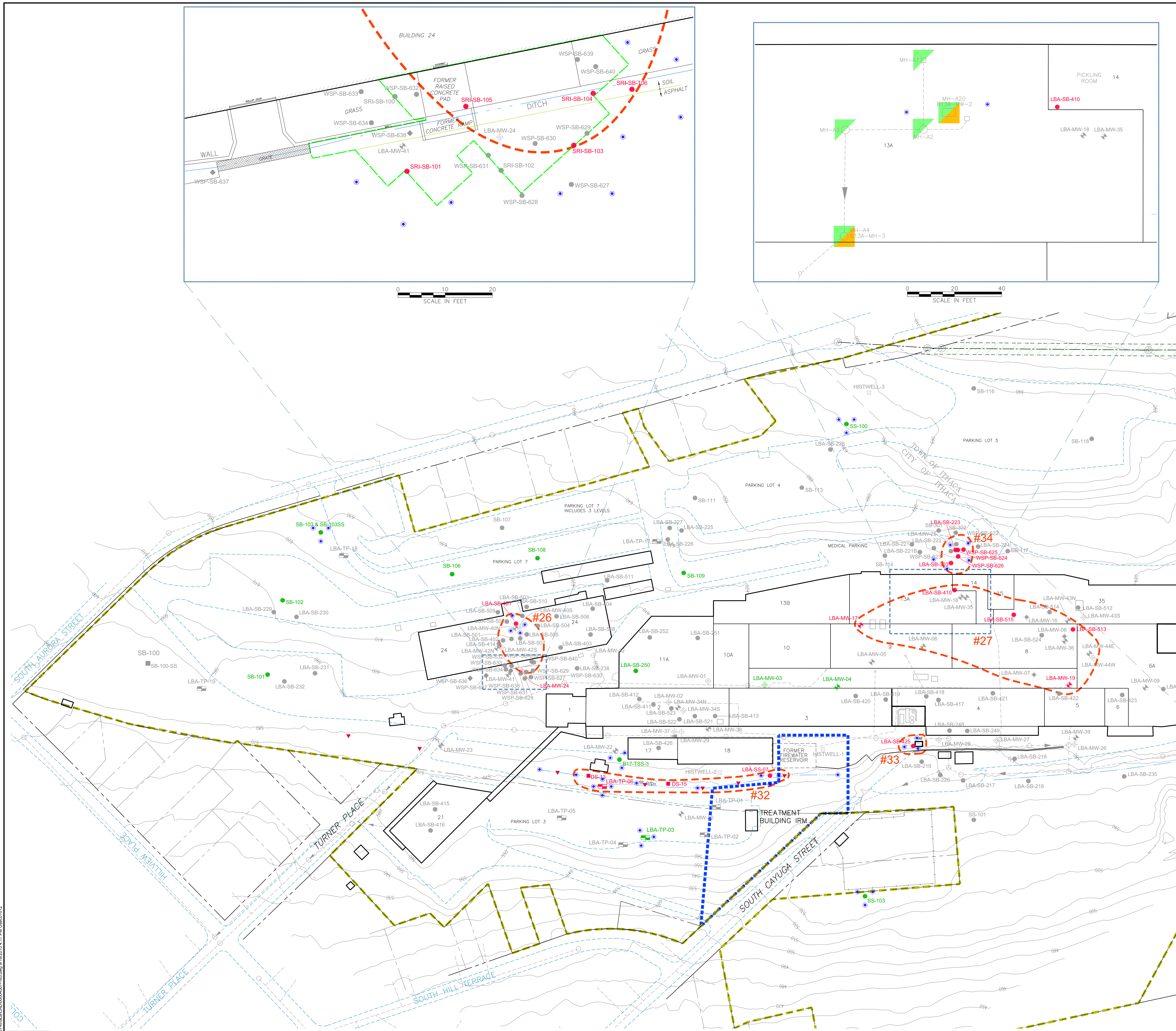
PREPARED FOR
EMERSON

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 5B

Drawing Number
00004507–164

D



LEGEND

- HISTORICAL WELL
- A/B HYDROGEOLOGIC ZONES
- B HYDROGEOLOGIC ZONE
- B/C HYDROGEOLOGIC ZONES
- C HYDROGEOLOGIC ZONE
- SOIL BORING
- SEDIMENT SAMPLE
- TEST PIT (2013)
- 34 BUILDING NUMBER
- PROPERTY BOUNDARY
- SANITARY SEWER
- #26 AREA OF CONCERN
- PROPOSED NEW BOUNDARY FOR SITE NO. 755010 OPERABLE UNIT 2
- PROPOSED BOUNDARY FOR OU-1
- PCB EXCAVATION BOUNDARY
- RED: SAMPLE LOCATION WITH EXCEEDENCE AND ASSOCIATED WITH AOCs #26 – #34
- GREEN: SAMPLE LOCATION WITH EXCEEDENCE AND ASSOCIATED WITH AOC #35 (ISOLATED AREAS)
- GRAY: SAMPLE LOCATION WITH NO EXCEEDENCE
- PROPOSED SOIL BORING LOCATION
- PROPOSED SEDIMENT SAMPLE LOCATION
- MH-A20: WSP RESIDUAL MATERIAL TCLP SAMPLE LOCATIONS
- B13A-MW-2: LABELLA RESIDUAL MATERIAL TCLP SAMPLE LOCATIONS
- MANHOLE
- MANWAY

0 80 160 240
SCALE IN FEET

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

REVISIONS

REV	DESCRIPTION

SEAL

DRAWN BY EGC
CHECKED
APPROVED

PROPOSED SOIL AND SEDIMENT SAMPLE DELINEATION LOCATIONS (SITE NORTH)

FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 6A

Drawing Number
00004507-165

D

LEGEND

- HISTORICAL WELL
- A/B HYDROGEOLOGIC ZONES
- B HYDROGEOLOGIC ZONE
- B/C HYDROGEOLOGIC ZONES
- C HYDROGEOLOGIC ZONE
- SOIL BORING
- SEDIMENT SAMPLE
- TEST PIT (2013)
- 34 BUILDING NUMBER
- PROPERTY BOUNDARY
- SANITARY SEWER
- #26 AREA OF CONCERN
- PROPOSED NEW BOUNDARY FOR SITE NO. 755010 OPERABLE UNIT 2
- AREA PROPOSED FOR REMOVAL FROM SITE NO. 755010
- PROPOSED INDUSTRIAL USE OR PARKING
- RED SAMPLE LOCATION WITH EXCEEDENCE AND ASSOCIATED WITH AOCs #26 – #34
- GREEN SAMPLE LOCATION WITH EXCEEDENCE AND ASSOCIATED WITH AOC #35 (ISOLATED AREAS)
- GRAY SAMPLE LOCATION WITH NO EXCEEDENCE
- PROPOSED SOIL BORING LOCATION
- PROPOSED SEDIMENT SAMPLE LOCATION

0 80 160 240
SCALE IN FEET

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

D

REVISIONS
REV | DESCRIPTION

SEAL | DATE

DRAWN BY EGC
CHECKED
APPROVED

PROPOSED SOIL AND SEDIMENT SAMPLE DELINEATION LOCATIONS (SITE SOUTH)

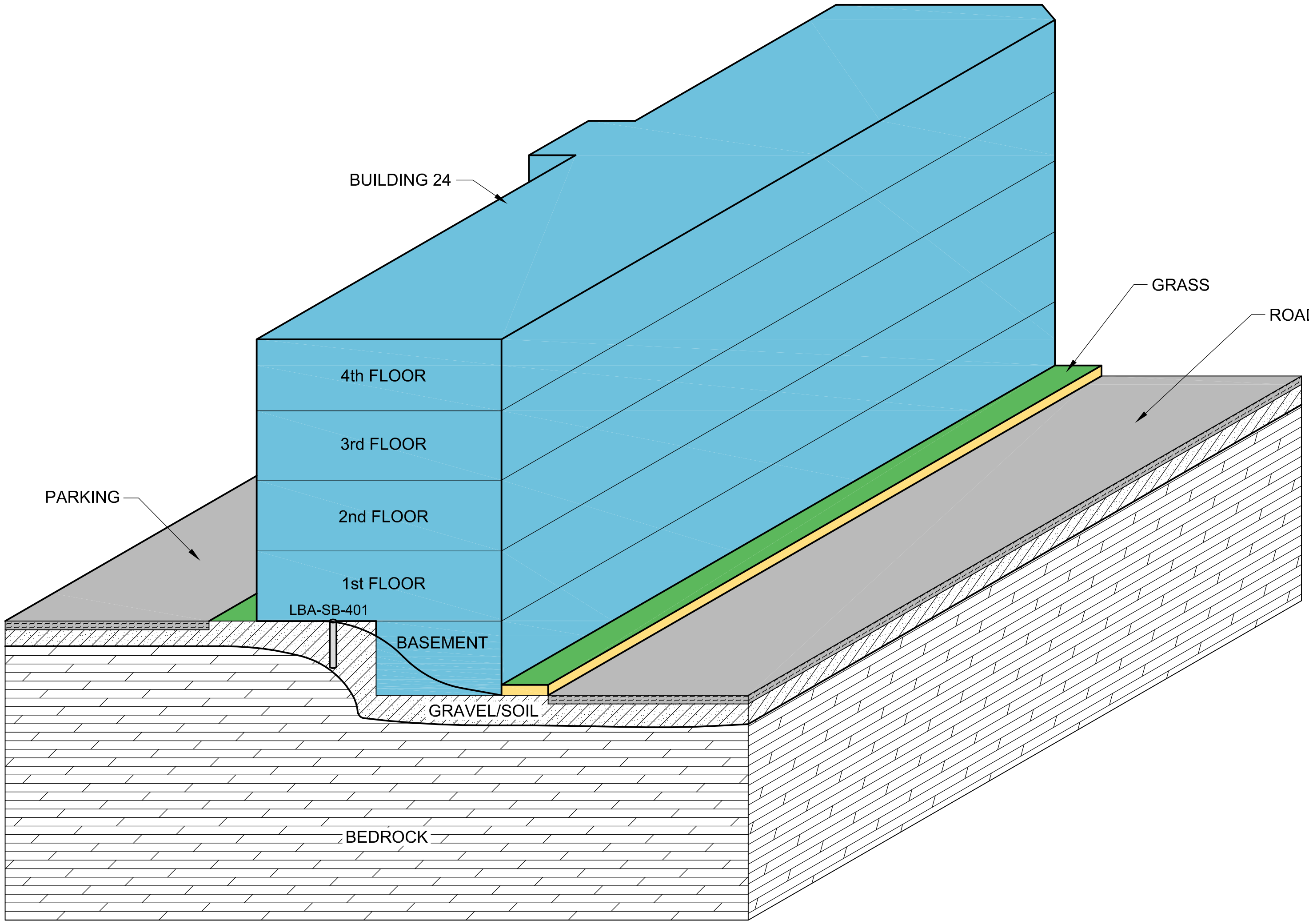
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK
PREPARED FOR
EMERSON

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 6B

Drawing Number
00004507-165

R:\ACAD\CADD\00004507-Ithaca\CAD\00004507-156.dwg 9/18/2015 3:31 PM Usec01012



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

A

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

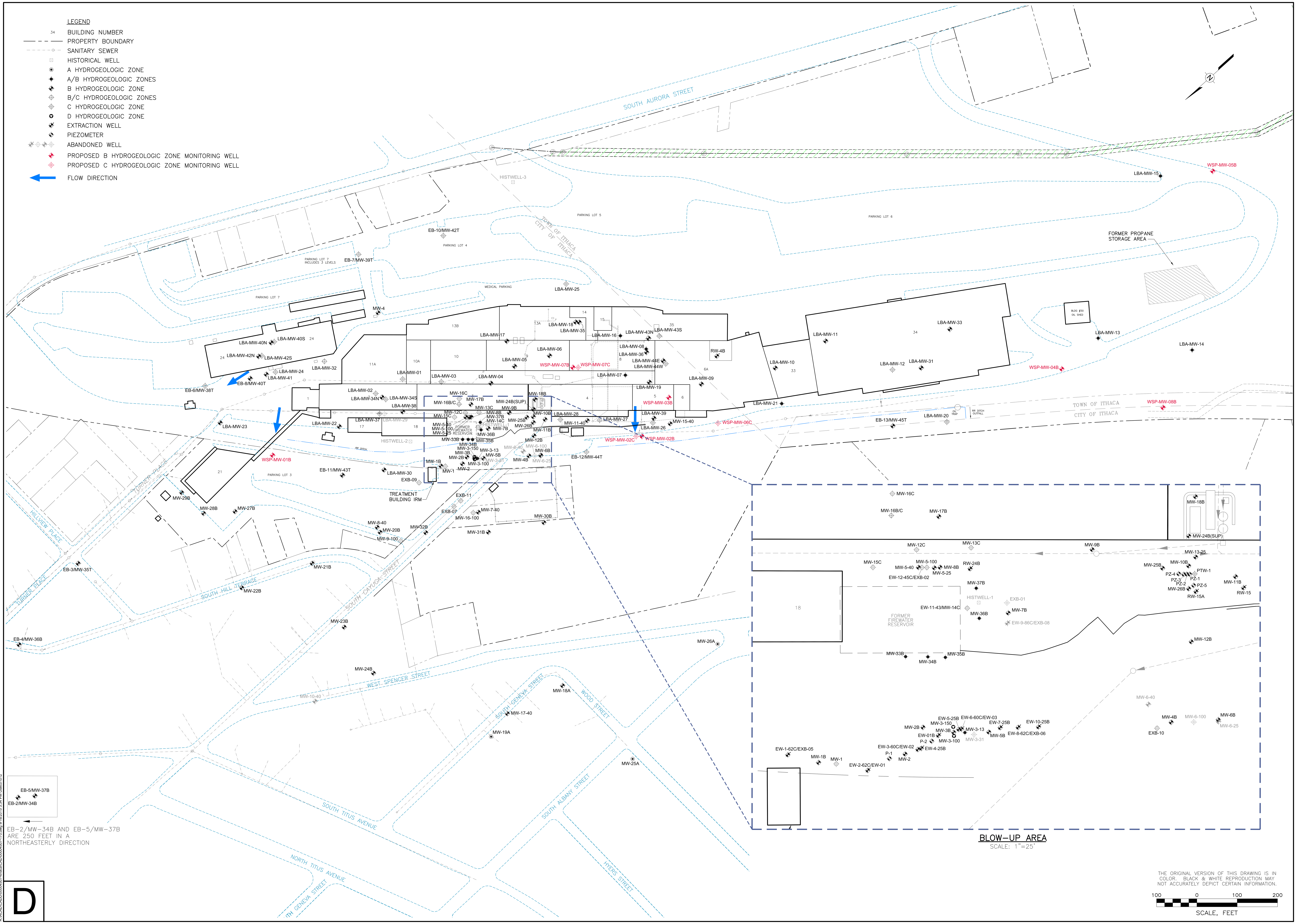
Figure 7

BUILDING 24 SCHEMATIC

FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON POWER TRANSMISSION

Drawn By: EGC
Checked: LKB 4/2/2015
Approved: SPH 4/2/2015
DWG Name: 00004507–156



REVISIONS

REV	DESCRIPTION

DRAWN BY EGC
CHECKED CC
APPROVED

SEAL

PROPERTY OF WSP USA CORP. IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS AND SUPPLIERS WITHOUT THE WRITTEN CONSENT OF WSP USA CORP.

NOTICE: THIS DRAWING HAS BEEN PREPARED UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. IT IS A VIOLATION OF STATE LAW FOR ANY PERSONS, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT IN ANY WAY.

SITE WELL NETWORK

FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

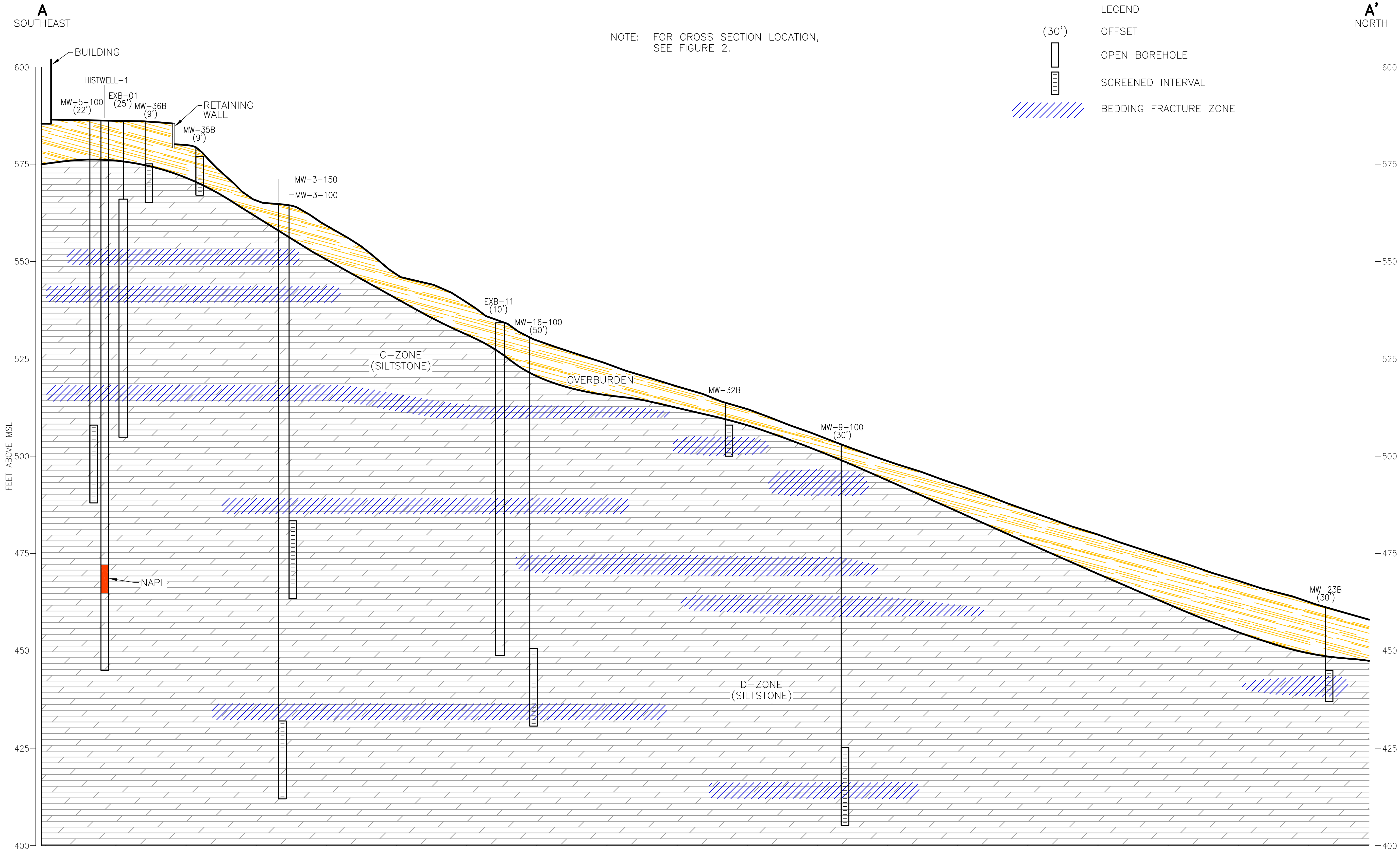
PREPARED FOR
EMERSON

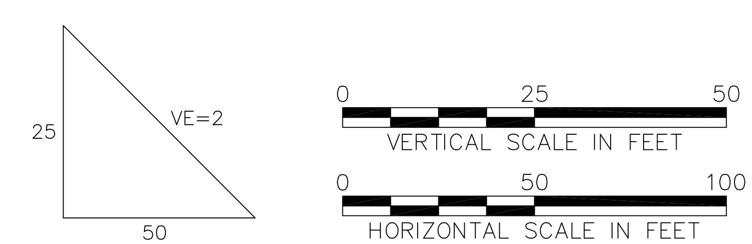
WSP | PARSONS BRINCKERHOFF

WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 8

Drawing Number
00004507-170





NOTICE: THIS DRAWING HAS BEEN PREPARED UNDER THE DIRECTION OF A PROFESSIONAL. DO NOT ALTER THIS DOCUMENT IN ANY WAY WITHOUT THE WRITTEN CONSENT OF WSP USA CORP.

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

B

Drawn By: EGC
Checked:
Approved: CBM 8/12/2015
DWG Name: 00004507-172

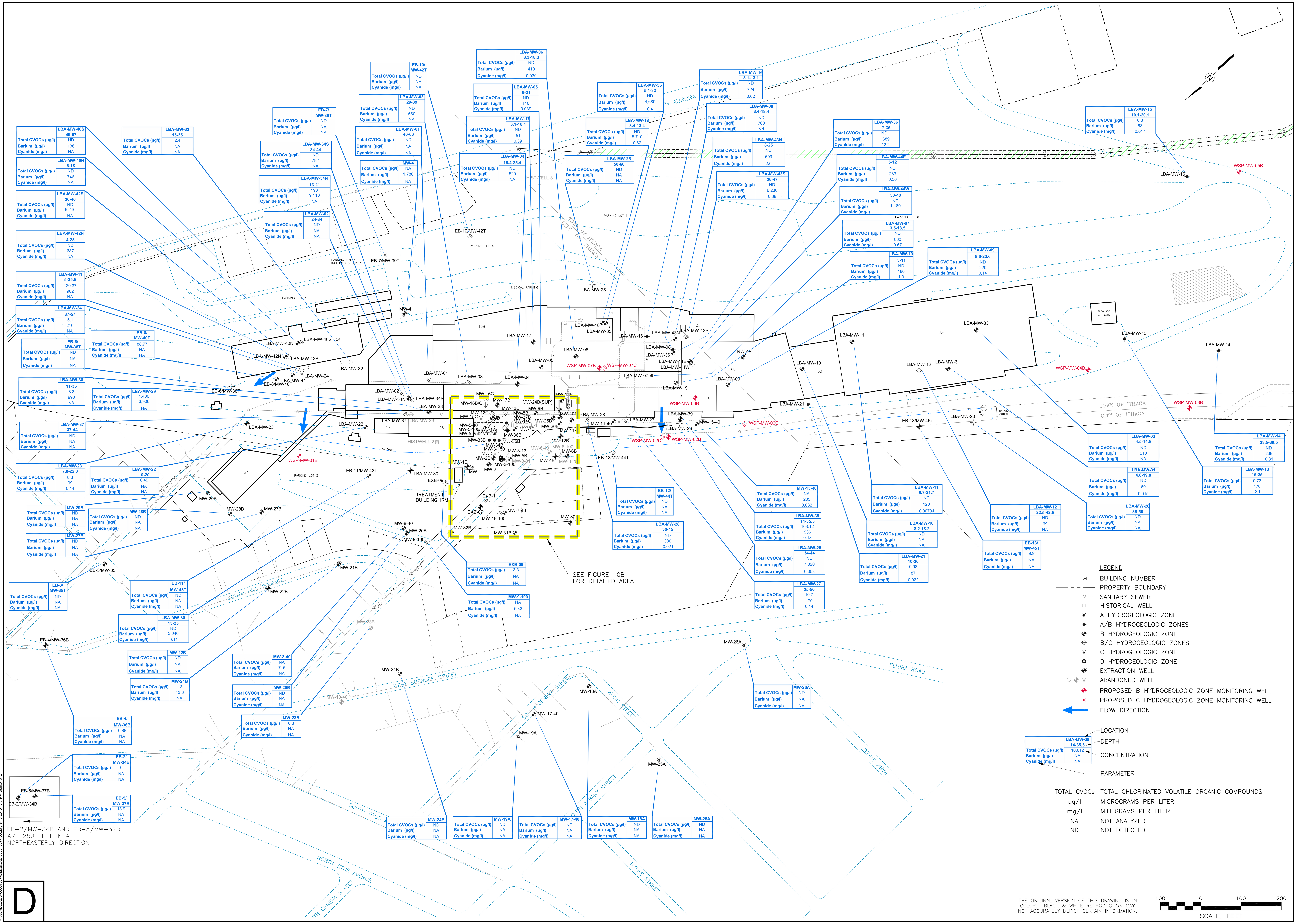
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK
PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

Figure 9

GENERALIZED FENCE DIAGRAM A-A'

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herdon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

R:\ACAD\CADD\00004507-Ithaca\CADD\00004507-172.dwg 9/16/2015 1:46 PM Usec01012



REVISIONS

REV | DESCRIPTION

DRAWN BY EGC
CHECKED CC
APPROVED

TOTAL CVOC, BARIUM, AND CYANIDE CONCENTRATIONS IN GROUNDWATER (SITE)

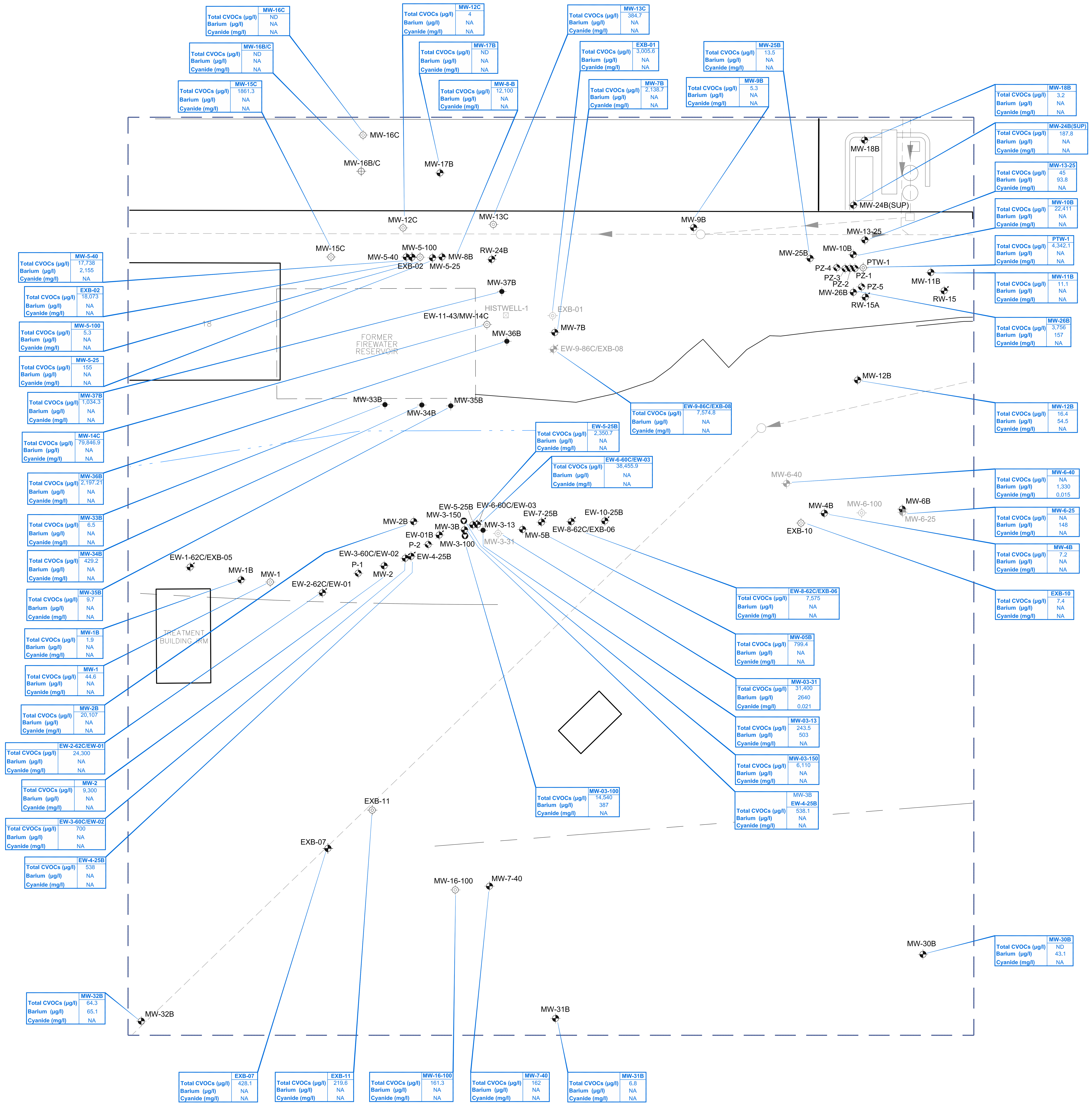
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 10A

Drawing Number
00004507-166



LEGEND

- BUILDING NUMBER
- PROPERTY BOUNDARY
- SANITARY SEWER
- HISTORICAL WELL
- A HYDROGEOLOGIC ZONE
- A/B HYDROGEOLOGIC ZONES
- B HYDROGEOLOGIC ZONE
- B/C HYDROGEOLOGIC ZONES
- C HYDROGEOLOGIC ZONE
- D HYDROGEOLOGIC ZONE
- EXTRACTION WELL
- PIEZOMETER
- ABANDONED WELL
- LOCATION
- CONCENTRATION
- PARAMETER

Example: MW-13C — Total CVOCs (µg/l) 384.7; Barium (µg/l) NA; Cyanide (mg/l) NA

TOTAL CVOCs	TOTAL CHLORINATED VOLATILE ORGANIC COMPOUNDS
µg/l	MICROGRAMS PER LITER
mg/l	MILLIGRAMS PER LITER
NA	NOT ANALYZED
ND	NOT DETECTED

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

0 20 40 60
SCALE IN FEET

REVISIONS
REV | DESCRIPTION

DRAWN BY EGC
CHECKED CC
APPROVED
9/18/2015

IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS AND SUPPLIERS WITHOUT THE WRITTEN CONSENT OF WSP USA CORP.

NOTICE: THIS DRAWING HAS BEEN PREPARED UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. IT IS A VIOLATION OF STATE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT IN ANY WAY.

TOTAL CVOC, BARIUM, AND CYANIDE CONCENTRATIONS IN GROUNDWATER (FIRE WATER RESERVOIR AREA)

FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

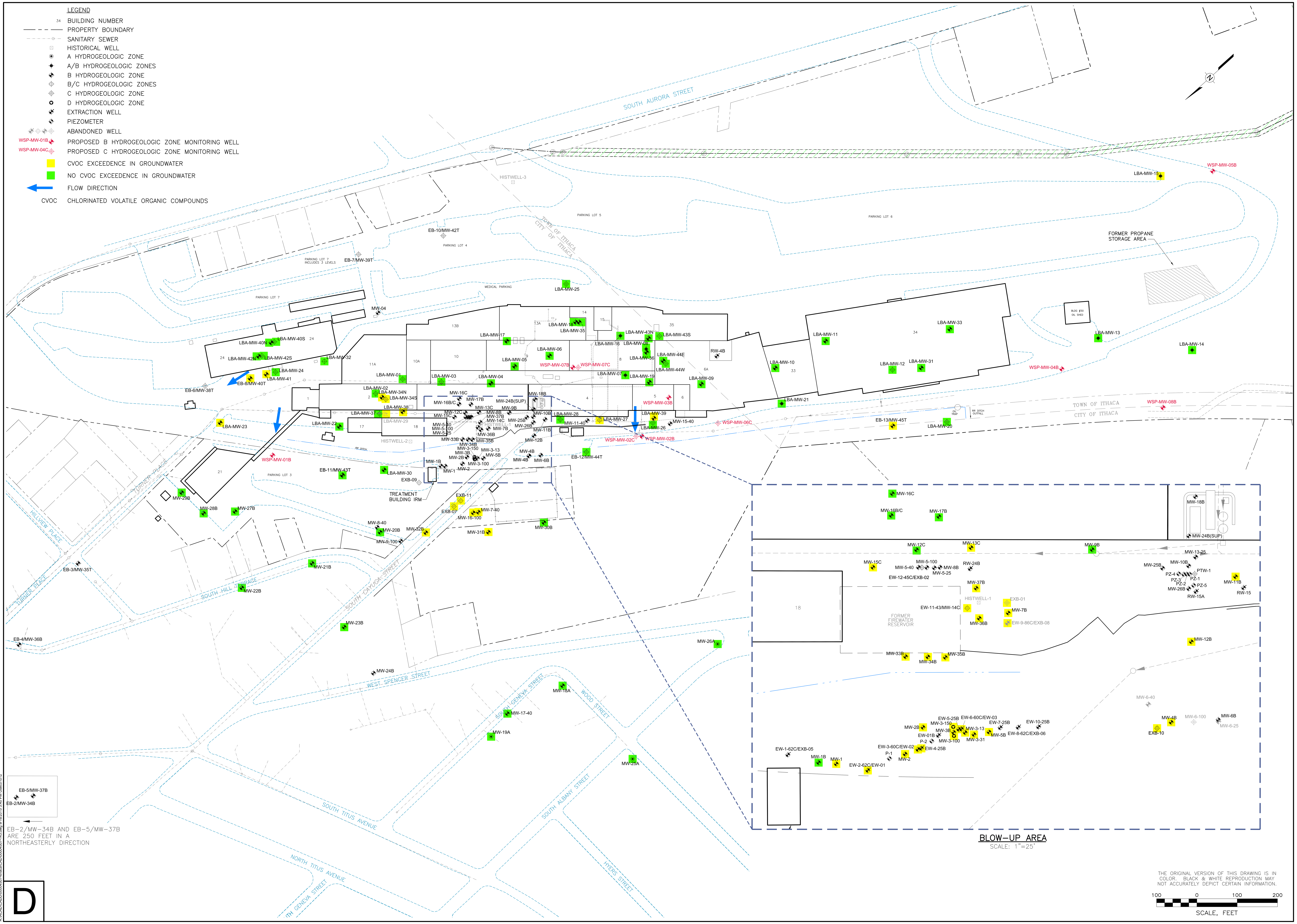
PREPARED FOR
EMERSON

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 10B

Drawing Number
00004507-167

D



REVISIONS

REV	DESCRIPTION

DRAWN BY EGC 3/17/2016
CHECKED
APPROVED

CVOC EXCEEDENCES IN GROUNDWATER

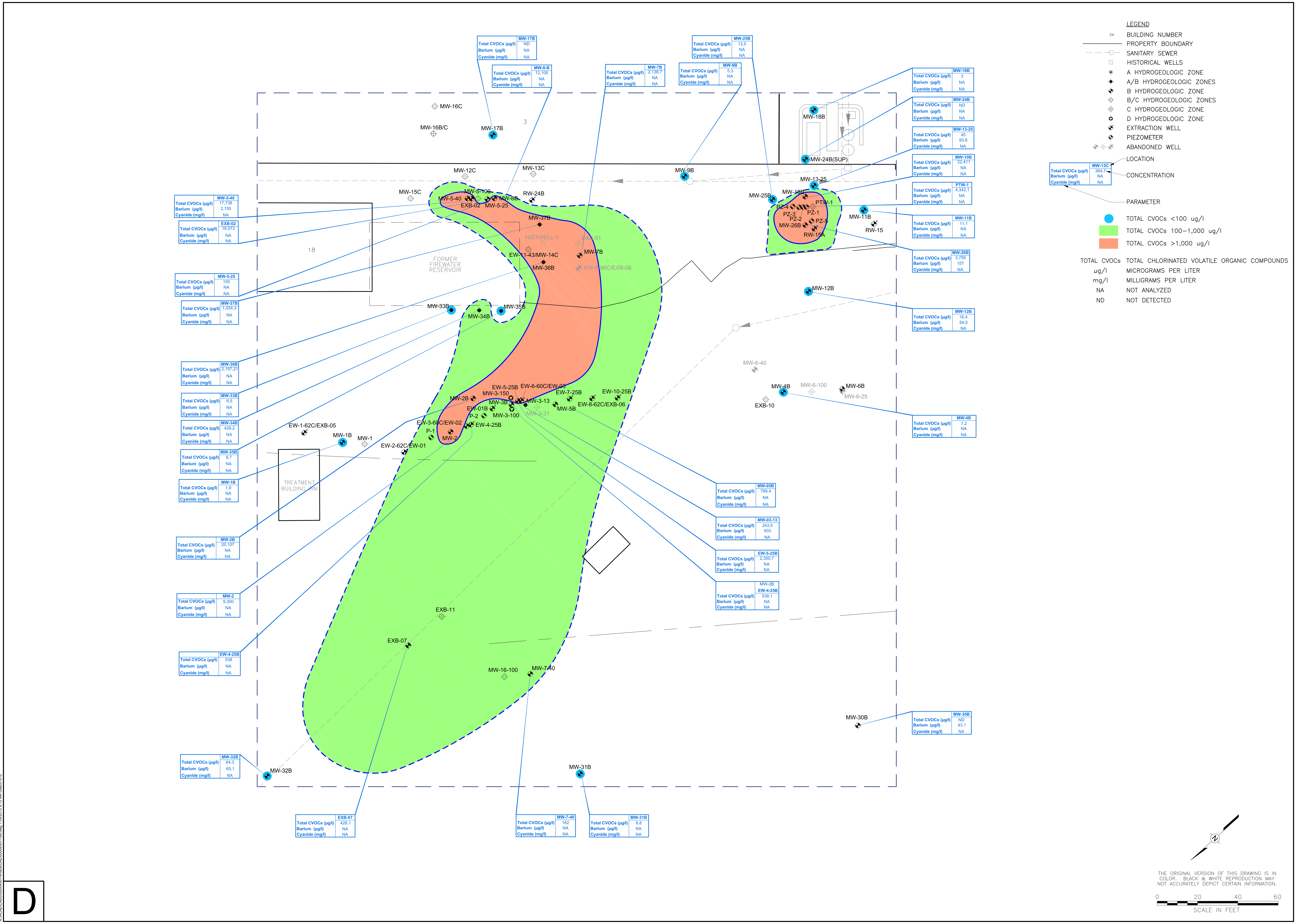
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 11

Drawing Number
00004507-143



REVISIONS

REV	DESCRIPTION	Chkd:	Appr:

DRAWN BY EGC
CHECKED CC
APPROVED
9/17/2015

IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS AND SUPPLIERS WITHOUT THE WRITTEN CONSENT OF WSP USA CORP.

NOTICE: THIS DRAWING HAS BEEN PREPARED UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. IT IS A VIOLATION OF STATE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT IN ANY WAY.

SEAL

TOTAL CVOC GROUNDWATER ISOPLETHS B HYDROGEOLOGIC ZONE (FIRE WATER RESERVOIR AREA)

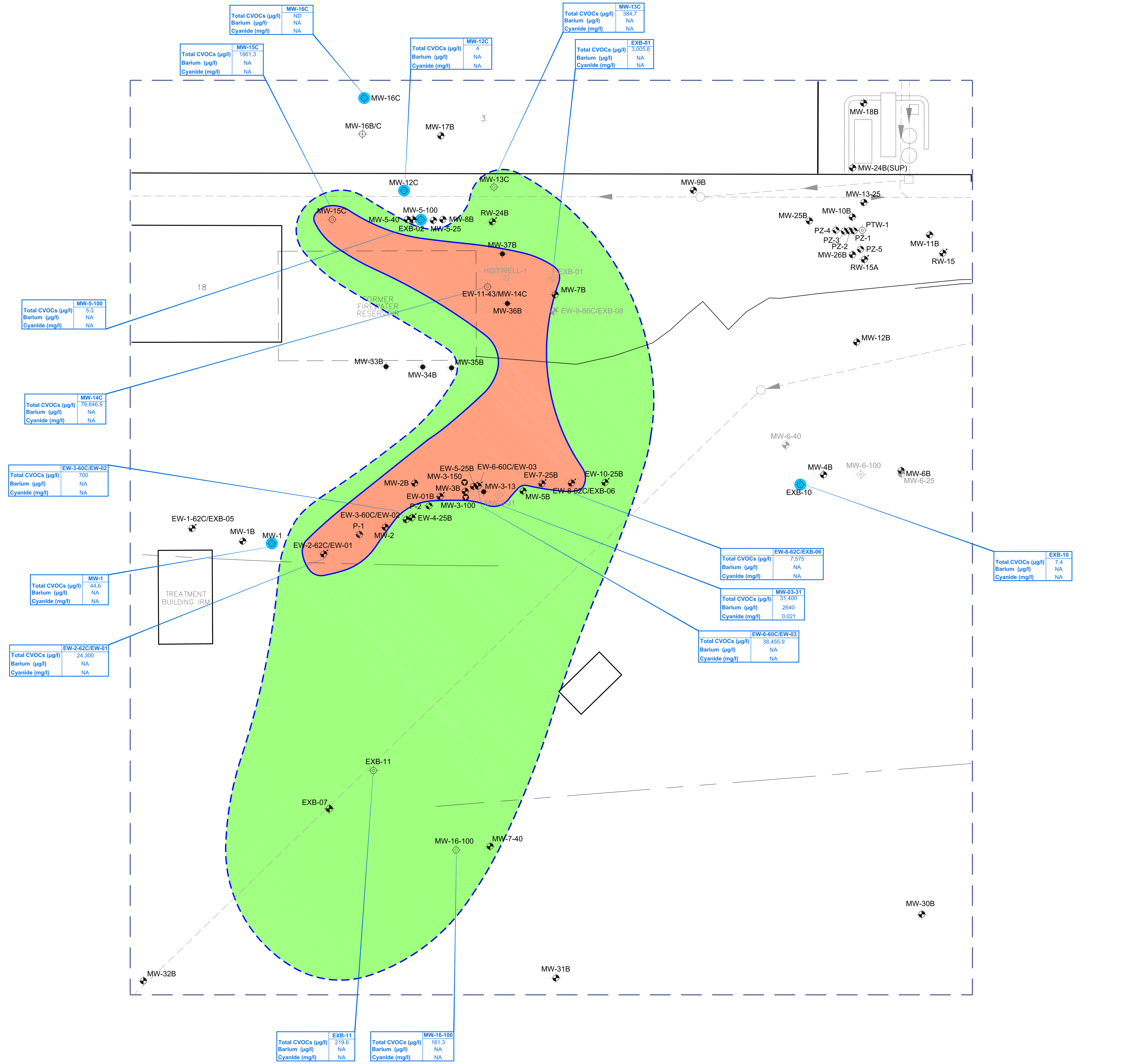
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 12A

Drawing Number
00004507-168



LEGEND

34 BUILDING NUMBER
PROPERTY BOUNDARY
SANITARY SEWER
HISTORICAL WELLS
A HYDROGEOLOGIC ZONE
A/B HYDROGEOLOGIC ZONES
B HYDROGEOLOGIC ZONE
B/C HYDROGEOLOGIC ZONES
C HYDROGEOLOGIC ZONE
D HYDROGEOLOGIC ZONE
EXTRACTION WELL
PIEZOMETER
ABANDONED WELL

MW-13C	
Total CVOCs (µg/l)	384.7
Barium (µg/l)	NA
Cyanide (mg/l)	NA

LOCATION
CONCENTRATION
PARAMETER

TOTAL CVOCs <100 ug/l
TOTAL CVOCs 100–1,000 ug/l
TOTAL CVOCs >1,000 ug/l

TOTAL CVOCs	TOTAL CHLORINATED VOLATILE ORGANIC COMPOUNDS
µg/l	MICROGRAMS PER LITER
mg/l	MILLIGRAMS PER LITER
NA	NOT ANALYZED
ND	NOT DETECTED

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

0 20 40 60
SCALE IN FEET

REVISIONS
REV DESCRIPTION

DRAWN BY EGC
CHECKED CC
APPROVED

TOTAL CVOC GROUNDWATER ISOPLETHS C HYDROGEOLOGIC ZONE (FIRE WATER RESERVOIR AREA)

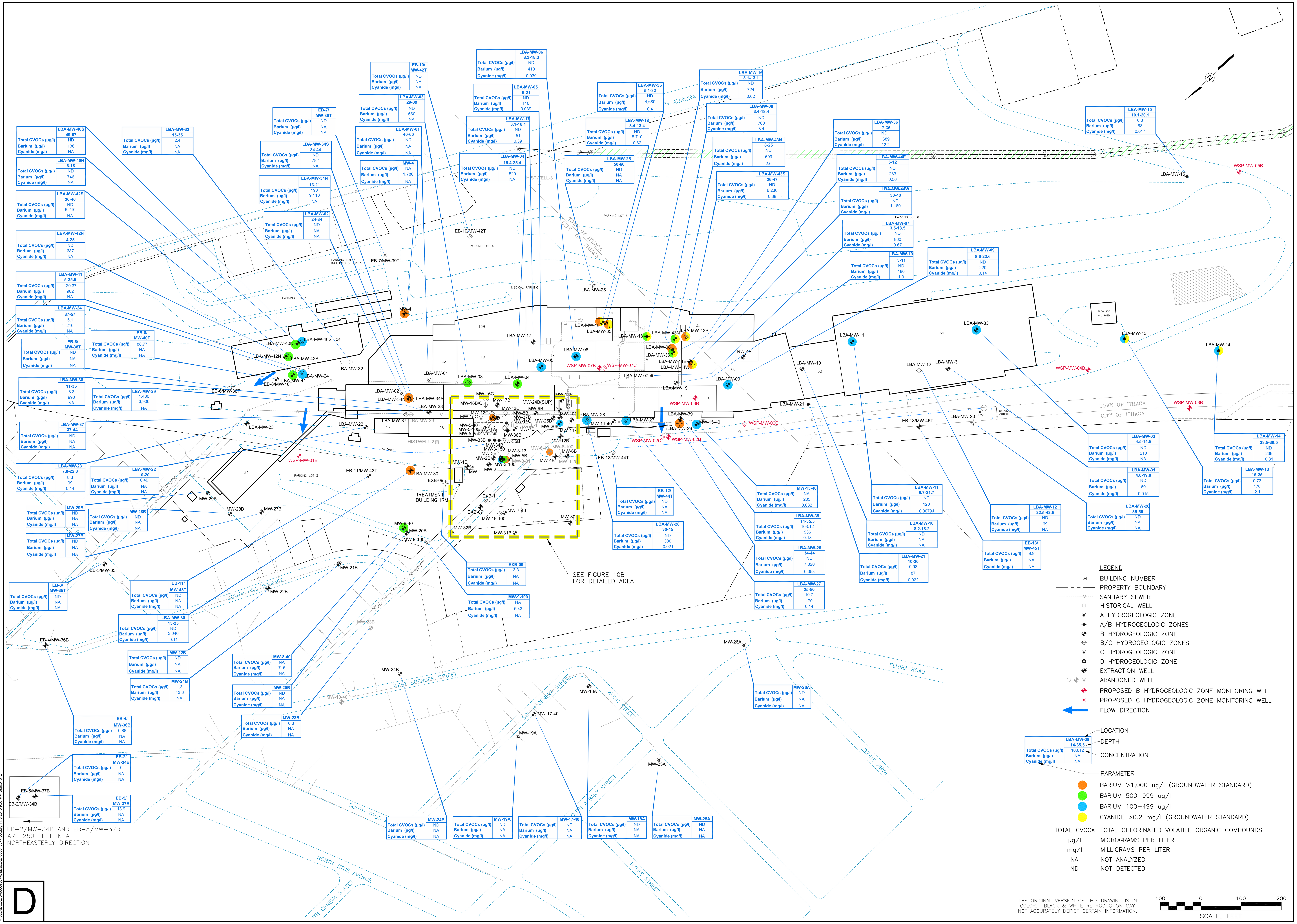
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK
PREPARED FOR
EMERSON

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 12B

Drawing Number
00004507–169

D



REVISIONS

BARIUM AND CYANIDE CONCENTRATION RANGES IN GROUNDWATER

FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

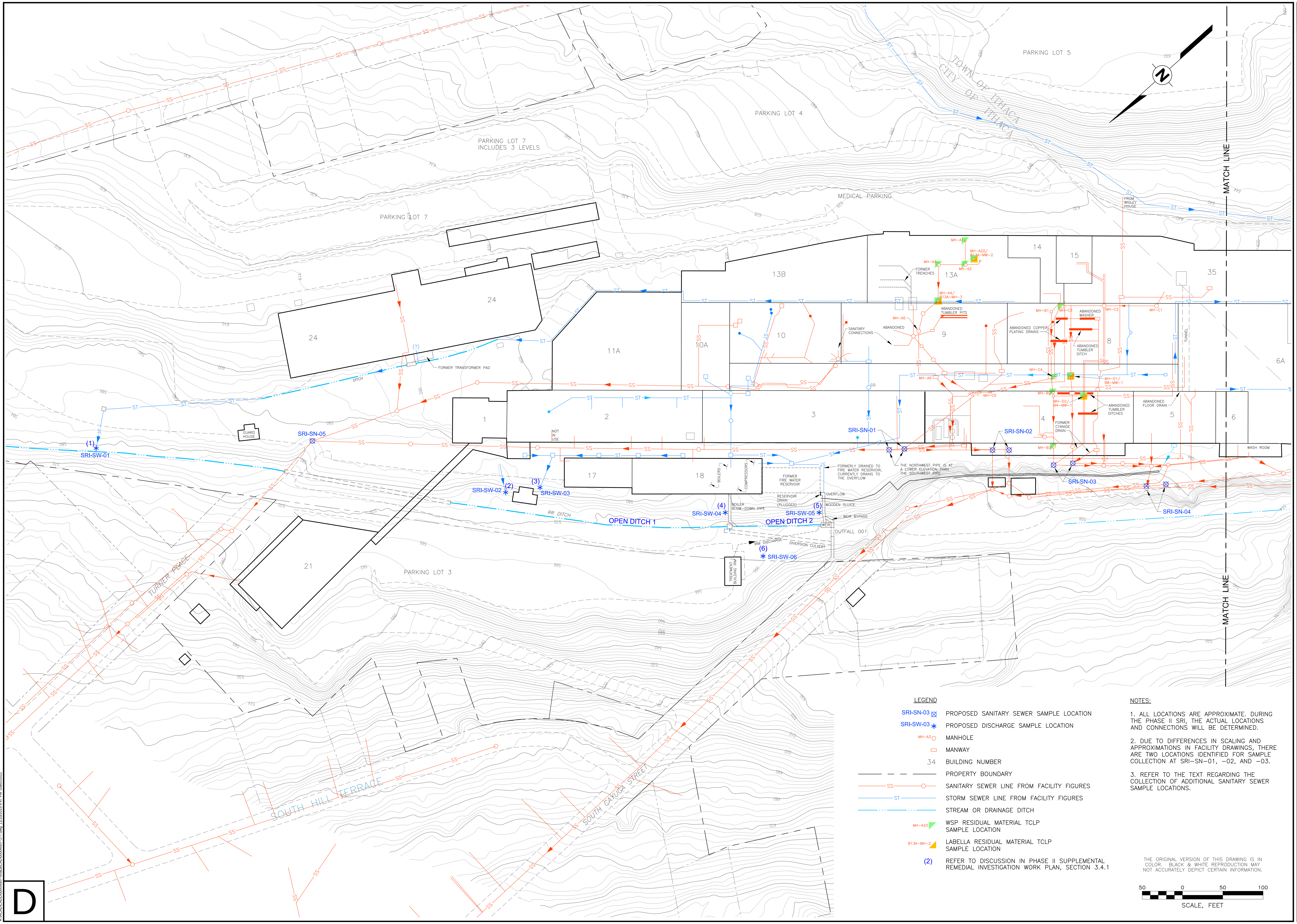
PREPARED FOR
EMERSON

WSP | PARSONS BRINCKERHOFF

WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 13

Drawing Number
00004507-166



LEGEND

- SRI-SN-03 ⊠ PROPOSED SANITARY SEWER SAMPLE LOCATION
- SRI-SW-03 ✱ PROPOSED DISCHARGE SAMPLE LOCATION
- MH-A3 ○ MANHOLE
- ▭ MANWAY
- 34 BUILDING NUMBER
- PROPERTY BOUNDARY
- SS SANITARY SEWER LINE FROM FACILITY FIGURES
- ST STORM SEWER LINE FROM FACILITY FIGURES
- STREAM OR DRAINAGE DITCH
- MH-A20 WSP RESIDUAL MATERIAL TCLP SAMPLE LOCATION
- B13A-MH-2 LABELLA RESIDUAL MATERIAL TCLP SAMPLE LOCATION
- (2) REFER TO DISCUSSION IN PHASE II SUPPLEMENTAL REMEDIAL INVESTIGATION WORK PLAN, SECTION 3.4.1

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE. DURING THE PHASE II SRI, THE ACTUAL LOCATIONS AND CONNECTIONS WILL BE DETERMINED.
2. DUE TO DIFFERENCES IN SCALING AND APPROXIMATIONS IN FACILITY DRAWINGS, THERE ARE TWO LOCATIONS IDENTIFIED FOR SAMPLE COLLECTION AT SRI-SN-01, -02, AND -03.
3. REFER TO THE TEXT REGARDING THE COLLECTION OF ADDITIONAL SANITARY SEWER SAMPLE LOCATIONS.

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

50 0 50 100
SCALE, FEET

D

REVISIONS

REV	DESCRIPTION		
1	Revised:	Chkd:	Appr.:
2	Revised:	Chkd:	Appr.:
3	Revised:	Chkd:	Appr.:

SEAL

DATE

DRAWN BY 09012015
CHECKED
APPROVED

STORM WATER AND SANITARY SEWER SYSTEMS (NORTH)

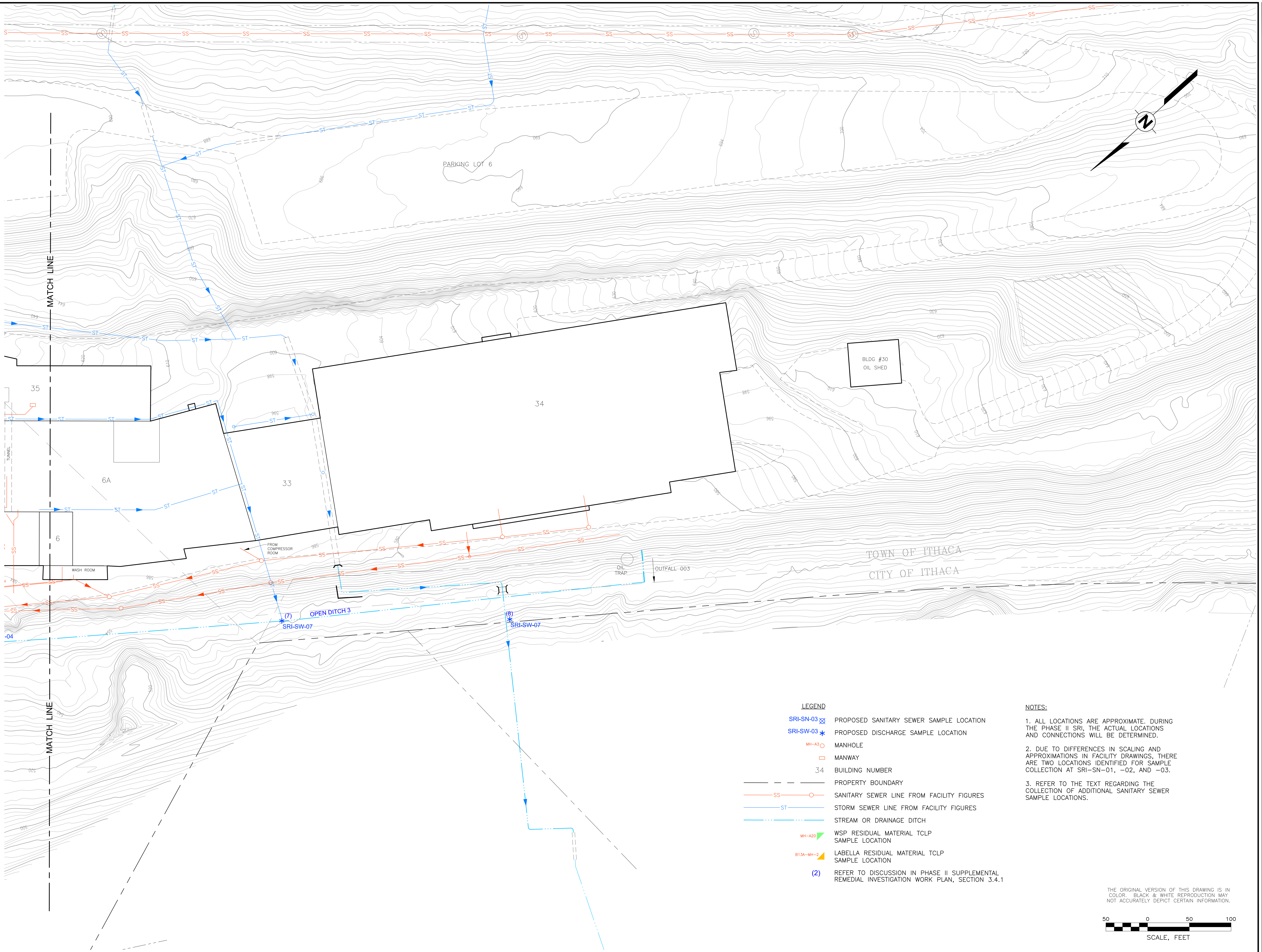
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 14A

Drawing Number
00004507-177



LEGEND

- SRI-SN-03 PROPOSED SANITARY SEWER SAMPLE LOCATION
- SRI-SW-03 PROPOSED DISCHARGE SAMPLE LOCATION
- MH-A3 MANHOLE
- MANWAY
- 34 BUILDING NUMBER
- PROPERTY BOUNDARY
- SS SANITARY SEWER LINE FROM FACILITY FIGURES
- ST STORM SEWER LINE FROM FACILITY FIGURES
- STREAM OR DRAINAGE DITCH
- MH-A20 WSP RESIDUAL MATERIAL TCLP SAMPLE LOCATION
- B13A-MH-2 LABELLA RESIDUAL MATERIAL TCLP SAMPLE LOCATION
- (2) REFER TO DISCUSSION IN PHASE II SUPPLEMENTAL REMEDIAL INVESTIGATION WORK PLAN, SECTION 3.4.1

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE. DURING THE PHASE II SRI, THE ACTUAL LOCATIONS AND CONNECTIONS WILL BE DETERMINED.
2. DUE TO DIFFERENCES IN SCALING AND APPROXIMATIONS IN FACILITY DRAWINGS, THERE ARE TWO LOCATIONS IDENTIFIED FOR SAMPLE COLLECTION AT SRI–SN–01, –02, AND –03.
3. REFER TO THE TEXT REGARDING THE COLLECTION OF ADDITIONAL SANITARY SEWER SAMPLE LOCATIONS.

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

50 0 50 100
SCALE, FEET

REVISIONS
REV | DESCRIPTION | Revised | Chkd | Appr.

SEAL
DATE

DRAWN BY
CHECKED
APPROVED

STORM WATER AND SANITARY SEWER SYSTEMS (SOUTH)

FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
13530 Dulles Technology Drive, Suite 300
Herndon, Virginia 20171
(703) 709-6500
www.wspgroup.com/usa

FIGURE 14B

Drawing Number
00004507–177

D

Tables

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

				Sample Location:	SB-100	SB-101	SB-102	SB-103	SB-104	SB-105	SB-106	SB-107	SB-108	SB-109	SB-111	SB-112	SB-113	SB-114	SB-115	SB-116	SB-117
				Sampling Entity:	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP
				Depth (feet bgs):	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	2.5-4	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2	0.5-2.5	0.5-2.5
				Date Sampled:	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12
	NYSDEC SCOs (b)																				
Parameters	**Unrestricted**	**Restricted Residential**	**Industrial**	**Protection of Groundwater**																	
VOCs (µg/kg)																					
Acetone	50	100,000	1,000,000	50	89.9 U	16.7 U	63.7 U	36.3 U	40.2 U	75.7 U	35.2 U	54.9 U	11.3 U	21.7 U	61.9 U	17.2 U	19.1 U	23.3 U	11.7 U	25.0 U	46.1 U
Benzene	60	4,800	89,000	60	5.9 U	4.6 U	5.6 U	8.9 U	3.4 U	5.9 U	6.2 U	5.7 U	2.8 U	5.0 U	5.6 U	4.4 U	6.3 U	5.2 U	5.9 U	4.3 U	5.4 U
2-Butanone (MEK)	120	100,000	1,000,000	120	11.8 U	9.2 U	11.2 U	17.8 U	6.8 U	11.9 U	12.3 U	11.7 U	5.5 U	10.0 U	11.1 U	8.8 U	12.6 U	10.3 U	16.5 U	8.7 U	10.8 U
Carbon disulfide	-	-	-	-	5.9 U	4.6 U	5.6 U	8.9 U	3.4 U	5.9 U	6.2 U	5.7 U	2.8 U	5.0 U	5.6 U	4.4 U	6.3 U	6.8	5.9 U	4.3 U	5.4 U
Chlorobenzene	1,100	100,000	1,000,000	1,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	370	49,000	700,000	370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyclohexane	-	-	-	-	11.8 U	9.2 U	11.2 U	17.8 U	6.8 U	11.9 U	12.3 U	11.4 U	5.5 U	10.0 U	11.1 U	8.8 U	12.6 U	10.3 U	16.5	8.7 U	10.8 U
1,1-Dichloroethane	270	26,000	480,000	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	250	100,000	1,000,000	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	190	100,000	1,000,000	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	1,000	41,000	780,000	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	-	-	-	-	5.9 U	4.6 U	5.6 U	8.9 U	83.7	5.9 U	6.2 U	5.7 U	2.8 U	5.0 U	5.6 U	4.4 U	6.3 U	6.8	5.9 U	4.3 U	5.4 U
Methyl acetate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylcyclohexane	-	-	-	-	11.8 U	9.2 U	11.2 U	17.8 U	6.8 U	11.9 U	12.3 U	11.4 U	5.5 U	10.0 U	11.1 U	8.8 U	12.6 U	10.3 U	46.6	8.7 U	10.8 U
Methyl tert-butyl ether	930	100,000	1,000,000	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride	50	100,000	1,000,000	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	12,000	100,000	1,000,000	12,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	3,900	100,000	1,000,000	3,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	1,300	19,000	300,000	1,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	700	100,000	1,000,000	700	5.9 U	4.6 U	5.6 U	8.9 U	3.4 U	5.9 U	6.2 U	5.7 U	2.8 U	5.0 U	5.6 U	4.4 U	6.3 U	5.8	5.9 U	4.3 U	5.4 U
1,2,4-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	680	100,000	1,000,000	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	470	21,000	400,000	470	5.9 U	4.6 U	5.6 U	8.9 U	3.4 U	5.9 U	6.2 U	5.7 U	2.8 U	5.0 U	5.6 U	4.4 U	6.3 U	5.2 U	5.9 U	4.3 U	5.4 U
1,2,4-Trimethylbenzene	3,600	52,000	380,000	3,600	5.9 U	4.6 U	5.6 U	8.9 U	3.4 U	5.9 U	6.2 U	5.7 U	2.8 U	5.0 U	5.6 U	4.4 U	6.3 U	5.2 U	6.1	4.3 U	5.4 U
1,3,5-Trimethylbenzene	8,400	52,000	380,000	8,400	5.9 U	4.6 U	5.6 U	8.9 U	3.4 U	5.9 U	6.2 U	5.7 U	2.8 U	5.0 U	5.6 U	4.4 U	6.3 U	5.2 U	6.1	4.3 U	5.4 U
Vinyl chloride	20	900	27,000	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
m,p-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (total)	260	100,000	1,000,000	1,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total TIC, Volatile (c)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

	NYSDEC SCOs (b)				Sample Location:	SB-118	SB-119		SB-120	SB-121	SB-122	SB-123		SB-124	SB-125			SB-126	SB-127	SB-128
					Sampling Entity:	WSP	WSP		WSP	WSP	WSP	WSP		WSP	WSP			WSP	WSP	WSP
					Depth (feet bgs):	7-7.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	17-18	0.5-2.5	0.5-2.5	11-12	18.5-20	3-3.8	0.5-2.5	0.5-2.5
Parameters	Unrestricted	Restricted Residential	Industrial	Protection of Groundwater	Date Sampled:	11/13/12	11/13/12 (e)	11/13/12 (e)	11/14/12	11/13/12	11/14/12	11/14/12	11/14/12	11/13/12	11/14/12	11/14/12	11/14/12	11/14/12	11/14/12	11/13/12
VOCs (µg/kg)																				
Acetone	50	100,000	1,000,000	50		64.7 U	61.9 U	21.6 U	11.9 U	22.7 U	53.9 UJ	54.3 UJ	62.5 UJ	[156]	10.2 U	59.1 UJ	73.7 UJ	[186 J]	7.4 UJ	68.6 U
Benzene	60	4,800	89,000	60		5.8 U	5.8 U	6.2 U	5.6 U	4.7 U	4.7	7.0	6.1 U	16.2	4.8 U	4.8 U	5.0 U	5.8 U	3.7 U	4.7 U
2-Butanone (MEK)	120	100,000	1,000,000	120		11.6 U	11.6 U	12.5 U	11.9 U	9.5 U	9.4 U	14.0 U	12.1 U	21.0	119.0	9.6 U	10.1 U	11.5 U	7.4 U	9.4 U
Carbon disulfide	-	-	-	-		5.8 U	5.8 U	6.2 U	5.6 U	4.7 U	4.7 U	7.4 U	6.1 U	7.4 U	14.8	4.8 U	5.0 U	5.8 U	3.7 U	4.7 U
Chlorobenzene	1,100	100,000	1,000,000	1,100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	370	49,000	700,000	370		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyclohexane	-	-	-	-		11.6 U	11.6 U	12.5 U	11.9 U	9.5 U	9.4 U	14.0 U	12.1 U	14.9 U	9.6 U	9.6 U	10.1 U	11.5 U	7.4 U	9.4 U
1,1-Dichloroethane	270	26,000	480,000	270		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	250	100,000	1,000,000	250		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	190	100,000	1,000,000	190		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	1,000	41,000	780,000	1,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	-	-	-	-		5.8 U	5.8 U	6.2 U	5.6 U	4.7 U	4.7 U	7.4 U	6.1 U	7.4 U	14.8	4.8 U	5.0 U	5.8 U	3.7 U	4.7 U
Methyl acetate	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylcyclohexane	-	-	-	-		11.6 U	11.6 U	12.5 U	5.9 U	9.5 U	9.4 U	14.0 U	12.1 U	14.9 U	9.6 U	9.6 U	10.1 U	11.5 U	7.4 U	9.4 U
Methyl tert-butyl ether	930	100,000	1,000,000	930		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride	50	100,000	1,000,000	50		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	12,000	100,000	1,000,000	12,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	3,900	100,000	1,000,000	3,900		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	1,300	19,000	300,000	1,300		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	700	100,000	1,000,000	700		5.8 U	5.8 U	6.2 U	2.9 U	4.7 U	4.7 U	7.0 U	6.1 U	7.4 U	4.8 U	4.8 U	5.0 U	5.8 U	3.7 U	4.7 U
1,2,4-Trichlorobenzene	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	680	100,000	1,000,000	680		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	470	21,000	400,000	470		5.8 U	5.8 U	6.2 U	5.9 U	4.7 U	4.7 U	24.4 J	173.0 J	11.3	11.3	4.8 U	5.0 U	5.8 U	4.7 J	4.7 U
1,2,4-Trimethylbenzene	3,600	52,000	380,000	3,600		5.8 U	5.8 U	6.2 U	5.9 U	4.7 U	4.7 U	7.0 U	6.1 U	7.4 U	4.8 U	4.8 U	5.0 U	5.8 U	3.7 U	4.7 U
1,3,5-Trimethylbenzene	8,400	52,000	380,000	8,400		5.8 U	5.8 U	6.2 U	5.9 U	4.7 U	4.7 U	7.0 U	6.1 U	7.4 U	4.8 U	4.8 U	5.0 U	5.8 U	3.7 U	4.7 U
Vinyl chloride	20	900	27,000	20		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
m,p-Xylene	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (total)	260	100,000	1,000,000	1,600		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total TIC, Volatile (c)	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

	NYSDEC SCOs (b)				Sample Location: LBA-SB-204		LBA-SB-207		LBA-SB-216		LBA-SB-217	LBA-SB-223		LBA-SB-234		LBA-SB-241		LBA-SB-246	LBA-SB-247	
				Sampling Entity:	LaBella	WSP	LaBella	WSP	LaBella	WSP	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	LaBella	WSP
				Depth (feet bgs):	6.5	6.5	3	3	7-8	7-8	8	1	1	7	7	1	0.5-2	4	6	6
				Date Sampled:	07/30/13	07/30/13	07/30/13	07/30/13	07/31/13	07/31/13	07/31/13	08/01/13	08/01/13	08/01/13	08/01/13	08/02/13	08/02/13	08/02/13	08/02/13	08/02/13
Parameters	**Unrestricted**	**Restricted Residential**	**Industrial**	**Protection of Groundwater**																
VOCs (µg/kg)																				
Acetone	50	100,000	1,000,000	50	5.1 U	470 U	5.0 U	550 U	6.0 U	670 U	500 U	58 U	690 U	4.9 J	590 U	7.2 U	730 U	5.2 U	5.1 U	630 U
Benzene	60	4,800	89,000	60	5.1 U	24 U	5.0 U	27 U	6.0 U	34 U	69.4	58 U	34 U	5.4 U	34.9	7.2 U	36 U	5.2 U	5.1 U	31 U
2-Butanone (MEK)	120	100,000	1,000,000	120	5.1 U	240 U	5.0 U	270 U	6.0 U	340 U	250 U	58 U	340 U	5.4 U	290 U	7.2 U	360 U	5.2 U	5.1 U	310 U
Carbon disulfide	-	-	-	-	5.1 U	240 U	5.0 U	270 U	6.0 U	340 U	250 U	58 U	340 U	5.4 U	290 U	7.2 U	360 U	5.2 U	5.1 U	310 U
Chlorobenzene	1,100	100,000	1,000,000	1,100	5.1 U	95 U	5.0 U	110 U	6.0 U	130 U	100 U	58 U	140 U	5.4 U	120 U	7.2 U	150 U	5.2 U	5.1 U	130 U
Chloroethane	-	-	-		5.1 U	240 U	5.0 U	270 U	6.0 U	340 U	250 U	58 U	340 U	5.4 U	290 U	7.2 U	360 U	5.2 U	5.1 U	310 U
Chloroform	370	49,000	700,000	370	5.1 U	95 U	5.0 U	110 U	6.0 U	130 U	100 U	58 U	140 U	5.4 U	120 U	7.2 U	150 U	5.2 U	5.1 U	130 U
Chloromethane	-	-	-	-	5.1 U	240 U	5.0 U	270 U	6.0 U	340 U	250 U	58 U	340 U	5.4 U	290 U	7.2 U	360 U	5.2 U	5.1 U	310 U
Cyclohexane	-	-	-	-	-	240 U	-	270 U	-	340 U	218 J	-	340 U	-	290 U	-	360 U	-	-	310 U
1,1-Dichloroethane	270	26,000	480,000	270	5.1 U	95 U	5.0 U	110 U	6.0 U	130 U	100 U	58 U	140 U	5.4 U	120 U	7.2 U	150 U	5.2 U	5.1 U	130 U
cis-1,2-Dichloroethene	250	100,000	1,000,000	250	5.1 U	95 U	5.0 U	110 U	6.0 U	130 U	100 U	58 U	3,740	5.4 U	120 U	7.2 U	150 U	5.2 U	5.1 U	130 U
trans-1,2-Dichloroethene	190	100,000	1,000,000	190	5.1 U	95 U	5.0 U	110 U	6.0 U	130 U	100 U	58 U	94.4 J	5.4 U	120 U	7.2 U	150 U	5.2 U	5.1 U	130 U
cis-1,3-Dichloropropene	-	-	-	-	5.1 U	95 U	5.0 U	110 U	6.0 U	130 U	100 U	58 U	140 U	5.4 U	120 U	7.2 U	150 U	5.2 U	5.1 U	130 U
Ethylbenzene	1,000	41,000	780,000	1,000	5.1 U	95 U	5.0 U	10 J	6.0 U	130 U	70.1 J	58 U	140 U	5.4 U	73.4 J	7.2 U	14.8 J	5.2 U	5.1 U	130 U
Isopropylbenzene	-	-	-	-	5.1 U	240 U	5.0 U	270 U	6.0 U	23.2 J	18.1 J	58 U	340 U	5.4 U	16.7 J	7.2 U	360 U	5.2 U	5.1 U	310 U
p-Isopropyltoluene	-	-	-	-	5.1 U	-	5.0 U	-	6.0 U	-	-	58 U	-	5.4 U	-	7.2 U	-	5.2 U	5.1 U	-
Methyl acetate	-	-	-	-	-	240 U	-	270 U	-	340 U	250 U	-	340 U	-	290 U	-	360 U	-	-	310 U
Methylcyclohexane	-	-	-	-	-	240 U	-	214 J	-	340 U	777	-	340 U	-	87.8 J	-	109 J	-	-	310 U
Methyl tert-butyl ether	930	100,000	1,000,000	930	5.1 U	95 U	5.0 U	110 U	6.0 U	130 U	100 U	58 U	140 U	5.4 U	120 U	7.2 U	150 U	5.2 U	5.1 U	130 U
Methylene chloride	50	100,000	1,000,000	50	4.7 B	95 U	6.1 B	110 U	5.9 B	130 U	100 U	43 B	140 U	5.9 B	120 U	4.3 BJ	150 U	2.1 BJ	2.3 B	130 U
Naphthalene	12,000	100,000	1,000,000	12,000	5.1 U	-	5.0 U	-	6.0 U	-	-	58 U	-	5.4 U	-	7.2 U	-	5.2 U	5.1 U	-
n-Propylbenzene	3,900	100,000	1,000,000	3,900	5.1 U	-	5.0 U	-	6.0 U	-	-	58 U	-	5.4 U	-	7.2 U	-	5.2 U	5.1 U	-
Tetrachloroethene	1,300	19,000	300,000	1,300	5.1 U	95 U	5.0 U	110 U	6.0 U	130 U	100 U	1,500	***75,200***	5.4 U	34.1 J	7.2 U	150 U	5.2 U	5.1 U	105 J
Toluene	700	100,000	1,000,000	700	5.1 U	240 U	5.0 U	270 U	6.0 U	340 U	766	58 U	340 U	2.3 J	112 J	7.2 U	26.1 J	5.2 U	5.1 U	310 U
1,2,4-Trichlorobenzene	-	-	-	-	-	240 U	-	270 U	-	340 U	250 U	-	340 U	-	290 U	-	360 U	-	-	310 U
1,1,1-Trichloroethane	680	100,000	1,000,000	680	5.1 U	95 U	5.0 U	110 U	6.0 U	130 U	26.8 J	58 U	140 U	5.4 U	120 U	7.2 U	150 U	5.2 U	5.1 U	130 U
1,1,2-Trichloroethane	-	-	-	-	5.1 U	95 U	5.0 U	110 U	6.0 U	130 U	100 U	58 U	140 U	5.4 U	120 U	7.2 U	150 U	5.2 U	5.1 U	130 U
Trichloroethene	470	21,000	400,000	470	5.1 U	95 U	5.0 U	170	6.0 U	130 U	100 U	56 J	1,960	5.4 U	86.4 J	7.2 U	357	5.2 U	5.1 U	130 U
1,2,4-Trimethylbenzene	3,600	52,000	380,000	3,600	5.1 U	-	5.0 J	-	6.0 U	-	-	58 U	-	5.4 U	-	7.2 U	-	5.2 U	2.8 J	-
1,3,5-Trimethylbenzene	8,400	52,000	380,000	8,400	5.1 U	-	3.5 J	-	6.0 U	-	-	58 U	-	5.4 U	-	7.2 U	-	5.2 U	1.8 J	-
Vinyl chloride	20	900	27,000	20	5.1 U	95 U	5.0 U	110 U	6.0 U	130 U	100 U	58 U	140 U	5.4 U	120 U	7.2 U	150 U	5.2 U	5.1 U	130 U
m,p-Xylene	-	-	-	-	5.1 U	-	4.1 J	-	6.0 U	-	-	58 U	-	5.4 U	-	7.2 U	-	5.2 U	2.9 J	-
o-Xylene	-	-	-	-	5.1 U	-	5.0 U	-	6.0 U	-	-	58 U	-	5.4 U	-	7.2 U	-	5.2 U	5.1 U	-
Xylene (total)	260	100,000	1,000,000	1,600	5.1 U	95 U	4.1 J	105 J	6.0 U	130 U	968	58 U	140 U	5.4 U	146	7.2 U	68.3 J	5.2 U	2.9 J	130 U
Total TIC, Volatile (c)	-	-	-	-	22.7	13,930	314	27,750	2,100	37,680	587,250	0	0	130.5	199,740	0	2,300	0	0	7,130

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

	NYSDEC SCOs (b)			Sample Location:	LBA-SB-248			LBA-SB-250		LBA-SB-301		LBA-SB-401			LBA-SB-404	LBA-SB-405		LBA-SB-412		LBA-SB-416	
				Sampling Entity:	LaBella	WSP	LaBella	LaBella	WSP	LaBella	WSP	WSP	LaBella	LaBella	LaBella	WSP	LaBella	WSP	LaBella	LaBella	WSP
				Depth (feet bgs):	7.5	7.5	15	4	4	2.5	2.5	0.8	1.5	2.5	2.5	8.5	10	0.4	1.2	4.5	4.5-5.3
			Protection of	Date Sampled:	08/02/13	08/02/13	08/02/13	08/15/13	08/15/13	08/26/13	08/26/13	09/24/13	09/24/13	09/24/13	09/24/13	09/25/13	09/25/13	09/25/13	09/25/13	09/26/13	09/26/13
Parameters	**Unrestricted**	**Restricted Residential**	**Industrial**	**Groundwater**																	
VOCs (µg/kg)																					
Acetone	50	100,000	1,000,000	50	5.6 U	210	6.5 U	5.5 U	520 U	4.8 U	11 U	82.7	11 J	20 J	26 U	10 U	25 U	41.5	22 J	29 U	14 U
Benzene	60	4,800	89,000	60	5.6 U	0.6 U	6.5 U	5.5 U	26 U	4.8 U	0.54 U	0.56 U	5.8 U	6.3 U	5.3 U	0.71	5.1 U	0.35 J	5.3 U	5.7 U	0.68 U
2-Butanone (MEK)	120	100,000	1,000,000	120	5.6 U	21.1	6.5 U	5.5 U	260 U	4.8 U	5.4 U	5.6 U	29 U	32 U	26 U	5 U	25 U	5.8 U	27 U	29 U	6.8 U
Carbon disulfide	-	-	-	-	5.6 U	13.4	6.5 U	5.5 U	260 U	4.8 U	5.4 U	0.86 J	5.8 U	6.3 U	5.3 U	5 U	5.1 U	1.3 J	5.3 U	5.7 U	1.5 J
Chlorobenzene	1,100	100,000	1,000,000	1,100	5.6 U	2.4 U	6.5 U	5.5 U	100 U	4.8 U	2.1 U	2.3 U	4.6 J	3.0 J	5.3 U	2 U	5.1 U	2.3 U	5.3 U	5.7 U	2.7 U
Chloroethane	-	-	-		5.6 U	6 U	6.5 U	5.5 U	260 U	4.8 U	5.4 U	5.6 U	5.8 U	6.3 U	5.3 U	5 U	5.1 U	5.8 U	7.2 J	5.7 U	6.8 U
Chloroform	370	49,000	700,000	370	5.6 U	0.67 J	6.5 U	5.5 U	100 U	4.8 U	2.1 U	2.3 U	5.8 U	6.3 U	5.3 U	2 U	5.1 U	2.3 U	5.3 U	5.7 U	2.7 U
Chloromethane	-	-	-	-	5.6 U	5.5 J	6.5 U	5.5 U	260 U	4.8 U	5.4 U	5.6 U	5.8 U	6.3 U	5.3 U	5 U	5.1 U	5.8 U	5.3 U	5.7 U	6.8 U
Cyclohexane	-	-	-	-	-	0.55 J	-	-	260 U		5.4 U	5.6 U	5.8 U	6.3 U	5.3 U	2.1 J	5.1 U	5.8 U	5.3 U	5.7 U	6.8 U
1,1-Dichloroethane	270	26,000	480,000	270	5.6 U	2.4 U	6.5 U	5.5 U	100 U	4.8 U	2.1 U	2.3 U	5.8 U	6.3 U	5.3 U	2 U	5.1 U	0.99 J	5.3 U	5.7 U	2.7 U
cis-1,2-Dichloroethene	250	100,000	1,000,000	250	2.9 J	29.8	6.5 U	1.6 J	100 U	4.8 U	2.1 U	2.3 U	2.9 J	29	5.3 U	2 U	5.1 U	2.3 U	1.8 J	5.7 U	2.7 U
trans-1,2-Dichloroethene	190	100,000	1,000,000	190	5.6 U	1.6 J	6.5 U	5.5 U	100 U	4.8 U	2.1 U	2.3 U	5.8 U	1.3 J	5.3 U	2 U	5.1 U	2.3 U	5.3 U	5.7 U	2.7 U
cis-1,3-Dichloropropene	-	-	-	-	5.6 U	2.4 U	6.5 U	5.5 U	100 U	4.8 U	2.1 U	2.3 U	5.8 U	6.3 U	5.3 U	2 U	5.1 U	2.3 U	5.3 U	5.7 U	2.7 U
Ethylbenzene	1,000	41,000	780,000	1,000	5.6 U	0.46 J	6.5 U	5.5 U	100 U	4.8 U	2.1 U	2.3 U	5.8 U	6.3 U	5.3 U	2 U	5.1 U	2.3 U	5.3 U	5.7 U	2.7 U
Isopropylbenzene	-	-	-	-	5.6 U	6 U	6.5 U	5.5 U	260 U	4.8 U	5.4 U	5.6 U	5.8 U	6.3 U	5.3 U	5 U	5.1 U	5.8 U	5.3 U	5.7 U	6.8 U
p-Isopropyltoluene	-	-	-	-	5.6 U	-	6.5 U	5.5 U	-	4.8 U	-	-	1.3 J	6.3 U	5.3 U	-	5.1 U	-	5.3 U	5.7 U	-
Methyl acetate	-	-	-	-	-	6 U	-	-	260 U		5.4 U	5.6 U	5.8 U	6.3 U	5.3 U	5 U	5.1 U	5.8 U	5.3 U	5.7 U	6.8 U
Methylcyclohexane	-	-	-	-	-	6 U	-	-	260 U		5.4 U	5.6 U	5.8 U	6.3 U	5.3 U	3.4 J	5.1 U	5.8 U	5.3 U	5.7 U	6.8 U
Methyl tert-butyl ether	930	100,000	1,000,000	930	5.6 U	2.4 U	6.5 U	5.5 U	100 U	4.8 U	2.1 U	2.3 U	5.8 U	6.3 U	5.3 U	2 U	5.1 U	2.3 U	5.3 U	5.7 U	2.7 U
Methylene chloride	50	100,000	1,000,000	50	2.5 B	30.8	4.3 B	5.5 U	100 U	2.9 BJ	2.6	2.3 U	5.8 U	6.3 U	5.3 U	1.6 J	5.1 U	2 J	5.3 U	5.7 U	2.2 J
Naphthalene	12,000	100,000	1,000,000	12,000	5.6 U	-	6.5 U	1.9 J	-	4.8 U	-	-	5.8 U	6.3 U	5.3 U	-	5.1 U	-	5.3 U	5.7 U	-
n-Propylbenzene	3,900	100,000	1,000,000	3,900	5.6 U	-	6.5 U	5.5 U	-	4.8 U	-	-	0.95 J	6.3 U	5.3 U	-	5.1 U	-	5.3 U	5.7 U	-
Tetrachloroethene	1,300	19,000	300,000	1,300	5.6 U	17.3	6.5 U	5.5 U	166	4.8 U	2.1 U	2.3 U	7.8	4.0 J	5.3 U	2 U	5.1 U	2.3 U	5.3 U	5.7 U	2.7 U
Toluene	700	100,000	1,000,000	700	5.6 U	1.3 J	6.5 U	5.5 U	260 U	4.8 U	1.5 J	0.61 J	5.8 U	0.75 J	5.3 U	1.3 J	5.1 U	0.99 J	5.3 U	5.7 U	0.54 J
1,2,4-Trichlorobenzene	-	-	-	-	-	4.6 J	-	-	260 U		5.4 U	5.6 U	5.8 U	6.3 U	5.3 U	5 U	5.1 U	5.8 U	5.3 U	5.7 U	6.8 U
1,1,1-Trichloroethane	680	100,000	1,000,000	680	5.6 U	2.4 U	6.5 U	5.5 U	210	4.8 U	2.1 U	2.3 U	5.8 U	6.3 U	5.3 U	2 U	5.1 U	2.3 U	5.3 U	5.7 U	2.7 U
1,1,2-Trichloroethane	-	-	-	-	5.6 U	2.4 U	6.5 U	5.5 U	100 U	4.8 U	2.1 U	2.3 U	5.8 U	6.3 U	5.3 U	2 U	5.1 U	2.3 U	5.3 U	5.7 U	2.7 U
Trichloroethene	470	21,000	400,000	470	2.0 J	35.2	10	6.9 J	631	4.8 U	2.1 U	25	1,800	6,800	2.3 J	2 U	5.1 U	2.3 U	5.3 U	5.7 U	2.7 U
1,2,4-Trimethylbenzene	3,600	52,000	380,000	3,600	5.6 U	-	6.5 U	5.5 U	-	4.8 U	-	-	3.1 J	6.3 U	5.3 U	-	5.1 U	-	5.3 U	5.7 U	-
1,3,5-Trimethylbenzene	8,400	52,000	380,000	8,400	5.6 U	-	6.5 U	5.5 U	-	4.8 U	-	-	3.0 J	6.3 U	5.3 U	-	5.1 U	-	5.3 U	5.7 U	-
Vinyl chloride	20	900	27,000	20	5.6 U	2.4 U	6.5 U	5.5 U	100 U	4.8 U	2.1 U	2.3 U	5.8 U	6.3 U	5.3 U	2 U	5.1 U	2.3 U	5.3 U	5.7 U	2.7 U
m,p-Xylene	-	-	-	-	5.6 U	-	6.5 U	5.5 U	-	4.8 U	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	5.6 U	-	6.5 U	5.5 U	-	4.8 U	-	-	-	-	-	-	-	-	-	-	-
Xylene (total)	260	100,000	1,000,000	1,600	5.6 U	1.2 J	6.5 U	5.5 U	100 U	4.8 U	1.1 J	2.3 U	12 U	13 U	11 U	0.96 J	10 U	0.71 J	11 U	11 U	2.7 U
Total TIC, Volatile (c)	-	-	-	-	0	0	0	0	0	132.1	0	0	165.1	0	34.6	39.7	0	75.8	0	0	14

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

				Sample Location:	LBA-SB-417		LBA-SB-418		LBA-SB-420	LBA-SB-425		LBA-SB-501		LBA-SB-503		LBA-SB-504		LBA-SB-505		LBA-SB-509	
				Sampling Entity:	LaBella	WSP	WSP	LaBella	LaBella	WSP	LaBella	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP
				Depth (feet bgs):	0.7	0.2-0.9	1.3	2	0.5	10	10.5	1.5	1-2	2	1-2	2	1-2	2	1-2	3.5-4	2.2
				Date Sampled:	09/26/13	09/26/13	09/26/13	09/26/13	09/26/13	09/26/13	09/26/13	12/04/13	12/04/13	12/04/13	12/04/13	12/04/13	12/04/13	12/04/13	12/04/13	12/05/13	12/05/13
	NYSDEC SCOs (b)																				
Parameters	Unrestricted	Restricted Residential	Industrial	Protection of Groundwater																	
VOCs (µg/kg)																					
Acetone	50	100,000	1,000,000	50	29 U	10 U	221	29 U	6.5 J	297	31 U	31 U	13 U	29 U	11 U	28 U	9 U	28 U	13 U	29 U	11 U
Benzene	60	4,800	89,000	60	5.7 U	0.51 U	0.52 U	5.9 U	5.7 U	0.68	6.1 U	6.2 U	0.66 U	5.7 U	0.55 U	5.5 U	0.45 U	5.6 U	0.65 U	5.7 U	0.55 U
2-Butanone (MEK)	120	100,000	1,000,000	120	29 U	5.1 U	5.2 U	29 U	28 U	6.2 U	31 U	31 U	6.6 U	29 U	5.5 U	28 U	4.5 U	28 U	6.5 U	29 U	5.5 U
Carbon disulfide	-	-	-	-	5.7 U	0.6 J	2.9 J	5.9 U	5.7 U	62.4	6.1 U	6.2 U	2.0 J	5.7 U	5.5 U	5.5 U	4.5 U	5.6 U	4.4 J	5.7 U	3.8 J
Chlorobenzene	1,100	100,000	1,000,000	1,100	5.7 U	2 U	2.1 U	5.9 U	5.7 U	2.5 U	6.1 U	6.2 U	2.6 U	5.7 U	2.2 U	5.5 U	1.8 U	5.6 U	2.6 U	5.7 U	2.2 U
Chloroethane	-	-	-		5.7 U	5.1 U	5.2 U	5.9 U	5.7 U	6.2 U	6.1 U	6.2 U	6.6 U	5.7 U	5.5 U	5.5 U	4.5 U	5.6 U	6.5 U	5.7 U	5.5 U
Chloroform	370	49,000	700,000	370	5.7 U	2 U	2.1 U	5.9 U	5.7 U	2.5 U	6.1 U	6.2 U	2.6 U	5.7 U	2.2 U	5.5 U	1.8 U	5.6 U	2.6 U	5.7 U	2.2 U
Chloromethane	-	-	-	-	5.7 U	5.1 U	5.2 U	5.9 U	5.7 U	6.2 U	6.1 U	6.2 U	6.6 U	5.7 U	5.5 U	5.5 U	4.5 U	5.6 U	6.5 U	5.7 U	5.5 U
Cyclohexane	-	-	-	-	5.7 U	5.1 U	5.2 U	5.9 U	5.7 U	6.2 U	6.1 U	6.2 U	6.6 U	5.7 U	5.5 U	5.5 U	4.5 U	5.6 U	6.5 U	5.7 U	5.5 U
1,1-Dichloroethane	270	26,000	480,000	270	5.7 U	2 U	2.1 U	5.9 U	5.7 U	2.5 U	6.1 U	6.2 U	2.6 U	5.7 U	2.2 U	5.5 U	1.8 U	5.6 U	2.6 U	5.7 U	2.2 U
cis-1,2-Dichloroethene	250	100,000	1,000,000	250	5.7 U	2 U	2.1 U	5.9 U	5.7 U	2.5 U	6.1 U	6.2 U	2.6 U	16	6.9	5.5 U	1.8 U	5.6 U	2.6 U	5.7 U	2.2 U
trans-1,2-Dichloroethene	190	100,000	1,000,000	190	5.7 U	2 U	2.1 U	5.9 U	5.7 U	2.5 U	6.1 U	6.2 U	2.6 U	5.7 U	2.2 U	5.5 U	1.8 U	5.6 U	2.6 U	5.7 U	2.2 U
cis-1,3-Dichloropropene	-	-	-	-	5.7 U	2 U	2.1 U	5.9 U	5.7 U	2.5 U	6.1 U	6.2 U	2.6 U	5.7 U	2.2 U	5.5 U	1.8 U	5.6 U	2.6 U	5.7 U	2.2 U
Ethylbenzene	1,000	41,000	780,000	1,000	5.7 U	2 U	2.1 U	5.9 U	5.7 U	0.33 J	6.1 U	6.2 U	2.6 U	5.7 U	2.2 U	5.5 U	1.8 U	5.6 U	2.6 U	5.7 U	2.2 U
Isopropylbenzene	-	-	-	-	5.7 U	5.1 U	5.2 U	5.9 U	5.7 U	6.2 U	6.1 U	6.2 U	6.6 U	5.7 U	5.5 U	5.5 U	4.5 U	5.6 U	6.5 U	5.7 U	5.5 U
p-Isopropyltoluene	-	-	-	-	5.7 U	-	-	5.9 U	5.7 U	-	6.1 U		-	-	-	-	-	-	-	-	-
Methyl acetate	-	-	-	-	5.7 U	5.1 U	5.2 U	5.9 U	5.7 U	6.2 U	6.1 U	6.2 U	6.6 U	5.7 U	5.5 U	5.5 U	4.5 U	5.6 U	6.5 U	5.7 U	5.5 U
Methylcyclohexane	-	-	-	-	5.7 U	5.1 U	5.2 U	5.9 U	5.7 U	6.2 U	6.1 U	6.2 U	6.6 U	5.7 U	5.5 U	5.5 U	4.5 U	5.6 U	6.5 U	5.7 U	5.5 U
Methyl tert-butyl ether	930	100,000	1,000,000	930	5.7 U	2 U	2.1 U	5.9 U	5.7 U	2.5 U	6.1 U	6.2 U	2.6 U	5.7 U	2.2 U	5.5 U	1.8 U	5.6 U	2.6 U	5.7 U	2.2 U
Methylene chloride	50	100,000	1,000,000	50	5.7 U	2 U	2.1	5.9 U	5.7 U	2.2 J	6.1 U	6.2 U	2.6 U	5.7 U	2 J	5.5 U	1.5 J	5.6 U	2.2 J	2.8 J	2.2 U
Naphthalene	12,000	100,000	1,000,000	12,000	5.7 U	-	-	5.9 U	5.7 U	-	6.1 U	6.2 U	-	5.7 U	-	5.5 U	-	5.6 U	-	5.7 U	-
n-Propylbenzene	3,900	100,000	1,000,000	3,900	5.7 U	-	-	5.9 U	5.7 U	-	6.1 U	6.2 U	-	5.7 U	-	5.5 U	-	5.6 U	-	5.7 U	-
Tetrachloroethene	1,300	19,000	300,000	1,300	5.7 U	2 U	2.1 U	5.9 U	5.7 U	2.5 U	6.1 U	6.2 U	2.6 U	5.7 U	2.2 U	5.5 U	1.8 U	5.6 U	2.6 U	5.7 U	2.2 U
Toluene	700	100,000	1,000,000	700	5.7 U	5.1 U	5.2 U	5.9 U	5.7 U	0.85 J	6.1 U	6.2 U	6.6 U	5.7 U	5.5 U	5.5 U	4.5 U	5.6 U	6.5 U	5.7 U	5.5 U
1,2,4-Trichlorobenzene	-	-	-	-	5.7 U	5.1 U	5.2 U	5.9 U	5.7 U	6.2 U	6.1 U	6.2 U	6.6 U	5.7 U	5.5 U	5.5 U	4.5 U	5.6 U	6.5 U	5.7 U	5.5 U
1,1,1-Trichloroethane	680	100,000	1,000,000	680	5.7 U	2 U	2.1 U	5.9 U	5.7 U	2.5 U	6.1 U	6.2 U	2.6 U	5.7 U	2.2 U	5.5 U	1.8 U	5.6 U	2.6 U	5.7 U	2.2 U
1,1,2-Trichloroethane	-	-	-	-	5.7 U	2 U	2.1 U	5.9 U	5.7 U	2.1 J	6.1 U	6.2 U	2.6 U	5.7 U	2.2 U	5.5 U	1.8 U	5.6 U	2.6 U	5.7 U	2.2 U
Trichloroethene	470	21,000	400,000	470	5.7 U	2 U	2.1 U	5.9 U	5.7 U	2.5 U	6.1 U	6.2 U	3	8.2	12	1.9 J	7.2	1.4 J	2.6 U	5.7 U	1.6 J
1,2,4-Trimethylbenzene	3,600	52,000	380,000	3,600	5.7 U	-	-	5.9 U	5.7 U	-	6.1 U	6.2 U	-	5.7 U	-	5.5 U	-	5.6 U	-	5.7 U	-
1,3,5-Trimethylbenzene	8,400	52,000	380,000	8,400	5.7 U	-	-	5.9 U	5.7 U	-	6.1 U	6.2 U	-	5.7 U	-	5.5 U	-	5.6 U	-	5.7 U	-
Vinyl chloride	20	900	27,000	20	5.7 U	2 U	2.1 U	5.9 U	5.7 U	2.5 U	6.1 U	6.2 U	2.6 U	5.7 U	2.2 U	5.5 U	1.8 U	5.6 U	2.6 U	5.7 U	2.2 U
m,p-Xylene	-	-	-	-	-	-	-	-	-	-	-	12 U	-	11 U	-	11 U	-	11 U	-	11 U	-
o-Xylene	-	-	-	-	-	-	-	-	-	-	-	12 U	-	11 U	-	11 U	-	11 U	-	11 U	-
Xylene (total)	260	100,000	1,000,000	1,600	11 U	2 U	2.1 U	12 U	11 U	2.5 U	12 U	12 U	2.6 U	11 U	2.2 U	11 U	1.8 U	11 U	2.6 U	11 U	2.2 U
Total TIC, Volatile (c)	-	-	-	-	0	21.8	586	322	0	253.2	6.1	0	237	0	0	0	0	0	0	0	0

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

				Sample Location:	LBA-SB-510		LBA-SB-511		LBA-SB-514			LBA-SB-517	LBA-SB-518				LBA-SB-519	LBA-SB-521		LBA-SB-522
				Sampling Entity:	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP	WSP	LaBella	WSP	WSP
				Depth (feet bgs):	3.8-4.8	1.4	1.5-2	0.8-1	0.5-2.2	1	0-1.7	1-1.5	3-4	3-4	8	8	8	2.5	1-1.5	0-0.9
				Date Sampled:	12/05/13	12/05/13	12/05/13	12/05/13	12/05/13	12/05/13	12/05/13	12/06/13	12/06/13	12/06/13	12/06/13	12/06/13	12/06/13	12/13/13	12/13/13	12/13/13
	NYSDEC SCOs (b)																			
Parameters	**Unrestricted**	**Restricted Residential**	**Industrial**	**Protection of Groundwater**																
VOCs (µg/kg)																				
Acetone	50	100,000	1,000,000	50	29 U	13 U	28 U	12 U	270 U	12 U	29 U	510 U	26 U	550 U	28 U	11 U	14 U	28 U	13 U	11 U
Benzene	60	4,800	89,000	60	5.8 U	0.65 U	5.7 U	0.6 U	54 U	2.4	5.8 U	26 U	5.1 U	27 U	5.6 U	4.5	0.68 U	5.5 U	0.63 U	0.56 U
2-Butanone (MEK)	120	100,000	1,000,000	120	29 U	6.5 U	28 U	6 U	270 U	6.1 U	29 U	260 U	26 U	270 U	28 U	5.5 U	6.8 U	28 U	6.3 U	5.6 U
Carbon disulfide	-	-	-	-	5.8 U	0.97 J	5.7 U	6 U	54 U	15.6	5.8 U	260 U	5.1 U	270 U	5.6 U	9.9	1.4 J	5.5 U	2.3 J	5.6 U
Chlorobenzene	1,100	100,000	1,000,000	1,100	5.8 U	2.6 U	5.7 U	2.4 U	54 U	2.4 U	5.8 U	100 U	5.1 U	110 U	5.6 U	2.2 U	2.7 U	5.5 U	2.5 U	2.2 U
Chloroethane	-	-	-		5.8 U	6.5 U	5.7 U	6 U	54 U	6.1 U	5.8 U	260 U	5.1 U	270 U	5.6 U	5.5 U	6.8 U	5.5 U	6.3 U	5.6 U
Chloroform	370	49,000	700,000	370	5.8 U	2.6 U	5.7 U	2.4 U	54 U	2.4 U	5.8 U	100 U	5.1 U	110 U	5.6 U	2.2 U	2.7 U	5.5 U	2.5 U	2.2 U
Chloromethane	-	-	-	-	5.8 U	6.5 U	5.7 U	6 U	54 U	6.1 U	5.8 U	260 U	5.1 U	270 U	5.6 U	5.5 U	6.8 U	5.5 U	6.3 U	5.6 U
Cyclohexane	-	-	-	-	5.8 U	6.5 U	5.7 U	6 U	54 U	7.6	5.8 U	260 U	5.1 U	270 U	5.6 U	2.2 J	6.8 U	5.5 U	6.3 U	5.6 U
1,1-Dichloroethane	270	26,000	480,000	270	5.8 U	2.6 U	5.7 U	2.4 U	54 U	2.4 U	5.8 U	100 U	5.1 U	110 U	5.6 U	2.2 U	2.7 U	5.5 U	2.5 U	2.2 U
cis-1,2-Dichloroethene	250	100,000	1,000,000	250	5.8 U	2.6 U	5.7 U	2.4 U	54 U	2.4 U	5.8 U	100 U	5.1 U	110 U	5.6 U	2.2 U	2.7 U	5.5 U	2.5 U	2.2 U
trans-1,2-Dichloroethene	190	100,000	1,000,000	190	5.8 U	2.6 U	5.7 U	2.4 U	54 U	2.4 U	5.8 U	100 U	5.1 U	110 U	5.6 U	2.2 U	2.7 U	5.5 U	2.5 U	2.2 U
cis-1,3-Dichloropropene	-	-	-	-	5.8 U	2.6 U	5.7 U	2.4 U	54 U	2.4 U	5.8 U	100 U	5.1 U	110 U	5.6 U	2.2 U	2.7 U	5.5 U	2.5 U	2.2 U
Ethylbenzene	1,000	41,000	780,000	1,000	5.8 U	2.6 U	5.7 U	2.4 U	54 U	2.4 U	5.8 U	100 U	5.1 U	110 U	5.6 U	0.88 J	2.7 U	5.5 U	2.5 U	2.2 U
Isopropylbenzene	-	-	-	-	5.8 U	6.5 U	5.7 U	6 U	54 U	6.1 U	5.8 U	260 U	5.1 U	270 U	5.6 U	5.5 U	6.8 U	5.5 U	6.3 U	5.6 U
p-Isopropyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl acetate	-	-	-	-	5.8 U	6.5 U	5.7 U	6 U	54 U	6.1 U	5.8 U	260 U	5.1 U	270 U	5.6 U	5.5 U	6.8 U	5.5 U	6.3 U	5.6 U
Methylcyclohexane	-	-	-	-	5.8 U	6.5 U	5.7 U	6 U	54 U	11.6	5.8 U	260 U	5.1 U	270 U	5.6 U	1.4 J	6.8 U	5.5 U	6.3 U	5.6 U
Methyl tert-butyl ether	930	100,000	1,000,000	930	5.8 U	2.6 U	5.7 U	2.4 U	54 U	2.4 U	5.8 U	100 U	5.1 U	110 U	5.6 U	2.2 U	2.7 U	5.5 U	2.5 U	2.2 U
Methylene chloride	50	100,000	1,000,000	50	3.7 J	2.6 U	2.8 J	2.6	54 U	2.4 U	5.8 U	100 U	5.1 U	110 U	5.6 U	4.7	2.7 U	5.5 U	2.5 U	3.3
Naphthalene	12,000	100,000	1,000,000	12,000	5.8 U	-	5.7 U	-	54 U	-	5.8 U	-	5.1 U	-	5.6 U	-	-	5.5 U	-	-
n-Propylbenzene	3,900	100,000	1,000,000	3,900	5.8 U	-	5.7 U	-	54 U	-	5.8 U	-	5.1 U	-	5.6 U	-	-	5.5 U	-	-
Tetrachloroethene	1,300	19,000	300,000	1,300	5.8 U	2.6 U	5.7 U	2.4 U	54 U	2.4	5.8 U	71.3 J	5.1 U	110 U	5.6 U	2.2 U	2.7 U	5.5 U	2.5 U	2.2 U
Toluene	700	100,000	1,000,000	700	5.8 U	6.5 U	5.7 U	2.3 J	16 J	18.7	5.8 U	260 U	5.1 U	270 U	5.6 U	3.2 J	6.8 U	5.5 U	6.3 U	5.6 U
1,2,4-Trichlorobenzene	-	-	-	-	5.8 U	6.5 U	5.7 U	6 U	54 U	6.1 U	5.8 U	260 U	5.1 U	270 U	5.6 U	5.5 U	6.8 U	5.5 U	6.3 U	5.6 U
1,1,1-Trichloroethane	680	100,000	1,000,000	680	5.8 U	2.6 U	5.7 U	2.4 U	54 U	2.4 U	5.8 U	100 U	5.1 U	110 U	5.6 U	2.2 U	2.7 U	5.5 U	2.5 U	2.2 U
1,1,2-Trichloroethane	-	-	-	-	5.8 U	2.6 U	5.7 U	2.4 U	54 U	2.4 U	5.8 U	100 U	5.1 U	110 U	5.6 U	2.2 U	2.7 U	5.5 U	2.5 U	2.2 U
Trichloroethene	470	21,000	400,000	470	5.8 U	2.6 U	5.7 U	2.4 U	54 U	2.4 U	5.8 U	2,690	5.1 U	114	6.6	46.1	4.6	5.5 U	2.5 U	2.2 U
1,2,4-Trimethylbenzene	3,600	52,000	380,000	3,600	5.8 U	-	5.7 U	-	54 U	-	5.8 U	-	5.1 U	-	5.6 U	-	-	-	-	-
1,3,5-Trimethylbenzene	8,400	52,000	380,000	8,400	5.8 U	-	5.7 U	-	54 U	-	5.8 U	-	5.1 U	-	5.6 U	-	-	-	-	-
Vinyl chloride	20	900	27,000	20	5.8 U	2.6 U	5.7 U	2.4 U	54 U	2.4 U	5.8 U	100 U	5.1 U	110 U	5.6 U	2.2 U	2.7 U	5.5 U	2.5 U	2.2 U
m,p-Xylene	-	-	-	-	11 U	-	11 U	-	110 U	-	12 U	-	10 U	-	11 U	-	-	11 U	-	-
o-Xylene	-	-	-	-	11 U	-	11 U	-	110 U	-	12 U	-	10 U	-	11 U	-	-	11 U	-	-
Xylene (total)	260	100,000	1,000,000	1,600	11 U	2.6 U	11 U	2.4 U	110 U	3.4	12 U	100 U	10 U	110 U	11 U	1.2 J	2.7 U	11 U	2.5 U	2.2 U
Total TIC, Volatile (c)	-	-	-	-	6.7	0	0	0	1,830	476.8	8	0	43.7	7,710	0	35.4	0	0	0	107

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

	NYSDEC SCOs (b)				Sample Location:	WSP-SB-610	WSP-SB-611		WSP-SB-612				WSP-SB-613			WSP-SB-621	WSP-SB-622			WSP-SB-623	
					Sampling Entity:	WSP	WSP	WSP	WSP	WSP	LaBella	LaBella	WSP	WSP	LaBella	LaBella	WSP	WSP	WSP	WSP	WSP
					Depth (feet bgs):	0-2	0-2	2-3.9	0-2	5-7	3	7.5	0-2	2.2-3.5	4	3.5	0-2	2-2.5	4-5	0-2	2-2.5
					Date Sampled:	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14
Parameters	Unrestricted	Restricted Residential	Industrial	Protection of Groundwater																	
VOCs (µg/kg)																					
Acetone	50	100,000	1,000,000	50		3.3 U	170 U	160 U	200 U	2.7 U	5.6 JL	2.1 JL	170 U	160 U	4.6 U	2.6 JL	160 U	160 U	3.3 U	3 U	3.3 U
Benzene	60	4,800	89,000	60		0.39 U	20 U	19 U	24 U	0.32 U	-	-	21 U	19 U	-	-	19 U	20 U	0.4 U	0.36 U	0.4 U
2-Butanone (MEK)	120	100,000	1,000,000	120		3.6 U	190 U	170 U	220 U	2.9 U	-	-	190 U	170 U	-	-	170 U	180 U	3.7 U	3.3 U	3.7 U
Carbon disulfide	-	-	-	-		0.15 U	7.9 U	7.4 U	9.2 U	0.13 U	-	-	8.2 U	7.4 U	-	-	7.3 U	7.6 U	0.16 U	0.14 U	0.16 U
Chlorobenzene	1,100	100,000	1,000,000	1,100		0.18 U	9.5 U	8.9 U	11 U	0.15 U	-	-	9.8 U	8.9 U	-	-	8.7 U	9.2 U	0.19 U	0.17 U	0.19 U
Chloroethane	-	-	-			0.88 U	46 U	43 U	53 U	0.72 U	-	-	47 U	43 U	-	-	42 U	44 U	0.9 U	0.8 U	0.9 U
Chloroform	370	49,000	700,000	370		0.2 U	10 U	9.6 U	12 U	0.16 U	-	-	11 U	9.5 U	-	-	9.4 U	9.9 U	0.2 U	0.18 U	0.2 U
Chloromethane	-	-	-	-		0.66 U	34 U	32 U	40 U	0.54 U	-	-	35 U	32 U	-	-	31 U	33 U	0.67 U	0.6 U	0.67 U
Cyclohexane	-	-	-	-		0.34 U	18 U	17 U	21 U	0.28 U	-	-	18 U	17 U	-	-	16 U	17 U	0.35 U	0.31 U	0.35 U
1,1-Dichloroethane	270	26,000	480,000	270		0.31 U	16 U	15 U	19 U	0.26 U	-	-	17 U	15 U	-	-	15 U	16 U	0.32 U	0.28 U	0.32 U
cis-1,2-Dichloroethene	250	100,000	1,000,000	250		0.53 U	27 U	26 U	137 J	2.6	4.8 U	3.3 JL	28 U	107 J	1.7 JL	-	25 U	26 U	0.54 U	2.1	0.54 U
trans-1,2-Dichloroethene	190	100,000	1,000,000	190		0.49 U	25 U	24 U	29 U	0.4 U	-	-	26 U	23 U	-	-	23 U	24 U	0.5 U	0.44 U	0.5 U
cis-1,3-Dichloropropene	-	-	-	-		0.26 U	14 U	13 U	16 U	0.22 U	-	-	14 U	13 U	-	4.6 U	13 U	13 U	0.27 U	0.24 U	0.27 U
Ethylbenzene	1,000	41,000	780,000	1,000		0.8 U	42 U	39 U	48 U	0.66 U	-	-	43 U	39 U	-	-	38 U	40 U	0.82 U	0.73 U	0.82 U
Isopropylbenzene	-	-	-	-		0.19 U	10 U	9.5 U	12 U	0.16 U	-	-	10 U	9.4 U	-	-	9.3 U	9.8 U	0.2 U	0.18 U	0.2 U
p-Isopropyltoluene	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-				-	-
Methyl acetate	-	-	-	-		0.71 U	37 U	34 U	43 U	0.58 U	-	-	38 U	34 U	-	-	34 U	35 U	0.73 U	0.65 U	0.72 U
Methylcyclohexane	-	-	-	-		0.34 U	18 U	17 U	21 U	0.28 U	-	-	18 U	16 U	-	-	16 U	17 U	0.35 U	0.31 U	0.35 U
Methyl tert-butyl ether	930	100,000	1,000,000	930		0.21 U	11 U	10 U	13 U	0.17 U	-	-	11 U	10 U	-	-	10 U	11 U	0.22 U	0.19 U	0.22 U
Methylene chloride	50	100,000	1,000,000	50		2.5 B	32 U	30 U	37 U	3.2 B	3.5 JL	2.9 JL	33 U	30 U	2.1 JL	4.5 U	29 U	31 U	2.8 B	4.3 B	2 JB
Naphthalene	12,000	100,000	1,000,000	12,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	3,900	100,000	1,000,000	3,900		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	1,300	19,000	300,000	1,300		3.2	1,080	346	9,010	1.7 J	7.8 JL	4.6 U	194	18 U	4.6 U	4.6 U	1,260	686	5.8	2.5	1.3 J
Toluene	700	100,000	1,000,000	700		0.24 U	12 U	12 U	14 U	0.36 J	-	-	13 U	12 U	-	-	11 U	12 U	0.25 U	0.22 U	0.25 U
1,2,4-Trichlorobenzene	-	-	-	-		0.6 U	31 U	29 U	36 U	0.49 U	-	-	32 U	29 U	-	-	28 U	30 U	0.61 U	0.55 U	0.61 U
1,1,1-Trichloroethane	680	100,000	1,000,000	680		0.25 U	187	250	984	0.21 U	4.8 U	4.6 U	198	12 U	4.6 U	4.6 U	12 U	13 U	0.26 U	0.23 U	0.26 U
1,1,2-Trichloroethane	-	-	-	-		0.67 U	35 U	33 U	40 U	0.55 U	-	-	36 U	32 U	-	-	32 U	33 U	0.69 U	0.61 U	0.68 U
Trichloroethene	470	21,000	400,000	470		2.2 J	6,440	1,420	***57,900***	12.8	120 JL	8.3 JL	5,500	2,070	19 JL	2.9 JL	14 U	14 U	0.29 U	0.26 U	0.29 U
1,2,4-Trimethylbenzene	3,600	52,000	380,000	3,600		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	8,400	52,000	380,000	8,400		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	20	900	27,000	20		1.1 U	55 U	52 U	64 U	0.87 U	-	-	57 U	51 U	-	-	50 U	53 U	1.1 U	0.97 U	1.1 U
m,p-Xylene	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (total)	260	100,000	1,000,000	1,600		0.26 U	13 U	12 U	15 U	0.21 U	-	-	14 U	12 U	-	-	12 U	13 U	0.26 U	0.23 U	0.26 U
Total TIC, Volatile (c)	-	-	-	-		2.8	0	720	0	0	-	-	0	3,850	-	-	0	1,960	0	0	0

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

Sample Location:					WSP-SB-623		WSP-SB-624			WSP-SB-625		WSP-SB-626				LBA-MW-01		LBA-MW-02		LBA-MW-03
Sampling Entity:					WSP	LaBella	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	LaBella	WSP	LaBella	LaBella	WSP	LaBella
Depth (feet bgs):					4-5.5	2	0-2	0-2	2-2.5	0-2	2-2.5	0-2	2-3	6-7	7	1	5.5	6-7.5	6-7.5	2
Date Sampled:					04/30/14	04/30/14	04/30/14 (e)	04/30/14 (e)	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	08/12/13	08/12/13	08/13/13	08/13/13	08/14/13
	NYSDEC SCOs (b)																			
Parameters	Unrestricted	Restricted Residential	Industrial	Protection of Groundwater																
VOCs (µg/kg)																				
Acetone	50	100,000	1,000,000	50	170 U	4.6 U	960 U	840 U	3.8 U	380 U	2.8 U	170 U	200 U	160 U	4.8 U	400 U	5.5 J	2.3 J	53.7	5.5 U
Benzene	60	4,800	89,000	60	20 U	-	120 U	100 U	0.46 U	46 U	0.34 U	21 U	24 U	19 U	-	20 U	5.5 U	5.6 U	0.59 U	5.5 U
2-Butanone (MEK)	120	100,000	1,000,000	120	180 U	-	1,000 U	920 U	4.2 U	420 U	3.1 U	190 U	220 U	170 U	-	200 U	5.5 U	5.6 U	5.9 U	5.5 U
Carbon disulfide	-	-	-	-	7.8 U	-	45 U	39 U	0.18 U	18 U	0.13 U	8.1 U	9.2 U	7.3 U	-	200 U	5.5 U	5.6 U	13.5	5.5 U
Chlorobenzene	1,100	100,000	1,000,000	1,100	9.3 U	-	54 U	47 U	0.22 U	22 U	0.16 U	9.7 U	11 U	8.8 U	-	81 U	5.5 U	5.6 U	2.4 U	5.5 U
Chloroethane	-	-	-		45 U	-	260 U	230 U	1 U	100 U	0.75 U	47 U	53 U	42 U	-	200 U	5.5 U	5.6 U	5.9 U	5.5 U
Chloroform	370	49,000	700,000	370	10 U	-	58 U	51 U	0.23 U	23 U	0.17 U	10 U	12 U	9.5 U	-	81 U	5.5 U	5.6 U	2.4 U	5.5 U
Chloromethane	-	-	-	-	33 U	-	190 U	170 U	0.77 U	77 U	0.56 U	35 U	40 U	32 U	-	200 U	5.5 U	5.6 U	5.9 U	5.5 U
Cyclohexane	-	-	-	-	17 U	-	100 U	89 U	0.4 U	40 U	0.29 U	18 U	21 U	17 U	-	200 U	-	-	5.9 U	-
1,1-Dichloroethane	270	26,000	480,000	270	16 U	-	91 U	80 U	0.36 U	36 U	0.27 U	17 U	19 U	15 U	-	81 U	5.5 U	5.6 U	2.4 U	5.5 U
cis-1,2-Dichloroethene	250	100,000	1,000,000	250	27 U	-	11,300	8,380	2.3 J	11,900	0.75 J	28 U	32 U	25 U	-	81 U	5.5 U	5.6 U	2.4 U	5.5 U
trans-1,2-Dichloroethene	190	100,000	1,000,000	190	25 U	-	140 U	130 U	0.57 U	57 U	0.42 U	26 U	29 U	23 U	-	81 U	5.5 U	5.6 U	2.4 U	5.5 U
cis-1,3-Dichloropropene	-	-	-	-	13 U	2.6 JL	77 U	68 U	0.31 U	31 U	0.23 U	14 U	16 U	13 U	4.8 U	81 U	5.5 U	5.6 U	2.4 U	5.5 U
Ethylbenzene	1,000	41,000	780,000	1,000	41 U	-	240 U	210 U	0.94 U	94 U	0.69 U	43 U	48 U	39 U	-	81 U	5.5 U	5.6 U	2.4 U	5.5 U
Isopropylbenzene	-	-	-	-	9.9 U	-	57 U	50 U	0.23 U	23 U	0.17 U	10 U	12 U	9.4 U	-	200 U	5.5 U	5.6 U	5.9 U	5.5 U
p-Isopropyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5 U	5.6 U	-	5.5 U
Methyl acetate	-	-	-	-	36 U	-	210 U	180 U	0.83 U	83 U	0.6 U	38 U	43 U	34 U	-	200 U	-	-	5.9 U	-
Methylcyclohexane	-	-	-	-	17 U	-	100 U	88 U	0.4 U	40 U	0.29 U	18 U	21 U	16 U	-	200 U	-	-	5.9 U	-
Methyl tert-butyl ether	930	100,000	1,000,000	930	11 U	-	62 U	55 U	0.25 U	25 U	0.18 U	11 U	13 U	10 U	-	81 U	5.5 U	5.6 U	2.4 U	5.5 U
Methylene chloride	50	100,000	1,000,000	50	31 U	3.8 JL	180 U	160 U	2 JB	73 U	2.1 B	33 U	37 U	30 U	2.4 JL	81 U	5.5 J	2.7 J	8.3	5.2 J
Naphthalene	12,000	100,000	1,000,000	12,000	-	-	-	-	-	-	-	-	-	-	-	-	5.5 U	5.6 U	-	34
n-Propylbenzene	3,900	100,000	1,000,000	3,900	-	-	-	-	-	-	-	-	-	-	-	-	5.5 U	5.6 U	-	5.5 U
Tetrachloroethene	1,300	19,000	300,000	1,300	97.5 J	11 JL	***116,000***	***87,400***	9.5	***66,600***	2.3	2,320	1,400	838	11 JL	81 U	5.5 U	5.6 U	2.4 U	5.5 U
Toluene	700	100,000	1,000,000	700	12 U	-	70 U	62 U	0.28 U	28 U	0.2 U	13 U	14 U	12 U	-	200 U	5.5 U	5.6 U	0.62 J	5.5 U
1,2,4-Trichlorobenzene	-	-	-	-	30 U	-	170 U	150 U	0.7 U	70 U	0.51 U	32 U	36 U	29 U	-	200 U	-	-	3.6 J	-
1,1,1-Trichloroethane	680	100,000	1,000,000	680	13 U	4.6 U	74 U	65 U	0.3 U	30 U	0.22 U	13 U	15 U	12 U	4.8 U	81 U	5.5 U	5.6 U	2.4 U	5.5 U
1,1,2-Trichloroethane	-	-	-	-	34 U	-	200 U	170 U	0.78 U	78 U	0.57 U	35 U	40 U	32 U	-	81 U	5.5 U	5.6 U	2.4 U	5.5 U
Trichloroethene	470	21,000	400,000	470	15 U	4.6 U	5,060	3,830	0.33 U	4,980	0.24 U	15 U	17 U	14 U	4.8 U	81 U	-	5.6 U	2.4 U	1.7 J
1,2,4-Trimethylbenzene	3,600	52,000	380,000	3,600	-	-	-	-	-	-	-	-	-	-	-	-	5.5 U	5.6 U	-	5.5 U
1,3,5-Trimethylbenzene	8,400	52,000	380,000	8,400	-	-	-	-	-	-	-	-	-	-	-	-	5.5 U	5.6 U	-	5.5 U
Vinyl chloride	20	900	27,000	20	54 U	-	310 U	270 U	1.2 U	120 U	0.91 U	56 U	64 U	51 U	-	81 U	5.5 U	5.6 U	2.4 U	5.5 U
m,p-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5 U	5.6 U	-	5.5 U
o-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5 U	5.6 U	-	5.5 U
Xylene (total)	260	100,000	1,000,000	1,600	13 U	-	75 U	66 U	0.3 U	30 U	0.22 U	14 U	15 U	12 U	-	81 U	5.5 U	5.6 U	2.4 U	5.5 U
Total TIC, Volatile (c)	-	-	-	-	3,950	-	0	0	0	0	0	0	0	1,520	-	0	0	0	0	0

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

	NYSDEC SCOs (b)																					
				Sample Location:	**LBA-MW-04**		**LBA-MW-06**	**LBA-MW-08**		**LBA-MW-09**		**LBA-MW-11**		**LBA-MW-12**		**LBA-MW-14**	**LBA-MW-17**		**LBA-MW-19**		**LBA-MW-21**
				Sampling Entity:	**LaBella**	**WSP**	**LaBella**	**LaBella**	**WSP**	**LaBella**	**WSP**	**LaBella**	**WSP**	**LaBella**	**WSP**	**LaBella**	**LaBella**	**WSP**	**LaBella**	**WSP**	**LaBella**
				Depth (feet bgs):	**9.5-10**	**9.5-10**	**9.5-10**	**0.6-1.4**	**0.6-1.4**	**0.5-2.3**	**0.5-2.3**	**0.5-2**	**0.5-2**	**1-2.4**	**0.1-2.4**	**20-24**	**5**	**5**	**0-1.9**	**0-1.9**	**13-14.2**
				Date Sampled:	**08/15/13**	**08/15/13**	**08/19/13**	**08/19/13**	**08/19/13**	**08/19/13**	**08/19/13**	**08/20/13**	**08/20/13**	**08/21/13**	**08/21/13**	**08/26/13**	**08/26/13**	**08/26/13**	**08/27/13**	**08/27/13**	**08/28/13**
Parameters	**Unrestricted**	**Restricted Residential**	**Industrial**	**Protection of Groundwater**																	
VOCs (µg/kg)																					
Acetone	50	100,000	1,000,000	50	5.7 U	6.5 J	5.4 U	2.6 J	12 U	5.3 U	13 U	4.8 U	11 U	4.9 U	10 U	4.7 U	5.0 U	10 U	5.6 U	13 U	6.7
Benzene	60	4,800	89,000	60	5.7 U	0.59 U	5.4 U	5.5 U	0.73	5.3 U	0.63 U	4.8 U	0.95	4.9 U	0.93	4.7 U	5.0 U	0.51 U	5.6 U	1.1	5.5 U
2-Butanone (MEK)	120	100,000	1,000,000	120	5.7 U	5.9 U	5.4 U	5.5 U	5.8 U	5.3 U	6.3 U	4.8 U	5.5 U	4.9 U	5 U	4.7 U	5.0 U	5.1 U	5.6 U	6.5 U	5.5 U
Carbon disulfide	-	-	-	-	5.7 U	5.9 U	5.4 U	5.5 U	3.6 J	5.3 U	6.3 U	4.8 U	1.1 J	4.9 U	0.7 J	4.7 U	5.0 U	0.44 J	5.6 U	1 J	5.5 U
Chlorobenzene	1,100	100,000	1,000,000	1,100	5.7 U	2.4 U	5.4 U	5.5 U	2.3 U	5.3 U	2.5 U	4.8 U	2.2 U	4.9 U	2 U	4.7 U	5.0 U	2 U	5.6 U	2.6 U	5.5 U
Chloroethane	-	-	-		5.7 U	5.9 U	5.4 U	5.5 U	5.8 U	5.3 U	6.3 U	4.8 U	5.5 U	4.9 U	5 U	4.7 U	5.0 U	5.1 U	5.6 U	6.5 U	5.5 U
Chloroform	370	49,000	700,000	370	5.7 U	2.4 U	5.4 U	5.5 U	2.3 U	5.3 U	2.5 U	4.8 U	2.2 U	4.9 U	2 U	4.7 U	5.0 U	2 U	5.6 U	0.73 J	5.5 U
Chloromethane	-	-	-	-	5.7 U	5.9 U	5.4 U	5.5 U	5.8 U	5.3 U	6.3 U	4.8 U	5.5 U	4.9 U	5 U	4.7 U	5.0 U	5.1 U	5.6 U	6.5 U	5.5 U
Cyclohexane	-	-	-	-	-	5.9 U	-	-	2.6 J	-	6.3 U	-	2 J	-	2.7 J	-	-	5.1 U	-	6.5 U	-
1,1-Dichloroethane	270	26,000	480,000	270	5.7 U	2.4 U	5.4 U	5.5 U	0.88 J	5.3 U	2.5 U	4.8 U	2.2 U	4.9 U	2 U	4.7 U	5.0 U	2 U	5.6 U	0.81 J	5.5 U
cis-1,2-Dichloroethene	250	100,000	1,000,000	250	5.7 U	2.4 U	5.4 U	5.5 U	2.3 U	5.3 U	2.5 U	4.8 U	2.2 U	4.9 U	2 U	4.7 U	5.0 U	2 U	5.6 U	0.67 J	5.5 U
trans-1,2-Dichloroethene	190	100,000	1,000,000	190	5.7 U	2.4 U	5.4 U	5.5 U	2.3 U	5.3 U	2.5 U	4.8 U	2.2 U	4.9 U	2 U	4.7 U	5.0 U	2 U	5.6 U	2.6 U	5.5 U
cis-1,3-Dichloropropene	-	-	-	-	5.7 U	2.4 U	5.4 U	5.5 U	2.3 U	5.3 U	2.5 U	4.8 U	2.2 U	4.9 U	2 U	4.7 U	5.0 U	2 U	5.6 U	2.6 U	5.5 U
Ethylbenzene	1,000	41,000	780,000	1,000	5.7 U	2.4 U	5.4 U	5.5 U	2.3 U	5.3 U	2.5 U	4.8 U	2.2 U	4.9 U	2 U	4.7 U	5.0 U	2 U	5.6 U	0.79 J	5.5 U
Isopropylbenzene	-	-	-	-	5.7 U	5.9 U	5.4 U	5.5 U	5.8 U	5.3 U	6.3 U	4.8 U	5.5 U	4.9 U	5 U	4.7 U	5.0 U	5.1 U	5.6 U	6.5 U	5.5 U
p-Isopropyltoluene	-	-	-	-	5.7 U	-	5.4 U	5.5 U	-	5.3 U	-	4.8 U	-	4.9 U	-	4.7 U	5.0 U	-	5.6 U	-	5.5 U
Methyl acetate	-	-	-	-	-	5.9 U	-	-	5.8 U	-	6.3 U	-	5.5 U	-	5 U	-	-	5.1 U	-	6.5 U	-
Methylcyclohexane	-	-	-	-	-	5.9 U	-	-	4.6 J	-	6.3 U	-	3.6 J	-	4.8 J	-	-	5.1 U	-	0.69 J	-
Methyl tert-butyl ether	930	100,000	1,000,000	930	5.7 U	2.4 U	5.4 U	5.5 U	2.3 U	5.3 U	2.5 U	4.8 U	2.2 U	4.9 U	2 U	4.7 U	5.0 U	2 U	5.6 U	2.6 U	5.5 U
Methylene chloride	50	100,000	1,000,000	50	5.7 U	2.4 U	5.4 U	1.9 J	3.3	5.3 U	2.4 J	3.3 J	2.9	3.4 J	3.4	1.9 J	2.8 B	2.4	5.6 U	8	5.5 U
Naphthalene	12,000	100,000	1,000,000	12,000	5.7 U	-	5.4 U	1.2 J	-	5.3 U	-	4.8 U	-	4.9 U	-	2.6 J	5.0 U	-	5.6 U	-	5.5 U
n-Propylbenzene	3,900	100,000	1,000,000	3,900	5.7 U	-	5.4 U	5.5 U	-	5.3 U	-	4.8 U	-	4.9 U	-	4.7 U	5.0 U	-	5.6 U	-	5.5 U
Tetrachloroethene	1,300	19,000	300,000	1,300	5.7 U	2.4 U	5.4 U	5.5 U	2.3 U	5.3 U	2.5 U	4.8 U	2.2 U	4.9 U	1.1 J	4.7 U	5.0 U	0.76 J	5.6 U	1.3 J	5.5 U
Toluene	700	100,000	1,000,000	700	5.7 U	5.9 U	5.4 U	5.5 U	1.2 J	5.3 U	0.51 J	4.8 U	1.4 J	4.9 U	1.8 J	4.7 U	5.0 U	0.79 J	5.6 U	4.5 J	5.5 U
1,2,4-Trichlorobenzene	-	-	-	-	-	5.9 U	-	-	5.8 U	-	6.3 U	-	5.5 U	-	5 U	-	-	5.1 U	-	6.5 U	-
1,1,1-Trichloroethane	680	100,000	1,000,000	680	5.7 U	2.4 U	5.4 U	5.5 U	2.3 U	5.3 U	2.5 U	4.8 U	2.2 U	4.9 U	2 U	4.7 U	5.0 U	2 U	5.6 U	6.9	5.5 U
1,1,2-Trichloroethane	-	-	-	-	5.7 U	2.4 U	5.4 U	5.5 U	2.3 U	5.3 U	2.5 U	4.8 U	2.2 U	4.9 U	2 U	4.7 U	5.0 U	2 U	5.6 U	2.6 U	5.5 U
Trichloroethene	470	21,000	400,000	470	5.7 U	2.4 U	5.4 U	5.5 U	0.69 J	5.3 U	2.5 U	4.8 U	2.2 U	4.9 U	1.3 J	4.7 U	5.0 U	2 U	5.6 U	1.9 J	5.5 U
1,2,4-Trimethylbenzene	3,600	52,000	380,000	3,600	5.7 U	-	5.4 U	5.5 U	-	5.3 U	-	4.8 U	-	4.9 U	-	4.7 U	5.0 U	-	5.6 U	-	5.5 U
1,3,5-Trimethylbenzene	8,400	52,000	380,000	8,400	5.7 U	-	5.4 U	5.5 U	-	5.3 U	-	4.8 U	-	4.9 U	-	4.7 U	5.0 U	-	5.6 U	-	5.5 U
Vinyl chloride	20	900	27,000	20	5.7 U	2.4 U	5.4 U	5.5 U	2.3 U	5.3 U	2.5 U	4.8 U	2.2 U	4.9 U	2 U	4.7 U	5.0 U	2 U	5.6 U	2.6 U	5.5 U
m,p-Xylene	-	-	-	-	5.7 U	-	5.4 U	5.5 U	-	5.3 U	-	4.8 U	-	4.9 U	-	4.7 U	5.0 U	-	5.6 U	-	5.5 U
o-Xylene	-	-	-	-	5.7 U	-	5.4 U	5.5 U	-	5.3 U	-	4.8 U	-	4.9 U	-	4.7 U	5.0 U	-	5.6 U	-	5.5 U
Xylene (total)	260	100,000	1,000,000	1,600	5.7 U	2.4 U	5.4 U	5.5 U	0.9 J	5.3 U	2.5 U	4.8 U	0.89 J	4.9 U	1.7 J	4.7 U	5.0 U	0.37 J	5.6 U	2.8	5.5 U
Total TIC, Volatile (c)	-	-	-	-	0	0	0	0	274	0	63	0	42.9	0	47.1	0	0	0	0	10.7	0

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

	NYSDEC SCOs (b)																			
				Sample Location:	LBA-MW-22		LBA-MW-24		LBA-MW-25		LBA-MW-26		LBA-MW-27		LBA-MW-28		LBA-TP-03		LBA-TP-10	LBA-TP-10A
				Sampling Entity:	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP
				Depth (feet bgs):	-	7	-	1	-	4	12	12	16	16-17.7	12	17-17.3	2	-	1.5	-
				Date Sampled:	08/28/13	08/28/13	08/29/13	08/29/13	08/29/13	08/29/13	08/30/13	08/30/13	08/30/13	08/30/13	09/03/13	09/03/13	08/08/13	08/08/13	08/09/13	08/09/13
Parameters	**Unrestricted**	**Restricted Residential**	**Industrial**	**Protection of Groundwater**																
VOCs (µg/kg)																				
Acetone	50	100,000	1,000,000	50	4.6 U	12 U	5.7 U	690 U	5.7 U	12 U	5.6 U	12 U	5.9 U	32.3	4.3	21.2	6.0 U	570 U	13 U	1,500 U
Benzene	60	4,800	89,000	60	4.6 U	0.6 U	5.7 U	21.8 J	5.7 U	0.58 U	5.6 U	0.61 U	5.9 U	0.68 U	5.8 U	0.69 U	6.0 U	29	13 U	73 U
2-Butanone (MEK)	120	100,000	1,000,000	120	4.6 U	6 U	5.7 U	350 U	5.7 U	5.8 U	5.6 U	6.1 U	5.9 U	6.8 U	5.8 U	6.9 U	6.0 U	280 U	13 U	730 U
Carbon disulfide	-	-	-	-	4.6 U	6 U	5.7 U	350 U	5.7 U	5.8 U	5.6 U	0.56 J	5.9 U	1.3 J	5.8 U	2.8 J	6.0 U	280 U	13 U	730 U
Chlorobenzene	1,100	100,000	1,000,000	1,100	4.6 U	2.4 U	5.7 U	140 U	5.7 U	2.3 U	5.6 U	2.4 U	5.9 U	2.7 U	5.8 U	2.8 U	6.0 U	110 U	13 U	290 U
Chloroethane	-	-	-		4.6 U	6 U	5.7 U	350 U	5.7 U	5.8 U	5.6 U	6.1 U	5.9 U	6.8 U	5.8 U	6.9 U	6.0 U	280 U	13 U	730 U
Chloroform	370	49,000	700,000	370	4.6 U	2.4 U	5.7 U	140 U	5.7 U	2.3 U	5.6 U	2.4 U	5.9 U	2.7 U	5.8 U	2.8 U	6.0 U	110 U	13 U	290 U
Chloromethane	-	-	-	-	4.6 U	6 U	5.7 U	350 U	5.7 U	5.8 U	5.6 U	6.1 U	5.9 U	6.8 U	5.8 U	6.9 U	6.0 U	280 U	13 U	730 U
Cyclohexane	-	-	-	-	-	6 U	-	47.5 J	-	5.8 U	-	6.1 U	-	6.8 U	-	6.9 U	-	280 U	-	730 U
1,1-Dichloroethane	270	26,000	480,000	270	4.6 U	2.4 U	1.8 J	140 U	5.7 U	2.3 U	5.6 U	2.4 U	5.9 U	2.7 U	5.8 U	2.8 U	6.0 U	110 U	13 U	290 U
cis-1,2-Dichloroethene	250	100,000	1,000,000	250	4.6 U	2.4 U	4.3 J	1,400	5.7 U	1.3 J	5.6 U	2.4 U	5.9 U	2.7 U	5.8 U	2.8 U	6.0 U	110 U	13 U	237 J
trans-1,2-Dichloroethene	190	100,000	1,000,000	190	4.6 U	2.4 U	5.7 U	564	5.7 U	2.3 U	5.6 U	2.4 U	5.9 U	2.7 U	5.8 U	2.8 U	6.0 U	110 U	13 U	290 U
cis-1,3-Dichloropropene	-	-	-	-	4.6 U	2.4 U	5.7 U	140 U	5.7 U	2.3 U	5.6 U	2.4 U	5.9 U	2.7 U	5.8 U	2.8 U	6.0 U	110 U	13 U	290 U
Ethylbenzene	1,000	41,000	780,000	1,000	4.6 U	2.4 U	5.7 U	29.5 J	5.7 U	2.3 U	5.6 U	2.4 U	5.9 U	2.7 U	5.8 U	2.8 U	6.0 U	30.1 J	13 U	290 U
Isopropylbenzene	-	-	-	-	4.6 U	6 U	5.7 U	350 U	5.7 U	5.8 U	5.6 U	6.1 U	5.9 U	6.8 U	5.8 U	6.9 U	6.0 U	280 U	13 U	730 U
p-Isopropyltoluene	-	-	-	-	4.6 U	-	5.7 U	-	5.7 U	-	5.6 U	-	5.9 U	-	5.8 U	-	6.0 U	-	13 U	-
Methyl acetate	-	-	-	-	-	6 U	-	350 U	-	5.8 U	-	6.1 U	-	6.8 U	-	6.9 U	-	280 U	-	730 U
Methylcyclohexane	-	-	-	-	-	6 U	-	152 J	-	5.8 U	-	6.1 U	-	6.8 U	-	6.9 U	-	280 U	-	730 U
Methyl tert-butyl ether	930	100,000	1,000,000	930	4.6 U	2.4 U	1.5 J	140 U	5.7 U	2.3 U	5.6 U	2.4 U	5.9 U	2.7 U	5.8 U	2.8 U	6.0 U	110 U	13 U	290 U
Methylene chloride	50	100,000	1,000,000	50	2.8 B	2.4 U	5.7 U	140 U	4.1 J	2 J	5.6 U	2 J	5.9 U	2.6 J	5.8 U	2.6 J	6.0 U	110 U	13 U	290 U
Naphthalene	12,000	100,000	1,000,000	12,000	4.6 U	-	5.7 U	-	5.7 U	-	5.6 U	-	5.9 U	-	5.8 U	-	6.0 U	-	13 U	-
n-Propylbenzene	3,900	100,000	1,000,000	3,900	4.6 U	-	5.7 U	-	5.7 U	-	5.6 U	-	5.9 U	-	5.8 U	-	6.0 U	-	13 U	-
Tetrachloroethene	1,300	19,000	300,000	1,300	4.6 U	2.4 U	5.7 U	140 U	5.7 U	4.3	5.6 U	2.4 U	5.9 U	2.7 U	5.8 U	2.8 U	6.0 U	110 U	24	11,700
Toluene	700	100,000	1,000,000	700	4.6 U	0.86 J	5.7 U	92.8 J	5.7 U	0.87 J	5.6 U	0.56 J	5.9 U	1 J	5.8 U	0.6 J	6.0 U	75.4 J	13 U	730 U
1,2,4-Trichlorobenzene	-	-	-	-	-	6 U	-	510	-	5.8 U	-	6.1 U	-	6.8 U	-	6.9 U	-	280 U	-	730 U
1,1,1-Trichloroethane	680	100,000	1,000,000	680	4.6 U	2.4 U	5.7 U	140 U	5.7 U	2.3 U	5.6 U	2.4 U	5.9 U	2.7 U	5.8 U	2.8 U	6.0 U	110 U	13 U	632
1,1,2-Trichloroethane	-	-	-	-	4.6 U	2.4 U	5.7 U	140 U	5.7 U	2.3 U	5.6 U	2.4 U	5.9 U	2.7 U	5.8 U	2.8 U	6.0 U	110 U	13 U	290 U
Trichloroethene	470	21,000	400,000	470	4.6 U	2.4 U	1.5 J	2,510	5.7 U	2.3 U	5.6 U	2.4 U	5.9 U	2.7 U	5.8 U	2.8 U	6.0 U	110 U	310	***101,000***
1,2,4-Trimethylbenzene	3,600	52,000	380,000	3,600	4.6 U	-	5.7 U	-	5.7 U	-	5.6 U	-	5.9 U	-	5.8 U	-	6.0 U	-	13 U	-
1,3,5-Trimethylbenzene	8,400	52,000	380,000	8,400	4.6 U	-	5.7 U	-	5.7 U	-	5.6 U	-	5.9 U	-	5.8 U	-	6.0 U	-	13 U	-
Vinyl chloride	20	900	27,000	20	4.6 U	2.4 U	5.7 U	176	5.2	2.3 U	5.6 U	2.4 U	5.9 U	2.7 U	5.8 U	2.8 U	6.0 U	110 U	13 U	290 U
m,p-Xylene	-	-	-	-	4.6 U	-	5.7 U	-	5.7 U	-	5.6 U	-	5.9 U	-	5.8 U	-	6.0 U	-	13 U	-
o-Xylene	-	-	-	-	4.6 U	-	5.7 U	-	5.7 U	-	5.6 U	-	5.9 U	-	5.8 U	-	6.0 U	-	13 U	-
Xylene (total)	260	100,000	1,000,000	1,600	4.6 U	0.57 J	5.7 U	155	5.7 U	0.36 J	5.6 U	2.4 U	5.9 U	0.54 J	5.8 U	2.8 U	6.0 U	117	13 U	290 U
Total TIC, Volatile (c)	-	-	-	-	0	0	58.8	1,240	0	0	0	0	0	0	208	27	55.8	610	0	0

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

	NYSDEC SCOs (b)				Sample Location:	LBA-TP-16	LBA-TP-16B	SB-100-SS	SS-100	SS-101	SS-102	SB-103-SS	SS-103	SB-104-SS	SS-104	SS-106		SS-122-SS	SS-128-SS
					Sampling Entity:	LaBella	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP
					Depth (feet bgs):	6	-	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"
					Date Sampled:	08/09/13	08/09/13	11/13/12	11/13/12	11/14/12	11/13/12	11/13/12	11/14/12	11/13/12	11/14/12	11/14/12 (e)	11/14/12 (e)	11/13/12	11/13/12
Parameters	**Unrestricted**	**Restricted Residential**	**Industrial**	**Protection of Groundwater**															
VOCs (µg/kg)																			
Acetone	50	100,000	1,000,000	50		5.6 U	15.3	106 U	352	812	432	115 U	553	123 U	23 U	872 J	872	145 U	639
Benzene	60	4,800	89,000	60		5.6 U	0.6 U	6.2 U	9.6 U	11.3 U	6.2 U	6.2 U	8.8 U	5.9 U	14.1 U	10.8 U	10.3 U	6.5 U	6.8 U
2-Butanone (MEK)	120	100,000	1,000,000	120		5.6 U	6 U	12.4 U	21.8	124	27.4	12.4 U	17.7 U	12.3	91.3	63.4	72.7	18.3	28.6
Carbon disulfide	-	-	-	-		5.6 U	6 U	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	1,100	100,000	1,000,000	1,100		5.6 U	2.4 U	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-		5.6 U	6 U	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	370	49,000	700,000	370		5.6 U	2.4 U	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	-	-	-	-		5.6 U	6 U	-	-	-	-	-	-	-	-	-	-	-	-
Cyclohexane	-	-	-	-		-	6 U	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	270	26,000	480,000	270		5.6 U	2.4 U	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	250	100,000	1,000,000	250		5.6 U	2.4 U	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	190	100,000	1,000,000	190		5.6 U	2.4 U	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-		5.6 U	2.4 U	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	1,000	41,000	780,000	1,000		5.6 U	2.4 U	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	-	-	-	-		5.6 U	6 U	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	-	-	-	-		5.6 U	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl acetate	-	-	-	-		-	6 U	61.9 U	96.2 U	113 U	90.1 U	62.0 U	88.0 U	59.4 U	141 U	108 U	103 U	444	67.8 U
Methylcyclohexane	-	-	-	-		-	6 U	-	-	-	-	-	-	-	-	-	-	-	-
Methyl tert-butyl ether	930	100,000	1,000,000	930		5.6 U	2.4 U	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride	50	100,000	1,000,000	50		2.8 J	18.7	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	12,000	100,000	1,000,000	12,000		5.6 U	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	3,900	100,000	1,000,000	3,900		5.6 U	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	1,300	19,000	300,000	1,300		5.6 U	2.4 U	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	700	100,000	1,000,000	700		5.6 U	0.87 J	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	-	-	-	-		-	6 U	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	680	100,000	1,000,000	680		5.6 U	2.4 U	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-		5.6 U	2.4 U	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	470	21,000	400,000	470		4.2 J	22.9	6.2 U	9.6 U	11.3 U	19.6	6.2 U	8.8 U	5.9 U	14.1 U	10.8 U	10.3 U	6.5 U	7.5
1,2,4-Trimethylbenzene	3,600	52,000	380,000	3,600		5.6 U	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	8,400	52,000	380,000	8,400		5.6 U	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	20	900	27,000	20		5.6 U	0.72 J	-	-	-	-	-	-	-	-	-	-	-	-
m,p-Xylene	-	-	-	-		5.6 U	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-		5.6 U	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (total)	260	100,000	1,000,000	1,600		5.6 U	2.4 U	-	-	-	-	-	-	-	-	-	-	-	-
Total TIC, Volatile (c)	-	-	-	-		0	0	-	-	-	-	-	-	-	-	-	-	-	-

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

	NYSDEC SCOs (b)											
Sample Location:					**SRI-SB-100**		**SRI-SB-101**	**SRI-SB-102**	**SRI-SB-103**	**SRI-SB-104**	**SRI-SB-105**	**SRI-SB-106**
Sampling Entity:					**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**
Depth (feet bgs):					**1**	**1**	**1**	**1**	**0.75**	**0.25**	**3.5**	**1**
Date Sampled:					**04/16/15 (e)**	**04/16/15 (e)**	**04/16/15**	**04/16/15**	**04/16/15**	**04/16/15**	**04/16/15**	**05/07/15**
Parameters	**Unrestricted**	**Restricted Residential**	**Industrial**	**Protection of Groundwater**								
VOCs (µg/kg)												
Acetone	50	100,000	1,000,000	50	11 U	11 U	550 U	8.2 U	490 U	1,200 U	10 U	1,300 U
Benzene	60	4,800	89,000	60	0.83	0.68	27 U	0.41 U	24 U	59 U	0.5 U	65 U
2-Butanone (MEK)	120	100,000	1,000,000	120	11 U	11 U	550 U	8.2 U	490 U	1,200 U	10 U	1,300 U
Carbon disulfide	-	-	-	-	3.2 J	2.0 J	270 U	4.1 U	240 U	590 U	1.2 J	650 U
Chlorobenzene	1,100	100,000	1,000,000	1,100	2.3 U	2.2 U	110 U	1.6 U	97 U	230 U	2.0 U	260 U
Chloroethane	-	-	-		5.6 U	5.4 U	270 U	4.1 U	240 U	590 U	5.0 U	650 U
Chloroform	370	49,000	700,000	370	2.3 U	2.2 U	110 U	1.6 U	97 U	230 U	2.0 U	260 U
Chloromethane	-	-	-	-	5.6 U	5.4 U	270 U	4.1 U	240 U	590 U	1.3 J	650 U
Cyclohexane	-	-	-	-	4.4 J	3.4 J	270 U	4.1 U	240 U	590 U	5.0 U	650 U
1,1-Dichloroethane	270	26,000	480,000	270	2.3 U	2.2 U	110 U	1.6 U	97 U	230 U	2.0 U	260 U
cis-1,2-Dichloroethene	250	100,000	1,000,000	250	2.3 U	2.2 U	110 U	1.7	97 U	8,620	9.8	10,100
trans-1,2-Dichloroethene	190	100,000	1,000,000	190	2.3 U	2.2 U	110 U	1.6 U	97 U	2,670	2.0 U	2,740
cis-1,3-Dichloropropene	-	-	-	-	2.3 U	2.2 U	110 U	1.6 U	97 U	230 U	2.0 U	260 U
Ethylbenzene	1,000	41,000	780,000	1,000	2.3 U	2.2 U	110 U	1.6 U	97 U	230 U	2.0 U	260 U
Isopropylbenzene	-	-	-	-	5.6 U	5.4 U	270 U	4.1 U	240 U	590 U	5.0 U	650 U
p-Isopropyltoluene	-	-	-	-	-	-	-	-	-	-	-	-
Methyl acetate	-	-	-	-	5.6 U	5.4 U	270 U	4.1 U	240 U	590 U	5.0 U	650 U
Methylcyclohexane	-	-	-	-	5.7	4.3 J	270 U	4.1 U	240 U	590 U	5.0 U	650 U
Methyl tert-butyl ether	930	100,000	1,000,000	930	2.3 U	2.2 U	110 U	1.6 U	97 U	230 U	2.0 U	260 U
Methylene chloride	50	100,000	1,000,000	50	2.3 U	2.2 U	110 U	1.6 U	97 U	230 U	2.0 U	260 U
Naphthalene	12,000	100,000	1,000,000	12,000	-	-	-	-	-	-	-	-
n-Propylbenzene	3,900	100,000	1,000,000	3,900	-	-	-	-	-	-	-	-
Tetrachloroethene	1,300	19,000	300,000	1,300	2.3 U	2.2 U	110 U	1.6 U	97 U	230 U	2.0 U	260 U
Toluene	700	100,000	1,000,000	700	1.4 J	1.0 J	270 U	4.1 U	240 U	94.1 J	1.2 J	650 U
1,2,4-Trichlorobenzene	-	-	-	-	5.6 U	5.4 U	270 U	4.1 U	240 U	590 U	5.0 U	650 U
1,1,1-Trichloroethane	680	100,000	1,000,000	680	2.3 U	2.2 U	110 U	1.6 U	97 U	230 U	2.0 U	260 U
1,1,2-Trichloroethane	-	-	-	-	2.3 U	2.2 U	110 U	1.6 U	97 U	230 U	2.0 U	260 U
Trichloroethene	470	21,000	400,000	470	6.1	5.1	797	10	828	***22,000***	20.6	***31,500***
1,2,4-Trimethylbenzene	3,600	52,000	380,000	3,600	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	8,400	52,000	380,000	8,400	-	-	-	-	-	-	-	-
Vinyl chloride	20	900	27,000	20	2.3 U	2.2 U	110 U	1.6 U	97 U	230 U	2.0 U	260 U
m,p-Xylene	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (total)	260	100,000	1,000,000	1,600	0.66 J	0.53 J	110 U	1.6 U	97 U	230 U	U	U
Total TIC, Volatile (c)	-	-	-	-	-	-	-	-	-	-	-	-

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

Parameters	NYSDEC SCOs: Unrestricted	Restricted Residential	Industrial	Protection of Groundwater	SB-100	SB-101	SB-102	SB-103	SB-104	SB-105	SB-106	SB-107	SB-108	SB-109	SB-111	SB-112	SB-113	SB-114	SB-115	SB-116	SB-117	SB-118	SB-119		SB-120
Sampling Entity:					WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP		WSP
Depth (feet bgs):					0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	2.5-4	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2	0.5-2.5	0.5-2.5	7-7.5	0.5-2.5	0.5-2.5	0.5-2.5
Date Sampled:					11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12 (e)	11/13/12 (e)	11/14/12
SVOCs (µg/kg)																									
Acenaphthene	20,000	100,000	1,000,000	98,000	401 U	364 U	389 U	425 U	371 U	388 U	371 U	349 U	1,220	388 U	405 U	378 U	364 U	345 U	334 U	371 U	359 U	388 U	398 U	357 U	346 U
Acenaphthylene	100,000	100,000	1,000,000	107,000	401 U	364 U	389 U	425 U	371 U	388 U	371 U	349 U	1,150	388 U	405 U	378 U	364 U	345 U	334 U	371 U	359 U	388 U	398 U	357 U	346 U
Acetophenone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthracene	100,000	100,000	1,000,000	1,000,000	401 U	364 U	389 U	425 U	371 U	388 U	371 U	349 U	2,760	465	405 U	378 U	364 U	345 U	334 U	371 U	359 U	388 U	398 U	357 U	346 U
Benzo(a)anthracene	1,000	1,000	11,000	1,000	401 U	364 U	389 UJ	425 U	371 U	388 U	***1,450***	349 U	***14,000 J***	***1,570***	405 U	378 U	364 U	345 U	334 UJ	371 U	359 UJ	388 UJ	398 UR	357 UR	346 U
Benzo(a)pyrene	1,000	1,000	1,100	22,000	401 U	364 U	389 UR	425 U	371 U	388 U	***1,880 J***	349 U	***14,700 J***	***1,350 J***	405 U	378 UJ	364 U	345 UJ	334 UR	371 U	359 UJ	388 UR	398 UR	357 UR	346 U
Benzo(b)fluoranthene	1,000	1,000	11,000	1,700	401 U	364 U	389 UR	425 U	371 U	489	***3,350 J***	538	***22,300 J***	***1,950 J***	405 U	378 UJ	364 U	345 UJ	334 UR	371 U	359 UJ	388 UR	398 UR	357 UR	346 U
Benzo(g,h,i)perylene	100,000	100,000	1,000,000	1,000,000	401 U	364 U	389 UR	425 U	371 U	388 U	1,120 J	349 U	5,430 J	397 J	405 U	378 UJ	364 U	345 UJ	334 UR	371 U	359 UJ	388 UR	398 UR	357 UR	346 U
Benzo(k)fluoranthene	800	3,900	110,000	1,700	401 U	364 U	389 UR	425 U	371 U	388 U	1,240 J	349 U	***8,220 J***	1,010 J	405 U	378 UJ	364 U	345 UJ	334 UR	371 U	359 UJ	388 UR	398 UR	357 UR	346 U
Carbazole	-	-	-	-	401 U	364 U	389 U	425 U	371 U	388 U	371 U	349 U	642	388 U	405 U	378 U	364 U	345 U	334 U	371 U	359 U	388 U	398 U	357 U	346 U
Chrysene	1,000	3,900	110,000	1,000	401 U	364 U	389 UJ	425 U	371 U	443	1,810	368	***15,000 J***	1,670	405 U	378 U	364 U	345 U	334 UJ	371 U	359 UJ	388 UJ	398 UR	357 UR	346 U
Dibenzo(a,h)anthracene	330	330	1,100	1,000,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzofuran	7,000	59,000	1,000,000	210,000	401 U	364 U	389 U	425 U	371 U	388 U	371 U	349 U	727	388 U	405 U	378 U	364 U	345 U	334 U	371 U	359 U	388 U	398 U	357 U	346 U
Diethyl phthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Di-n-butyl phthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	100,000	100,000	1,000,000	1,000,000	401 U	364 U	389 U	425 U	371 U	766	2,870	721	25,900	2,470	405 U	378 U	364 U	345 U	334 U	371 U	359 U	966	398 U	357 U	346 U
Fluorene	30,000	100,000	1,000,000	386,000	401 U	364 U	389 U	425 U	371 U	388 U	371 U	349 U	759	388 U	405 U	378 U	364 U	345 U	334 U	371 U	359 U	388 U	398 U	357 U	346 U
Hexachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	500	500	11,000	8,200	401 U	364 U	389 UR	425 U	371 U	388 U	***805 J***	349 U	***5,610***	388 UJ	405 U	378 UJ	364 U	345 UJ	334 UR	371 U	359 UJ	388 UR	398 UR	357 UR	346 U
2-Methylnaphthalene	-	-	-	-	401 U	364 U	389 U	425 U	371 U	388 U	371 U	349 U	636	388 U	405 U	378 U	364 U	345 U	949	371 U	359 U	388 U	398 U	357 U	346 U
Naphthalene	12,000	100,000	1,000,000	12,000	401 U	364 U	389 U	425 U	371 U	338 U	371 U	376	2,400	388 U	405 U	378 U	364 U	345 U	334 U	371 U	359 U	388 U	398 U	357 U	346 U
N-Nitrosodiphenylamine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	100,000	100,000	1,000,000	100,000	401 U	364 U	389 U	425 U	371 U	388 U	643	723	7,080	1,630	405 U	378 U	364 U	345 U	460	371 U	359 U	669	398 U	357 U	346 U
Pyrene	100,000	100,000	1,000,000	100,000	401 UJ	364 UJ	389 UJ	425 UJ	371 UJ	794 J	3,960 J	814 J	30,600 J	3,420 J	405 U	378 UJ	364 U	345 UJ	398 J	371 U	359 UJ	1,210 J	398 UR	357 UR	346 U
Total TIC, Semi-Volatile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Parameters	NYSDEC SCOs: Unrestricted	Restricted Residential	Industrial	Protection of Groundwater	SB-121	SB-122	SB-123		SB-124	SB-125			SB-126	SB-127	SB-128	LBA-SB-204		LBA-SB-207		LBA-SB-212	LBA-SB-216		LBA-SB-223	
Sampling Entity:					WSP	WSP	WSP		WSP	WSP			WSP	WSP	WSP	LaBella	WSP	LaBella	WSP	LaBella	LaBella	WSP	LaBella	WSP
Depth (feet bgs):					0.5-2.5	0.5-2.5	0.5-2.5	17-18	0.5-2.5	0.5-2.5	11-12	18.5-20	3-3.8	0.5-2.5	0.5-2.5	6.5	6.5	3	3	2	7-8	7-8	1	1
Date Sampled:					11/13/12	11/14/12	11/14/12	11/14/12	11/13/12	11/14/12	11/14/12	11/14/12	11/14/12	11/14/12	11/13/12	07/30/13	07/30/13	07/30/13	07/30/13	07/31/13	07/31/13	07/31/13	08/01/13	08/01/13
SVOCs (µg/kg)																								
Acenaphthene	20,000	100,000	1,000,000	98,000	352 U	374 U	1,140	365 U	385 U	352 U	358 U	499 U	386 U	344 U	369 U	340 U	100 U	330 U	100 U	350 U	380 U	120 U	4,200 J	57.7 J
Acenaphthylene	100,000	100,000	1,000,000	107,000	352 U	374 U	349 U	365 U	385 U	352 U	358 U	339 U	386 U	344 U	369 U	340 U	100 U	330 U	100 U	350 U	380 U	120 U	4,200 J	69.7 J
Acetophenone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510 U	-	500 U	-	-	590 U	-	560 U
Anthracene	100,000	100,000	1,000,000	1,000,000	352 U	374 U	349 U	444	385 U	491	358 U	339 U	386 U	344 U	369 U	340 U	100 U	330 U	100 U	350 U	380 U	120 U	19,000	285
Benzo(a)anthracene	1,000	1,000	11,000	1,000	352 UJ	696	***7,300***	***1,630 J***	***1,010***	***1,380***	487	***1,880***	386 UR	344 U	369 UJ	81 J	100 U	330 U	100 U	350 U	380 U	25.9 J	***29,000***	535
Benzo(a)pyrene	1,000	1,000	1,100	22,000	352 UR	740 J	***7,320 J***	***1,280 J***	936 J	***1,250 J***	462	***1,790 J***	386 UR	344 U	369 UR	340 U	100 U	330 U	100 U	350 U	380 U	120 U	***19,000***	402
Benzo(b)fluoranthene	1,000	1,000	11,000	1,700	352 UR	971 J	***13,000 J***	***1,620 J***	***1,330 J***	***1,890 J***	709	***2,610 J***	386 UR	344 U	369 UR	340 U	100 U	330 U	100 U	350 U	380 U	120 U	***27,000***	424
Benzo(g,h,i)perylene	100,000	100,000	1,000,000	1,000,000	352 UR	394 J	2,460 J	1,280 J	560 J	605 J	358 U	718 J	386 UR	344 U	369 UR	340 U	100 U	330 U	100 U	350 U	380 U	120 U	9,700	178
Benzo(k)fluoranthene	800	3,900	110,000	1,700	352 UR	519 J	***4,920 J***	722 J	632 J	639 J	366	1,160 J	386 UR	344 U	369 UR	340 U	100 U	330 U	100 U	350 U	380 U	120 U	***12,000***	293
Carbazole	-	-	-	-	352 U	374 U	1,400	365 U	385 U	352 U	358 U	551	386 U	344 U	369 U	340 U	100 U	330 U	100 U	350 U	380 U	120 U	10,000	124
Chrysene	1,000	3,900	110,000	1,000	352 UJ	852	***7,690 J***	1,980 J	1,040	1,350	587	1,950	386 UR	344 U	369 UJ	340 U	100 U	330 U	100 U	350 U	380 U	38 J	***27,000***	488
Dibenzo(a,h)anthracene	330	330	1,100	1,000,000	-	-	-	-	-	-	-	-	-	-	-	340 U	100 U	330 U	100 U	350 U	380 U	120 U	***3,000 J***	84.4 J
Dibenzofuran	7,000	59,000	1,000,000	210,000	352 U	374 U	617	365 U	385 U	352 U	358 U	339 U	386 U	344 U	369 U	340 U	100 U	330 U	100 U	350 U	380 U	120 U	16,000	186
Diethyl phthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	340 U	250 U	330 U	250 U	350 U	380 U	290 U	7,700 U	280 U
Di-n-butyl phthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	340 U	250 U	330 U	250 U	350 U	380 U	290 U	7,700 U	280 U
bis(2-Ethylhexyl)phthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	340 U	41.3 J	330 U	37.9 J	350 U	380 U	209 J	7,700 U	45.4 J
Fluoranthene	100,000	100,000	1,000,000	1,000,000	352 U	835	14,300	1,540	1,740	2,140 U	938	3,920	386 U	344 U	369 U	95 J	100 U	330 U	100 U	350 U	380 U	33.8 J	72,000	1,460
Fluorene	30,000	100,000	1,000,000	386,000	352 U	374 U	992	365 U	385 U	352 U	358 U	457	386 U	344 U	369 U	340 U	100 U	330 U	100 U	350 U	380 U	120 U	26,000	328
Hexachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	340 U	250 U	330 U	250 U	350 U	380 U	290 U	7,700 U	280 U
Indeno(1,2,3-cd)pyrene	500	500	11,000	8,200	352 UJ	407 J	***3,810 J***	***1,100 J***	482 J	***677 J***	358 U	***567 J***	386 UR	344 U	369 UR	340 U	100 U	330 U	100 U	350 U	380 U	120 U	***13,000***	196
2-Methylnaphthalene	-	-	-	-	352 U	374 U	349 U	365 U	385 U	352 U	358 U	339 U	386 U	344 U	369 U	340 U	100 U	330 U	100 U	350 U	380 U	120 U	10,000	126
Naphthalene	12,000	100,000	1,000,000	12,000	352 U	374 U	435	365 U	385 U	352 U	358 U	445	386 U	344 U	369 U	340 U	100 U	330 U	100 U	350 U	380 U	20.9 J	23,000	255
N-Nitrosodiphenylamine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	340 U	250 U	330 U	250 U	350 U	380 U	290 U	7,700 U	280 U
Phenanthrene	100,000	100,000	1,000,000	100,000	352 U	654	10,000 J	2,050	1,340	1,790	692	4,040	386 U	344 U	369 U	340 U	100 U	330 U	100 U	350 U	380 U	41.9 J	87,000	1,380
Pyrene	100,000	100,000	1,000,000	100,000	352 UJ	1,320	19,900 J	5,380 J	1,910	2,060	789	3,300 J	386 UR	344 U	369 UJ	100 J	100 U	330 U	100 U	350 U	380 U	52.9 J	49,000	875
Total TIC, Semi-Volatile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,620	15,270	3,750	8,700	670	60,600	560	71,100	21,000

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

Parameters	NYSDEC SCOs: Unrestricted	NYSDEC SCOs: Restricted Residential	NYSDEC SCOs: Industrial	NYSDEC SCOs: Protection of Groundwater	LBA-SB-234		LBA-SB-240	LBA-SB-241	LBA-SB-246			LBA-SB-247	LBA-SB-248			LBA-SB-250		LBA-SB-417		LBA-SB-418		LBA-MW-01		LBA-MW-02	LBA-MW-03
Sampling Entity:					LaBella	WSP	LaBella	WSP	LaBella	LaBella	WSP	WSP	LaBella	WSP	LaBella	LaBella	LaBella	LaBella	WSP	WSP	LaBella	WSP	LaBella	WSP	LaBella
Depth (feet bgs):					7	7	1	0.5-2	8	10-12	10-12	6	7.5	7.5	15	2	4	0.7	0.2-0.9	1.3	2	1	5.5	6-7.5	6
Date Sampled:					08/01/13	08/01/13	08/02/13	08/02/13	08/02/13	08/02/13	08/02/13	08/02/13	08/02/13	08/02/13	08/02/13	08/15/13	08/15/13	09/26/13	09/26/13	09/26/13	09/26/13	08/12/13	08/12/13	08/13/13	08/14/13
SVOCs (µg/kg)																									
Acenaphthene	20,000	100,000	1,000,000	98,000	350 U	110 U	400 U	66.2 J	340 U	500 U	110 U	-	370 U	580 U	420 U	-	1,900 U	190 U	110 U	124	200 U	510 U	360 U	110 U	1,800 U
Acenaphthylene	100,000	100,000	1,000,000	107,000	350 U	110 U	400 U	84.4 J	340 U	500 U	24.3 J	-	370 U	117 J	420 U	-	1,900 U	190 U	110 U	110 U	200 U	510 U	360 U	110 U	1,800 U
Acetophenone	-	-	-	-	-	530 U	-	32.1 J	-	-	550 U	-	-	2,900 U	-	-	-	190 U	550 U	570 U	200 U	2,600 U	-	540 U	-
Anthracene	100,000	100,000	1,000,000	1,000,000	350 U	110 U	280 J	205	340 U	500 U	110 U	-	88 J	148 J	420 U	-	2,000	190 U	110 U	110 U	200 U	97.6 J	360 U	110 U	1,400 J
Benzo(a)anthracene	1,000	1,000	11,000	1,000	350 U	110 U	440	336	340 U	500 U	110 U	***1,110***	160 J	454 J	420 U	***4,700***	***4,700***	190 U	110 U	52.4 J	200 U	510 U	360 U	110 U	***7,000***
Benzo(a)pyrene	1,000	1,000	1,100	22,000	350 U	110 U	300 J	208	340 U	500 U	110 U	967	370 U	338 J	420 U	***3,900***	***3,900***	190 U	110 U	110 U	200 U	510 U	360 U	110 U	***6,400***
Benzo(b)fluoranthene	1,000	1,000	11,000	1,700	350 U	110 U	710 U	336	340 U	500 U	110 U	912	370 U	347 J	420 U	***5,600***	***5,600***	190 U	110 U	110 U	200 U	510 U	360 U	110 U	***9,900***
Benzo(g,h,i)perylene	100,000	100,000	1,000,000	1,000,000	350 U	110 U	200 J	136	340 U	500 U	110 U	-	510	388 J	110 J	-	2,200	190 U	110 U	110 U	200 U	510 U	360 U	110 U	4,100
Benzo(k)fluoranthene	800	3,900	110,000	1,700	350 U	110 U	290 J	250	340 U	500 U	110 U	666	370 U	257 J	420 U	-	2,000	190 U	110 U	110 U	200 U	510 U	360 U	110 U	3,700 J
Carbazole	-	-	-	-	350 U	110 U	270 J	173	340 U	500 U	110 U	-	370 U	580 U	420 U	-	1,200 J	190 U	110 U	110 U	200 U	510 U	360 U	110 U	600 J
Chrysene	1,000	3,900	110,000	1,000	350 U	110 U	830	583	340 U	500 U	110 U	1,040	170 J	477 J	420 U	***5,000***	***5,000***	190 U	110 U	103 J	200 U	510 U	360 U	110 U	***7,500***
Dibenzo(a,h)anthracene	330	330	1,100	1,000,000	350 U	110 U	400 U	51.9 J	340 U	500 U	110 U	-	370 U	84 J	420 U	***630 J***	***630 J***	190 U	110 U	110 U	200 U	510 U	360 U	110 U	***1,200 J***
Dibenzofuran	7,000	59,000	1,000,000	210,000	350 U	110 U	400 U	152	340 U	500 U	110 U	192	370 U	580 U	420 U	410 J	410 J	17 J	110 U	114	28 J	510 U	360 U	110 U	1,800 U
Diethyl phthalate	-	-	-	-	350 U	270 U	400 U	290 U	71 BJ	500 U	280 U	-	370 U	1,400 U	420 U	-	1,900 U	190 U	270 U	290 U	200 U	1,300 U	360 U	27.2 J	1,800 U
Di-n-butyl phthalate	-	-	-	-	350 U	270 U	400 U	290 U	340 U	500 U	280 U	-	370 U	1,400 U	420 U	-	1,200	190 U	270 U	290 U	200 U	1,300 U	360 U	52.1 J	1,800 U
bis(2-Ethylhexyl)phthalate	-	-	-	-	350 U	33.7 J	400 U	39.3 J	83 J	500 U	664	-	370 U	1,400 U	420 U	-	1,900 U	190 U	270 U	290 U	200 U	1,300 U	360 U	270 U	1,800 U
Fluoranthene	100,000	100,000	1,000,000	1,000,000	350 U	110 U	1,000	1070	340 U	500 U	24.4 J	-	330 J	907	160 J	-	10,000	48 J	110 U	66.9 J	17 J	510 U	360 U	110 U	12,000
Fluorene	30,000	100,000	1,000,000	386,000	350 U	110 U	400 U	47.6 J	340 U	500 U	110 U	-	370 U	580 U	420 U	-	650 J	13 J	110 U	242	41 J	510 U	360 U	110 U	1,800 U
Hexachloroethane	-	-	-	-	350 U	270 U	210 J	290 U	340 U	500 U	280 U	-	370 U	1,400 U	420 U	-	1,900 U	190 U	270 U	290 U	200 U	1,300 U	360 U	270 U	1,800 U
Indeno(1,2,3-cd)pyrene	500	500	11,000	8,200	350 U	110 U	400 U	117 J	340 U	500 U	110 U	486	230 J	221 J	90 J	***2,600***	***2,600***	190 U	110 U	110 U	200 U	510 U	360 U	110 U	***4,700***
2-Methylnaphthalene	-	-	-	-	350 U	33.4 J	400 U	211	340 U	500 U	110 U	-	370 U	106 J	420 U	-	1,900 U	190 U	110 U	110 U	200 U	173 J	360 U	110 U	1,800 U
Naphthalene	12,000	100,000	1,000,000	12,000	350 U	30.9 J	400 U	195	340 U	500 U	47.7 J	-	370 U	580 U	420 U	-	1,900 U	97 J	110 U	110 U	200 U	289 J	360 U	110 U	1,800 U
N-Nitrosodiphenylamine	-	-	-	-	350 U	270 U	400 U	290 U	340 U	500 U	280 U	-	370 U	1,400 U	420 U	-	1,900 U	190 U	270 U	492	200 U	1,300 U	360 U	270 U	1,800 U
Phenanthrene	100,000	100,000	1,000,000	100,000	350 U	23.5 J	200 J	871	340 U	500 U	22.2 J	-	200 J	516 J	99 J	-	7,700	70 J	110 U	268	76 J	989	360 U	110 U	5,100
Pyrene	100,000	100,000	1,000,000	100,000	350 U	110 U	1,200	754	340 U	500 U	23 J	-	310 J	556 J	200 J	-	8,200	67 J	110 U	501	100 J	510 U	360 U	110 U	11,000
Total TIC, Semi-Volatile	-	-	-	-	1,070	1,820	4,620	5,210	940	1,630	240	-	48,260	0	28,730	-	434	1,540	0	8,860	3,840	72,800	324,800	0	0

Parameters	NYSDEC SCOs: Unrestricted	NYSDEC SCOs: Restricted Residential	NYSDEC SCOs: Industrial	NYSDEC SCOs: Protection of Groundwater	LBA-MW-04		LBA-MW-05	LBA-MW-24		LBA-MW-26		LBA-MW-27		LBA-MW-28			LBA-TP-03	LBA-TP-06	LBA-TP-12	SB-100-SS	SS-100	SS-101	SS-102	SB-103-SS	SS-103
Sampling Entity:					LaBella	WSP	LaBella	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	LaBella	WSP	LaBella	LaBella	LaBella	WSP	WSP	WSP	WSP	WSP	WSP
Depth (feet bgs):					6	6	8	-	1	12	12	16	16-17.7	12	17	17-17.3	2	1	6.5	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"
Date Sampled:					08/15/13	08/15/13	08/15/13	08/29/13	08/29/13	08/30/13	08/30/13	08/30/13	08/30/13	09/03/13	09/03/13	09/03/13	08/08/13	08/08/13	08/09/13	11/13/12	11/13/12	11/14/12	11/13/12	11/13/12	11/14/12
SVOCs (µg/kg)																									
Acenaphthene	20,000	100,000	1,000,000	98,000	ND	70.9 J	390 U	2,600	855	110 U	-	390 U	120 U	380 U	380 U	120 U	4,000	350 J	460 U	435 U	870	592 U	522 U	431 U	371 U
Acenaphthylene	100,000	100,000	1,000,000	107,000	ND	190	390 U	630 J	493 J	110 U	-	390 U	120 U	380 U	380 U	120 U	4,000 U	490	460 U	435 U	1,500	592 U	522 U	431 U	371 U
Acetophenone	-	-	-	-	-	580 U	-	-	2,800 U	560 U	-	-	600 U	380 U	380 U	610 U	-	-	-	-	-	-	-	-	-
Anthracene	100,000	100,000	1,000,000	1,000,000	240 J	303	390 U	5,900	2,590	110 U	-	390 U	120 U	380 U	380 U	120 U	7,200	1,300	460 U	-	-	-	-	-	-
Benzo(a)anthracene	1,000	1,000	11,000	1,000	640	873	390 U	1,500 U	***6,240***	110 U	110 U	390 U	120 U	380 U	380 U	120 U	***23,000***	***5,300***	230 J	435 UJ	***2,770 J***	592 U	522 UR	489 J	***1,630***
Benzo(a)pyrene	1,000	1,000	1,100	22,000	560	801	390 U	***7,800***	***5,500***	110 U	110 U	390 U	120 U	380 U	380 U	120 U	***17,000***	***4,900***	230 J	435 UJ	***2,250 J***	592 UJ	522 UR	553 J	***1,790 J***
Benzo(b)fluoranthene	1,000	1,000	11,000	1,700	870	957	390 U	***11,000***	***4,770***	110 U	110 U	390 U	120 U	380 U	380 U	120 U	***24,000***	***6,800***	410 J	435 UJ	***4,400 J***	592 UJ	599 J	***1,050 J***	***2,930 J***
Benzo(g,h,i)perylene	100,000	100,000	1,000,000	1,000,000	570	1,040	390 U	4,300	3,080	110 U	-	390 U	120 U	380 U	380 U	120 U	2,900 J	2,900	230 J	435 UJ	927 J	592 UJ	522 UR	431 UR	1,090 J
Benzo(k)fluoranthene	800	3,900	110,000	1,700	320 J	706	390 U	***4,000***	***4,600***	110 U	110 U	390 U	120 U	380 U	380 U	120 U	***9,400***	2,700	130 J	435 UJ	1,550 J	592 UJ	522 UR	431 UR	1,290 J
Carbazole	-	-	-	-	88 J	186	390 U	2,500	1,160	110 U	-	390 U	120 U	380 U	380 U	120 U	4,400	470	460 U	435 U	970	592 U	522 U	431 U	371 U
Chrysene	1,000	3,900	110,000	1,000	810	999	390 U	***8,900***	***5,980***	110 U	110 U	390 U	120 U	380 U	380 U	120 U	***21,000***	***5,100***	340 J	435 UJ	2,800 J	592 U	522 UR	616 J	1,900
Dibenzo(a,h)anthracene	330	330	1,100	1,000,000	120 J	228	390 U	***1,100***	***1,070***	110 U	110 U	390 U	120 U	380 U	380 U	120 U	***2,900 J***	970	460 U	-	-	-	-	-	-
Dibenzofuran	7,000	59,000	1,000,000	210,000	ND	259	390 U	1,900	917	110 U	-	390 U	120 U	380 U	380 U	120 U	2,300 J	140 J	460 U	435 U	729	592 U	522 U	431 U	371 U
Diethyl phthalate	-	-	-	-	ND	290 U	390 U	1,500 U	1,400 U	280 U	-	390 U	300 U	380 U	380 U	310 U	4,000 U	410 U	460 U	-	-	-	-	-	-
Di-n-butyl phthalate	-	-	-	-	250 J	94.9 J	390 U	1,500 U	1,400 U	280 U	-	390 U	300 U	380 U	380 U	310 U	4,000 U	410 U	460 U	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate	-	-	-	-	400	272 J	390 U	9,300	1,400 U	280 U	-	390 U	300 U	380 U	380 U	310 U	4,000 U	410 U	460 U	-	-	-	-	-	-
Fluoranthene	100,000	100,000	1,000,000	1,000,000	1,000	1,610	390 U	17,000	12,600	110 U	-	390 U	120 U	380 U	380 U	120 U	41,000	9,000	280 J	455	4,730	592 U	522 U	812	2,550
Fluorene	30,000	100,000	1,000,000	386,000	ND	63.6 J	390 U	1,500 U	1,100	110 U	-	390 U	120 U	380 U	380 U	120 U	3,000 J	320 J	460 U	435 U	866	592 U	522 U	431 U	371 U
Hexachloroethane	-	-	-	-	ND	290 U	390 U	1,500 U	1,400 U	280 U	-	390 U	300 U	380 U	380 U	310 U	4,000 U	410 U	460 U	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	500	500	11,000	8,200	490	***674***	390 U	***4,900***	***2,980***	110 U	110 U	390 U	120 U	380 U	380 U	120 U	***12,000***	***3,800***	230 J	435 U	***890 J***	592 UJ	522 UR	431 UR	***841 J***
2-Methylnaphthalene	-	-	-	-	200 J	435	390 U	940	406 J	110 U	-	390 U	120 U	380 U	380 U	120 U	900 J	110 J	460 U	-	-	-	-	-	-
Naphthalene	12,000	100,000	1,000,000	12,000	220 J	577	390 U	2,300	625	110 U	-	390 U	120 U	380 U	380 U	120 U	1,800 J	87 J	460 U	-	-	-	-	-	-
N-Nitrosodiphenylamine	-	-	-	-	ND	290 U	390 U	1,500 U	1,400 U	280 U	-	390 U	300 U	380 U	380 U	310 U	4,000 U	410 U	460 U	-	-	-	-	-	-
Phenanthrene	100,000	100,000	1,000,000	100,000	700	1,210	390 U	16,000	7,580	110 U	-	140 J	120 U	380 U	120 J	120 U	33,000	3,500	130 J	435 U	7,450	592 U	522 U	509	1,500
Pyrene	100,000	100,000	1,000,000	100,000	1,200	1,400	390 U	15,000	9,570	110 U	-	390 U	70 J	380 U	510	120 U	34,000	7,500	270 J	468 J	7,570 J	592 U	654 J	1,180 J	3,290
Total TIC, Semi-Volatile	-	-	-	-	0	1,400	0	57,840	11,100	380	-	11,400	0	2,430	16,050	2,490	17,400	18,750	5,370	-	-	-	-	-	-

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

				Sample Location:	SB-104-SS	SB-104-SS	SS-104	SS-106		SS-122-SS	SS-128-SS	DS-1	DS-8	SRI-SB-100		SRI-SB-101	SRI-SB-102	SRI-SB-103	SRI-SB-104	SRI-SB-105	SRI-SB-106
				Sampling Entity:	WSP	WSP	WSP	WSP	WSP	WSP	WSP	LaBella	LaBella	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP
				Depth (feet bgs):	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	-	-	1	1	1	1	0.75	0.25	3.5	1
				Date Sampled:	11/13/12	11/13/12	11/14/12	11/14/12 (e)	11/14/12 (e)	11/13/12	11/13/12	09/04/13	09/04/13	04/16/15 (e)	04/16/15 (e)	04/16/15	04/16/15	04/16/15	04/16/15	04/16/15	05/07/15
	NYSDEC SCOs																				
Parameters	Unrestricted	Restricted Residential	Industrial	Protection of Groundwater																	
SVOCs (µg/kg)																					
Acenaphthene	20,000	100,000	1,000,000	98,000	424 U	424 U	634 U	619 U	603 U	447 U	448 U	500	590 U	87.9 J	194	15.1 J	100 U	110 U	18.1 J	31.8 J	344 J
Acenaphthylene	100,000	100,000	1,000,000	107,000	424 U	424 U	634 U	619 U	603 U	447 U	448 U	-	-	130	15.1	19.2 J	100 U	29.4 J	29.4 J	283	229 J
Acetophenone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthracene	100,000	100,000	1,000,000	1,000,000	-	-	-	-	-	-	-	770	210 J	240	479	58.7 J	100 U	46.9 J	57.8 J	395	1,070
Benzo(a)anthracene	1,000	1,000	11,000	1,000	508	508	634 U	619 U	603 U	447 UR	448 UJ	***1,600***	520 J	535	973	115	22.4 J	143	132	***1,380***	***2,330***
Benzo(a)pyrene	1,000	1,000	1,100	22,000	521	521	634 UJ	619 UJ	603 UJ	532 J	448 UR	***1,300***	500 J	448	802	144	23.7 J	157	137	***1,750***	***2,210***
Benzo(b)fluoranthene	1,000	1,000	11,000	1,700	701 J	701 J	634 UJ	619 UJ	603 UJ	953 J	526 J	***1,600***	670	359	697	159	26.3 J	183	163	***1,650***	***2,190***
Benzo(g,h,i)perylene	100,000	100,000	1,000,000	1,000,000	424 J	424 J	634 UJ	619 UJ	603 UJ	447 UR	448 UR	770	340 J	206	389	93.4 J	20.7 J	122	110	1,240	1,240
Benzo(k)fluoranthene	800	3,900	110,000	1,700	424 J	424 J	634 UJ	619 UJ	603 UJ	447 UR	448 UR	900	280 J	426	680	134	20.3 J	163	145	1,600	1,860
Carbazole	-	-	-	-	424 U	424 U	634 U	619 U	603 U	447 U	448 U	480	590 U	-	-	-	-	-	-	-	-
Chrysene	1,000	3,900	110,000	1,000	578	578	634 U	619 U	603 U	459 J	448 UJ	1,600	620	511	925	172	28.5 J	163	178	1,390	2,370
Dibenzo(a,h)anthracene	330	330	1,100	1,000,000	-	-	-	-	-	-	-	160.0 J	590 U	121 J	227	32.6 J	100	56.2 J	36.3 J	***425***	***476 J***
Dibenzofuran	7,000	59,000	1,000,000	210,000	424 U	424 U	634 U	619 U	603 U	447 U	448 UJ	270 J	590 U	-	-	-	-	-	-	-	-
Diethyl phthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Di-n-butyl phthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	100,000	100,000	1,000,000	1,000,000	1,030	1,030	634 U	619 U	603 U	447 U	499	3,100	1,000	1,140	2,070	306	44.3 J	258	267	1,760	4,820
Fluorene	30,000	100,000	1,000,000	386,000	424 U	424 U	895	619 U	603 U	447 U	448 U	390 J	590 U	113 J	246	23.3 J	100 U	15.4 J	46.7 J	54.5 J	444 J
Hexachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	500	500	11,000	8,200	424 U	424 U	634 UJ	619 UJ	603 UJ	447 UR	448 UR	***700***	320 J	221	409	90.4 J	15.5 J	120	104 J	***1,210***	***1,220***
2-Methylnaphthalene	-	-	-	-	-	-	-	-	-	-	-	110 J	590 U	21.3 J	50.5	44.0 J	100 U	31.1 J	29.8 J	78.1 J	304 J
Naphthalene	12,000	100,000	1,000,000	12,000	-	-	-	-	-	-	-	230 J	589 U	27.7 J	67.3	44.4 J	25.4 J	32.1 J	66.3 J	101 J	422 J
N-Nitrosodiphenylamine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	100,000	100,000	1,000,000	100,000	501	501	634 U	619 U	603 U	447 U	448 U	3,200	600	948	1,910	201	36.3 J	145	143	613	3,390
Pyrene	100,000	100,000	1,000,000	100,000	822	822	1,130	619 U	603 U	885 J	801 J	2,600	950	856	1,580	244	36.5 J	220	218	1,540	3,430
Total TIC, Semi-Volatile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emesron Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

Parameters	NYSDEC SCOs Unrestricted	NYSDEC SCOs Restricted Residential	NYSDEC SCOs Industrial	NYSDEC SCOs Protection of Groundwater	SB-100	SB-101	SB-102	SB-103	SB-104	SB-105	SB-106	SB-107	SB-108	SB-109	SB-111	SB-112	SB-113	SB-114	SB-115	SB-116	SB-117	SB-118	SB-119	SB-119	SB-120	SB-121	SB-122
Sampling Entity:					WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP
Depth (feet bgs):					0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	2.5-4	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2	0.5-2.5	0.5-2.5	7-7.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5	0.5-2.5
Date Sampled:					11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12	11/13/12 (e)	11/13/12 (e)	11/14/12	11/13/12	11/14/12
Metals (mg/kg)																											
Aluminum	-	-	-	-	16,900	12,500	2,670	4,910	11,300	3,410	13,000	11,300	7,220	9,590	10,400	13,300	14,000	6,300	1,200	10,800	20,000	13,700	18,200	19,000	11,900	17,600	12,900
Antimony	-	-	-	-	0.42 U	0.42 U	0.59 U	0.63 U	0.41 U	0.50 U	0.53 U	0.50 U	0.64 U	0.60 U	0.45 U	0.46 U	0.63 U	0.40 U	0.43 U	0.69 U	0.49 U	0.53 U	0.66 U	0.46 U	0.74 UJ	0.60 U	0.48 U
Arsenic	13	16	16	16	7.6	34.6	24.6	270	5.3	5.5	7.2	16.0	8.9	4.7	6.6	4.5	10.3	5.2	7.1	4.4 U	9.8	7.9 U	5.5 U	8.1 U	12.4 UJ	8.9 U	5.8 U
Barium	350	400	10,000	820	59.0	53.0	150	98.3	55.9	65.3	62.5	67.9	71.4	46.2	103.0	46.4	89.1	140.0	82.2	59.8	85.1	106.0 U	61.6	54.1	91.8 J	68.6	77.5
Beryllium	7.2	72	2,700	47	0.67 U	0.42 U	0.53 U	1.10	0.50 U	0.34 U	0.55 U	0.72 U	0.42 U	0.44 U	0.49 U	0.63 U	0.60 U	0.29 U	0.43 U	0.48 U	0.83 U	0.60 U	0.73 U	0.72 U	0.45 U	0.66 U	0.55 U
Cadmium	2.5	4.3	60	7.5	0.21 U	0.21 U	0.29 U	0.27 U	0.20 U	0.25 U	0.27 U	0.25 U	0.23 U	0.30 U	0.23 U	0.23 U	0.31 U	0.20 U	0.21 U	0.34 U	0.25 U	0.26 U	0.33 U	0.23	0.30 U	0.30 U	0.24 U
Calcium	-	-	-	-	995 U	943 U	27,900	3,640	1,430 U	1,830	4,160	2,230	7,310	2,690	1,710	1,130 U	3,140	183,000	21,400	2,220	1,240 U	8,410	1,770	2,030	22,500	3,450	6,580
Chromium	30	180	6,800	NS	21.9	21.4	5.2 U	19.7	14.2 U	6.2 U	17.2	15.4	15.9	14.9	13.0	18.8	18.9	10.4	17.7	12.4	25.9	19.3 U	24.9	25.0	37.6 J	24.7	16.8 U
Cobalt	-	-	-	-	10.2	7.0	5.0	5.6	9.1	6.4	13.3	10.4	6.7	9.1	8.6	11.5	12.9	14.1	11.9	6.3	18.8	11.2	15.4 U	19.7 U	11.7 U	17.2 U	10.2 U
Copper	50	270	10,000	1,720	25.6 U	8.9 U	20.5 U	32.3	12.5 U	11.4	15.0 U	20.1 U	153.0	22.4 U	14.3 U	10.3 U	11.8 U	41.0 U	15.9 U	9.4 U	14.0 U	32.5 U	12.4	13.9	88.9 J	19.9	12.7 U
Iron	-	-	-	-	27,900	49,900	30,000	17,600	18,400	25,400	25,200	22,600	18,900	27,300	14,900	21,400	25,700	14,400	24,900	15,400	39,600	24,300	36,900	38,400	39,700 J	37,000	23,100
Lead	63	400	3,900	450	15.7 U	13.8	10.0 U	21.2 U	30.8 U	4.3 U	14.0 U	68.0	86.7	23.9 U	54.0 U	12.9 U	75.2	16.9 U	16.9 U	70.4	14.3 U	174	11.2 U	17.5 U	50.7 J	14.0 U	32.8
Magnesium	-	-	-	-	4,260	4,010	832	273	2,980	327	5,380	2,650	2,510	3,270	2,170	5,160	4,630	5,130	6,680	2,620	7,310	4,930	7,040	7,670	5,850 J	7,400	4,570
Manganese	1,600	2,000	10,000	2,000	237	172	165	16.4 U	408	79	692	324	170	321	677	232	458	648	458	1,140	612	567	551	726	632 J	569	474
Mercury	0.18	0.81	5.7	0.73	0.28	0.11 U	0.11 U	0.65 J	0.11 U	0.11 U	0.10 U	0.10 U	0.12 U	0.12	0.32	0.11 U	0.11 U	0.10 U	0.10 U	0.11 U	0.10 U	0.31	0.11 U	0.10 U	0.10 U	0.11 U	0.11 U
Nickel	30	310	10,000	130	24.0 U	22.1 U	21.7 U	14.2 U	18.1 U	11.9 U	26.2 U	27.5 U	79.5	24.6 U	15.1 U	23.0 U	25.3 U	37.7	27.4 U	14.7 U	39.9	24.5 U	37.7	37.9	48.9 J	37.6	22.1
Potassium	-	-	-	-	1,700 U	1,070 U	478 U	683 U	741 U	291 U	1,070 U	917 U	647 U	603 U	1,090 U	1,580 U	1,200 U	1,070 U	1,010 U	800 U	1,390 U	1,220	1,230 U	1,270 U	1,090 UJ	1,300 U	1,080 U
Selenium	3.9	180	6,800	4	1.3 U	2.0 U	1.8 U	5.4 U	0.69 U	1.0 U	0.7 U	1.4 U	1.4 U	0.81 U	0.61	0.93 U	1.1 U	0.93 U	0.71 U	0.92 U	1.1 U	0.71 UR	0.88 U	1.0 U	1.2 U	0.80 U	0.77 U
Silver	2	180	6,800	8.3	0.42 U	0.42 U	0.59 U	0.54 U	0.41 U	0.50 U	0.53 U	0.50 U	0.47 U	0.60 U	0.45 U	0.46 U	0.63 U	0.40 U	0.43 U	0.69 U	0.49 U	0.53 U	0.66 U	0.46 U	0.60 U	0.60 U	0.48 U
Sodium	-	-	-	-	923 U	1,470 U	490 U	448 U	340 U	414 U	445 U	413 U	390 U	616 U	2,950 U	809 U	1,720 U	364 U	910 U	932 U	1,470 U	442 U	547 U	416	1,120 J	497 U	397 U
Thallium	-	-	-	-	1.8 U	1.4	2.0 U	3.0 U	1.4 U	1.7 U	1.8 U	1.7 U	1.6 U	2.0 U	1.5 U	1.5 U	2.1 U	1.3 U	1.4 U	2.3 U	1.6 U	1.8 U	2.2 U	1.5 U	2.0 U	2.0 U	1.6 U
Vanadium	-	-	-	-	26.3	27.1	15.6	30.0	17.1	9.0	17.3	18.4	13.5	13.9	15.4	21.3	19.0	11.1	20.4	17.7	21.9	21.5	19.9 U	20.8 U	21.6 J	20.4 U	18.3
Zinc	109	10,000	10,000	2,480	58.8	42.3	33.9 U	13.2 U	46.0	12.8 U	53.6	63.1	101.0	46.5	108.0	46.0	75.5	100.0	51.2	56.4	62.8	108.0	61.2 U	65.4 U	86.1 J	70.8 U	70.9
Cyanide	27	27	10,000	40	0.71 U	2.10 U	0.67 U	0.77 U	0.68 U	0.68 U	0.56 U	0.61 U	0.78 U	0.68 U	0.68 U	0.69 U	0.61 U	0.57 U	0.52 U	0.66 U	0.59 U	0.71 U	0.61 U	0.57 U	0.63 U	0.61 U	2.10 J

Parameters	NYSDEC SCOs Unrestricted	NYSDEC SCOs Restricted Residential	NYSDEC SCOs Industrial	NYSDEC SCOs Protection of Groundwater	SB-123	SB-123	SB-124	SB-125	SB-125	SB-125	SB-126	SB-127	SB-128	LBA-SB-200	LBA-SB-203	LBA-SB-203	LBA-SB-203	LBA-SB-205	LBA-SB-209	LBA-SB-210	LBA-SB-210	LBA-SB-212	LBA-SB-214	LBA-SB-240	LBA-SB-240	LBA-SB-242
Sampling Entity:					WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	LaBella	WSP	LaBella	WSP	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP	WSP
Depth (feet bgs):					0.5-2.5	17-18	0.5-2.5	0.5-2.5	11-12	18.5-20	3-3.8	0.5-2.5	0.5-2.5	8.5-9	13	14	23	3	27	12	12	2	8	1	1	0-1.5
Date Sampled:					11/14/12	11/14/12	11/13/12	11/14/12	11/14/12	11/14/12	11/14/12	11/14/12	11/13/12	07/30/13	07/30/13	07/30/13	07/30/13	07/30/13	07/31/13	07/31/13	07/31/13	07/31/13	07/31/13	08/02/13	08/02/13	08/02/13
Metals (mg/kg)																										
Aluminum	-	-	-	-	11,600	5,900	11,700	10,200	7,210	10,400	13,400	7,340	13,400	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony	-	-	-	-	0.63 U	3.40 U	0.71 U	0.57 U	0.61 U	0.92 U	0.65 U	0.52 U	0.49 UJ	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	13	16	16	16	9.7 U	13.2 U	23.9 U	13.0 U	14.4 U	17.2 U	5.2 U	4.1 U	5.6 U	17.6	17	41.6	65	12.5	18.2	-	13.7	7.8	12	23	8	3.6
Barium	350	400	10,000	820	154.0	663	216	1,330	192	491	105	28.9 U	62.3	118	160 J	120	250 J	464	2,070	-	2,800	130 J	1,300 J	69	107	162
Beryllium	7.2	72	2,700	47	0.51 U	0.19 U	0.46 U	0.39 U	0.46 U	0.43 U	0.39 U	0.25 U	0.46 U	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	2.5	4.3	60	7.5	0.35 U	0.72	0.35 U	0.28 U	0.31 U	0.24 U	0.33 U	0.26 U	0.25 U	0.63	1.2	0.85	6.2	0.54	0.34 J	-	0.91	0.3	2.1	0.032 J	0.17 J	0.095 J
Calcium	-	-	-	-	13,800	25,300	31,700	15,500	2,710	10,900	4,020	36,400	1,250 J	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	30	180	6,800	NS	32.7	50.1	55.7	114	13.5 U	57.2	18.8 U	9.9 U	17.4	92.7	320 J	389	310 J	78.1	33.2	-	63.7	14	120	9.7 J	7	6.4
Cobalt	-	-	-	-	11.9 U	9.7 U	15.4 U	13.6 U	6.4 U	13.6 U	8.4 U	5.8 U	11.2 U	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	50	270	10,000	1,720	67.3	251	77.6	121	34.0	85.4	28.5	14.7 U	7.6 J	-	2,900	1,870	650	-	-	-	-	-	3,900	-	-	-
Iron	-	-	-	-	30,900	56,300	38,400	45,800	39,600	48,500	21,300	16,000	23,100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	63	400	3,900	450	37.2	234	40.0 U	50.4	39.9	38.4	14,500	7.6 U	10.7 U	136	35 J	73.9	2,000 J	61.3	28.4	-	237	15	300	30	24	42
Magnesium	-	-	-	-	5,100	2,090	5,460	5,150	1,990	3,810	3,930	6,120	3,850	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	1,600	2,000	10,000	2,000	476	587	575	506	256	659	566	285	579	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	0.18	0.81	5.7	0.73	0.10 U	0.50 U	0.11 U	0.22	0.11 U	0.10 U	0.22	0.10 U	0.10 U	0.087	0.17	0.16	0.025 J	0.12	0.078	-	0.33	0.041	0.0455 J	0.071	0.048	0.023 J
Nickel	30	310	10,000	130	46.5	162	165	157	28.4	341	32.7	14.9 U	21.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	-	-	-	-	1,030 U	644 U	1,220 U	860 U	786 U	985 U	810 U	828 U	840 UJ	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	3.9	180	6,800	4	0.84 U	1.1 U	1.0 U	1.2 U	1.1 U	1.0 U	0.87 U	0.69 U	0.93 U	0.89 U	1.5 U	2 U	4.7 U	1.9 U	0.9 U	-	0.93 U	0.81 U	1.5 U	1.7	1.3	0.66 J
Silver	2	180	6,800	8.3	0.63 U	0.56 U	0.71 U	0.57 U	0.61 U	0.49 U	0.65 U	0.52 U	0.49 U	0.44 U	0.21 J	0.5 U	4.7 U	0.47 U	0.45 U	-	0.12 J	0.81 U	0.063	1.5 U	0.47 U	0.48 U
Sodium	-	-	-	-	524 U	554	767	724	721	597	724	454	412 U	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	-	-	-	-	2.1 U	1.8 U	2.4 U	2.2 U	2.0 U	1.6 U	2.2 U	1.7 U	1.6 U	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	15.6	18.6	19.4 U	40.9	12.0	15.1	40.9	10.6	20.0 U	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	109	10,000	10,000	2,480	81.4	323	78.7 U	179	52.6	67.1	179	41.1	42.6 U	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide	27	27	10,000	40	1	1.10	4.20	2.10	2.10	1.20	3.50	0.52 U	0.61 U	-	-	-	-	-	-	1.3	-	-	20	-	-	-

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emesron Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

Sample Location:					LBA-SB-246			LBA-SB-248				LBA-SB-250	LBA-SB-303	LBA-SB-417	LBA-SB-425		LBA-SB-512		LBA-SB-513		LBA-SB-514		LBA-SB-515		LBA-SB-518	
Sampling Entity:					LaBella	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	LaBella	LaBella	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	WSP
Depth (feet bgs):					8	10-12	10-12	7.5	7.5	15	15	2	5	0.7	4	4	0.5-2	0.5	6	6.5-7.5	0.5-2.2	1	0-1.7	1	4-6	4-6
Date Sampled:					08/02/13	08/02/13	08/02/13	08/02/13	08/02/13	08/02/13	08/02/13	08/15/13	08/26/13	09/26/13	09/26/13	09/26/13	12/05/13	12/05/13	12/05/13	12/05/13	12/05/13	12/05/13	12/05/13	12/05/13	12/06/13	12/06/13
	NYSDEC SCOs																									
Parameters	Unrestricted	Restricted Residential	Industrial	Protection of Groundwater																						
Metals (mg/kg)																										
Aluminum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,310	-
Antimony	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.2	-
Arsenic	13	16	16	16	11	9.6	***16.4***	15	15.5	16	14.2	15	7.4	5.2	15.7	***20.5***	7.1	6	10.5	8.9	5.4	5.5	***23.8***	***19.7***	***19.2***	10.4
Barium	350	400	10,000	820	57	29	105	180	166	150	108	100 J	300 J	75	***543***	*969*	148	288	322	*3,020*	98.2	106	92.0	148	***1,100***	196
Beryllium	7.2	72	2,700	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.52	-
Cadmium	2.5	4.3	60	7.5	1.4	0.32 U	0.95	0.95	1.7	0.30	0.39 J	0.53 J	0.39	0.34	0.9	3	0.75	0.23 J	0.37	0.77	0.059 J	0.34 U	0.71	0.53	2.5	1
Calcium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56,000 J	-
Chromium	30	180	6,800	NS	15 J	18 J	16.3	16.3	21.7	28 J	20.8	25 J	28 J	16.1	45.9	120	12.0	40.1	21.5	28.9	19.8	10.6	10.3	12.6	116	33.5
Cobalt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.2	-
Copper	50	270	10,000	1,720	-	-	-	-	-	-	-	-	***460***	-	-	-	-	-	10.5	-	-	-	-	-	***8,240 ^***	-
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77,500 J	-
Lead	63	400	3,900	450	1.7	4.8	15	190	187	90	175	170 J	37	39	161	208	19.1 ^	92.4	95.9 ^	***403***	6.9	13.4	221	264	***880***	181
Magnesium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,380	-
Manganese	1,600	2,000	10,000	2,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	761 ^J	-
Mercury	0.18	0.81	5.7	0.73	0.038 U	0.053 U	0.036 U	0.2	0.097	0.070	0.067	0.14	0.24	0.04	0.28	0.41	0.021 U	0.14	0.041	0.078	0.016 J	0.023 J	0.34	0.74	0.12	0.072
Nickel	30	310	10,000	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***397***	-
Potassium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	810	-
Selenium	3.9	180	6,800	4	1.3 U	3.4	0.71 J	1.5 U	0.62 J	0.92 J	0.54 J	1.7 U	1.4 U	4.6 U	0.62 J	0.82 B	4.6 U	0.93 U	0.67 J	0.5	4.7 U	0.84 U	2.3 J	1.2	1.1 J	0.95 U
Silver	2	180	6,800	8.3	1.3 U	1.9 U	0.48 U	1.5 U	0.49 U	1.5 U	0.52 U	1.7 U	0.36	0.58 U	0.65 U	0.65 U	0.58 U^	0.47 U	0.64 U^	0.46	0.58 U	0.42 U	0.57 U	0.48 U	0.61 J^	0.48 U
Sodium	-	-	-	-	-	-	0.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,210 J	-
Thallium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8 U	-
Vanadium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52.3	-
Zinc	109	10,000	10,000	2,480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	634 J	-
Cyanide	27	27	10,000	40	-	-	0.71	-	0.45	-	-	-	-	-	-	-	9.2	14.3	20.3	10.4	6.9	0.13 U	1.0 J	2.1	10 U	-

Sample Location:					LBA-SB-524	WSP-SB-614			WSP-SB-615		WSP-SB-616		WSP-SB-617		WSP-SB-618			WSP-SB-619		WSP-SB-620	WSP-SB-621		WSP-SB-638	LBA-MW-01	
Sampling Entity:					LaBella	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	LaBella	LaBella	WSP
Depth (feet bgs):					1	2-2.8	5-6	6-6.5	2-2.8	6-6.5	2-2.7	8-8.5	2-3.5	8-8.6	0-2	0-2	2-3	0-2	2-3	0-2	0-2	2-3	-	1	1
Date Sampled:					12/13/13	04/30/14	04/30/14	05/01/14	05/01/14	05/01/14	05/01/14	05/01/14	05/01/14	05/01/14	04/30/14 (e)	04/30/14 (e)	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	04/30/14	05/01/14	08/12/13	08/12/13
	NYSDEC SCOs																								
Parameters	Unrestricted	Restricted Residential	Industrial	Protection of Groundwater																					
Metals (mg/kg)																									
Aluminum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	13	16	16	16	11.3	-	-	-	-	-	-	-	-	-	***23.8***	-	-	***22.9***	***29***	-	-	-	-	8	6.4
Barium	350	400	10,000	820	117 ^	358	***5,370***	116	346	235	***1,370***	***2,880***	338	224	***1,320***	***1,100***	***879***	***2,750***	***3,750***	***1,070***	46.4	73.6	88.3	58 J	34.2
Beryllium	7.2	72	2,700	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	2.5	4.3	60	7.5	0.24	-	-	-	-	-	-	-	-	-	3.3	1.8	1.4	3.9	3.2	2.1	0.047	0.099	-	0.4 J	0.15 J
Calcium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	30	180	6,800	NS	16.4 J	-	-	-	-	-	-	-	-	-	***259***	157	87.6	***382***	***381***	107	11.2	16.5	-	18 J	22
Cobalt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	50	270	10,000	1,720	-	-	-	-	-	-	-	-	-	-	***589***	***300***	***350***	***1,270***	***987***	***794***	10.3	22	-	-	-
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	63	400	3,900	450	19.1	-	-	-	-	-	-	-	-	-	202	111	123	159	181	128	7.5	8.8	-	16 J	10.5
Magnesium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	1,600	2,000	10,000	2,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	0.18	0.81	5.7	0.73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02 J	0.032 J
Nickel	30	310	10,000	130	-	-	-	-	-	-	-	-	-	-	264	157	144	***567***	***471***	166	18.5	27.7	-	-	-
Potassium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	3.9	180	6,800	4	0.71 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3 U	0.86 U
Silver	2	180	6,800	8.3	0.55 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3 U	0.4 J
Sodium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	109	10,000	10,000	2,480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide	27	27	10,000	40	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emesron Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

				Sample Location:	LBA-MW-02	LBA-MW-03		LBA-MW-04		LBA-MW-05	LBA-MW-06	LBA-MW-07		LBA-MW-16	LBA-MW-17	LBA-MW-18		LBA-MW-19		LBA-MW-24		LBA-TP-03	LBA-TP-08		LBA-TP-12	LBA-TP-16	LBA-TP-16A
				Sampling Entity:	WSP	LaBella	LaBella	LaBella	WSP	LaBella	LaBella	LaBella	WSP	LaBella	LaBella	LaBella	WSP	LaBella	WSP	LaBella	WSP	LaBella	LaBella	WSP	LaBella	LaBella	WSP
				Depth (feet bgs):	6-7.5	0.5	2	6	6	1	2	1	6	0.5-2.4	2	0-1	1.9	0-1.9	0-1.9	-	1	2	5	-	6.5	2.5	-
				Date Sampled:	08/13/13	08/14/13	08/14/13	08/15/13	08/15/13	08/15/13	08/16/13	08/16/13	08/16/13	8/23/2013	08/26/13	08/26/13	08/26/13	08/27/13	08/27/13	08/29/13	08/29/13	08/08/13	08/08/13	08/08/13	08/09/13	08/09/13	08/09/13
	NYSDEC SCOs																										
Parameters	Unrestricted	Restricted Residential	Industrial	Protection of Groundwater																							
Metals (mg/kg)																											
Aluminum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	13	16	16	16	10.4	***18***	***18***	***17***	11.8	5.8	11	-	-	5.6	***19***	5.5	10.2	***26***	***26.2***	11	8.1	8.2	15	11.2	***21***	***24***	15.4
Barium	350	400	10,000	820	92.9	75 J	-	81 J	93.1	94 J	190 J	-	-	83 J	***540 J***	380 J	278	110 J	927	110 J	124	67	***3,000***	***2,740***	***2,100***	***1,200***	***1,840***
Beryllium	7.2	72	2,700	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	2.5	4.3	60	7.5	0.22 J	1.5 J	-	0.68	0.38	0.16 J	0.21 J	-	-	0.027	0.83	0.20	0.12 J	2.0	0.46	0.85	0.49	0.75	1.5	0.83	1.2	4.2	1.9
Calcium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	30	180	6,800	NS	16.2	45 J	-	68 J	112	16 J	22 J	-	-	9.1 J	30 J	11 J	18.4	28 J	16.4	22 J	31.8	33 J	***480 J***	168	***610***	***450 J***	106
Cobalt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	50	270	10,000	1,720	-	-	-	-	-	-	-	-	-	-	270	11	9.5	-	-	86	-	100	***3,400***	-	***1,200***	***1,500***	-
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	63	400	3,900	450	23.1	***1,100 J***	***1,100***	80 J	74.5	40 J	7 J	-	-	12	280	6.5	14	51	88.5	120	49.4	33	70	96.9	39	160	252
Magnesium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	1,600	2,000	10,000	2,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	0.18	0.81	5.7	0.73	0.05	0.12	-	0.11	0.076	0.0084	0.04	-	-	0.024 J	0.16	0.021 J	0.015 J	0.094	0.1	0.15	0.11	0.025 J	0.25	0.15	0.2	0.48	0.64
Nickel	30	310	10,000	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	3.9	180	6,800	4	0.92 U	1.3 U	-	-	0.51 J	1.4 U	1.4 U	-	-	1 U	1.2	0.76 J	0.51 J	1.0 U	1 U	1.1 J	0.81 U	4.6	3.9	2 U	8.9	2.8	5 U
Silver	2	180	6,800	8.3	0.46 U	1.3 U	-	0.26 J	0.46 U	1.4 U	1.4 U	-	-	0.22	1	0.25 J	0.48 U	0.88 J	0.22 J	0.34 J	0.41 U	1.4 U	1.2 U	0.21 J	2 U	1.5 U	0.5 U
Sodium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	109	10,000	10,000	2,480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide	27	27	10,000	40	0.13 U	-	-	-	0.23	0.91 U	0.91 U	0.92 U	0.95 U	4	-	-	-	-	-	-	-	-	1.7	0.14 U	-	-	4.8

				Sample Location:	LBA-TP-18	LBA-SS-07	LBA-B17-TSS-3	SB-100-SS	SS-100	SS-101	LBA-B17-SS-102	SB-103-SS	SS-103	SB-104-SS	SS-104	SS-106		SS-122-SS	SS-128-SS	DS-1
				Sampling Entity:	LaBella	LaBella	LaBella	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	LaBella
				Depth (feet bgs):	4	0-2"	-	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	0-2"	-
				Date Sampled:	08/09/13	-	-	11/13/12	11/13/12	11/14/12	11/13/12	11/13/12	11/14/12	11/13/12	11/14/12	11/14/12 (e)	11/14/12 (e)	11/13/12	11/13/12	09/04/13
	NYSDEC SCOs																			
Parameters	Unrestricted	Restricted Residential	Industrial	Protection of Groundwater																
Metals (mg/kg)																				
Aluminum	-	-	-	-	-	-	-	12,300	9,610	9,280	10,500	11,900	4,790	12,100	10,700	11,200	12,400	15,500	11,500	-
Antimony	-	-	-	-	-	-	-	1.1	0.68	0.73 U	0.8	0.73 U	0.93 U	0.48 U	0.99 U	1.1 U	0.85 U	0.57 U	0.56 U	-
Arsenic	13	16	16	16	6.3	***69.8***	-	15.8 U	5.4 U	4.7 U	11 U	11.5 U	14.7 U	7.1 U	5.2 U	4.3 U	5.3 U	6.8 U	8.4 U	4.3
Barium	350	400	10,000	820	50	291	-	134	87.2	69.1	126	78.3	243	79.7	77	103	109	111	76.3	196
Beryllium	7.2	72	2,700	47	-	-	-	0.62 U	0.54 U	0.33 U	0.5 U	0.58 U	0.34 U	0.58 U	0.41 U	0.55 U	0.65 U	0.66 U	0.51 U	-
Cadmium	2.5	4.3	60	7.5	0.032 J	1.3	***4.8***	0.42 U	0.46 U	0.36 U	0.4	0.38 U	1.2 U	0.34 U	0.5 U	0.53 U	0.43 U	0.43 U	0.4 U	2.9
Calcium	-	-	-	-	-	-	-	2,850	5,820	5,350	9,940	2,890	52,000	1,880	9,160	9,630	7,690	3,140	72,800	-
Chromium	30	180	6,800	NS	5.7 J	40	-	20.8 U	15.9 U	15.6 U	36.3	17.7 U	72.1	18.5 U	14.6 U	13.8 U	15 U	19.1 U	17.8 U	28.6
Cobalt	-	-	-	-	-	-	-	9.9	9.7	6.9 U	11.3	9.4	7.6 U	8.6	8.5 U	6.1 U	7.5 U	10.3	9.9	-
Copper	50	270	10,000	1,720	-	269	-	49.1	19.3 U	16 U	78.1	18.3 U	127	19.1 U	19.5 U	13.6 U	15.7 U	19 U	28.6 U	-
Iron	-	-	-	-	-	-	-	18,700	20,500	15,400	31,200	19,100	40,700	20,100	19,700	13,400	14,900	25,200	23,600	-
Lead	63	400	3,900	450	19	***420***	***405***	258	78.4 U	32.9 U	85.5 U	115 U	***617***	47.6 U	20.8 U	25.5 U	30.9 U	36.9 U	66.8 U	76.3
Magnesium	-	-	-	-	-	-	-	2,800	3,170	2,650	4,310	3,010	5,950	3,020	3,970 U	2,650	2,780	3,920	8,270	-
Manganese	1,600	2,000	10,000	2,000	-	-	-	403	832	550	509	489	480	466	618	526	631	806	510	-
Mercury	0.18	0.81	5.7	0.73	0.042	0.41	-	0.60	0.15 U	0.18 U	0.16 UJ	0.13 U	0.27	0.13 U	0.19 U	0.19 U	0.18 U	0.14 U	0.13 U	0.079
Nickel	30	310	10,000	130	-	-	-	19.6 U	18.8 U	15.5 U	63.8 U	19.4 U	68.4	20 U	19.8 U	14.1 U	15.6 U	23.2 U	27.4 U	-
Potassium	-	-	-	-	-	-	-	1,340	1,570	1,240 U	1,540	1,170	1,040 U	1,360	1,520 U	1,280 U	1,380 U	1,550	1,660	-
Selenium	3.9	180	6,800	4	1.3 J	3.2 J	-	1.4 J	0.7 UR	0.97 U	1.3 U	0.98 UR	1.2 U	0.64 UR	1.3 U	1.4 U	1.1 U	0.76 UR	0.75 UR	0.94 J
Silver	2	180	6,800	8.3	1.3 U	0.61 U	-	0.66 U	0.53	0.73 U	0.8 U	0.73 U	5.3 U	0.48 U	0.99 U	1.1 U	0.85 U	0.57 U	0.56 U	0.086 J
Sodium	-	-	-	-	-	-	-	498 U	438 U	605 U	663 U	611 U	776 U	401 U	828 U	888 U	710 U	475 U	469 U	-
Thallium	-	-	-	-	-	-	-	2 U	1.8 U	2.4 U	2.8 U	2.4 U	3.1 U	1.6 U	3.3 U	3.6 U	2.8 U	1.9 U	1.9 U	-
Vanadium	-	-	-	-	-	-	-	24.8	17.4	16	17.4	20.5	18.3	20.8	15.7	16.3	17.6	24.1	19	-
Zinc	109	10,000	10,000	2,480	-	-	-	257	96.6	93.5	136	74.1	303	63.5	71.2	91.3	102	99.5	90.2	-
Cyanide	27	27	10,000	40	-	1.3 U	-	0.80 U	0.78 U	1.10 U	1.30	0.72 U	1.30	0.96	1.10 U	1.40	0.96 U	0.72 U	0.69 U	-

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

				Sample Location:	LBA-SB-241		LBA-TP-08		DS-1
				Sampling Entity:	LaBella	WSP	LaBella	WSP	LaBella
				Depth (feet bgs):	1	0.5-2	5	-	-
				Date Sampled:	08/02/13	08/02/13	08/08/13	08/08/13	09/04/13
	NYSDEC SCOs								
Parameters	Unrestricted	Restricted Residential	Industrial	Protection of Groundwater					
Pesticides (µg/kg)									
alpha-Chlordane	94	4,200	47,000	2,900	6.0	21 U	83 U	5.6 U	2.3 U
gamma-Chlordane	-	-	-	-	2.4 U	21 U	83 U	5.6 U	2.3 U
Dieldrin	5	200	2,800	100	4.7 U	21 U	***730***	5.6 U	4.5 U
4,4'-DDD	3.3	13,000	180,000	14,000	4.7 U	21 U	1,500 P	5.6 U	4.8
4,4'-DDE	3.3	8,900	120,000	17,000	4.7 U	21 U	390 P	5.6 U	4.5 U
4,4'-DDT	3.3	7,900	94,000	136,000	4.7 U	21 U	2,600	5.6 U	4.6
Endosulfan sulfate	2,400	24,000	920,000	1,000,000	9.5	21 U	160 U	5.6 U	7.2
Endrin	14	11,000	410,000	60	4.7 U	21 U	140 J	5.6 U	4.5 U
Endrin aldehyde	-	-	-	-	4.8	21 U	160 U	5.6 U	6.6
Endrin ketone	-	-	-	-	2.4 U	21 U	160 U	5.6 U	4.5 U

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to foonote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

				Sample Location:	**SB-100**	**SB-101**	**SB-102**	**SB-103**	**SB-104**	**SB-105**	**SB-106**	**SB-107**	**SB-108**	**SB-109**	**SB-111**	**SB-112**	**SB-113**	**SB-114**	**SB-115**	**SB-116**	**SB-117**	**SB-118**
				Sampling Entity:	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**
				Depth (feet bgs):	**0.5-2.5**	**0.5-2.5**	**0.5-2.5**	**0.5-2.5**	**0.5-2.5**	**0.5-2.5**	**0.5-2.5**	**0.5-2.5**	**0.5-2.5**	**2.5-4**	**0.5-2.5**	**0.5-2.5**	**0.5-2.5**	**0.5-2.5**	**0.5-2**	**0.5-2.5**	**0.5-2.5**	**7-7.5**
				Date Sampled:	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**	**11/13/12**
	NYSDEC SCOs																					
Parameters	**Unrestricted**	**Restricted Residential**	**Industrial**	**Protection of Groundwater**																		
PCBS (µg/kg)																						
Aroclor 1254	-	-	-	-	20.5 UJ	18.3 UJ	19.5 UJ	21.4 J	18.7 UJ	19.5 UJ	18.3 UJ	17.6 UJ	21.2 UJ	19.5 UJ	20.1 UJ	18.9 UJ	18.4 UJ	17.3 UJ	17.0 UJ	19.0 UJ	18.0 UJ	19.7 UJ
Aroclor 1260	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PCBs	100	1,000	25,000	3,200	0	0	0	21.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0

				Sample Location:	**SB-119**		**SB-120**	**SB-121**	**SB-122**	**SB-123**		**SB-124**	**SB-125**			**SB-126**	**SB-127**	**SB-128**	**LBA-SB-212**	**LBA-SB-241**	
				Sampling Entity:	**WSP**		**WSP**	**WSP**	**WSP**	**WSP**		**WSP**	**WSP**			**WSP**	**WSP**	**WSP**	**LaBella**	**LaBella**	**WSP**
				Depth (feet bgs):	**0.5-2.5**	**0.5-2.5**	**0.5-2.5**	**0.5-2.5**	**0.5-2.5**	**0.5-2.5**	**17-18**	**0.5-2.5**	**0.5-2.5**	**11-12**	**18.5-20**	**3-3.8**	**0.5-2.5**	**0.5-2.5**	**2**	**1**	**0.5-2**
				Date Sampled:	**11/13/12 (e)**	**11/13/12 (e)**	**11/14/12**	**11/13/12**	**11/14/12**	**11/14/12**	**11/14/12**	**11/13/12**	**11/14/12**	**11/14/12**	**11/14/12**	**11/14/12**	**11/14/12**	**11/13/12**	**07/31/13**	**08/02/13**	**08/02/13**
	NYSDEC SCOs																				
Parameters	**Unrestricted**	**Restricted Residential**	**Industrial**	**Protection of Groundwater**																	
PCBS (µg/kg)																					
Aroclor 1254	-	-	-	-	20.3 UJ	18.0 UJ	86.9 UJ	17.6 UJ	91.3 UJ	151 UJ	123 J	60.1 UJ	1,680 J	56.1	86.7 UJ	95.6 UJ	17.1 UJ	18.6 UJ	38	47 U	100 U
Aroclor 1260	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35 U	47 U	100 U
Total PCBs	100	1,000	25,000	3,200	0	0	0	0	0	0	123	0	***1,680***	56.1	0	0	0	0	38	0	0

				Sample Location:	**WSP-SB-614**			**WSP-SB-615**		**WSP-SB-616**		**WSP-SB-617**		**LBA-MW-05**		**LBA-MW-24**		**LBA-MW-26**	**LBA-MW-27**		**LBA-MW-28**	
				Sampling Entity:	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**LaBella**	**LaBella**	**LaBella**	**WSP**	**WSP**	**LaBella**	**WSP**	**LaBella**	**WSP**
				Depth (feet bgs):	**2-2.8**	**5-6**	**6-6.5**	**2-2.8**	**6-6.5**	**2-2.7**	**8-8.5**	**2-3.5**	**8-8.6**	**1**	**8**	**-**	**1**	**12**	**16**	**16-17.7**	**17**	**17-17.3**
				Date Sampled:	**04/30/14**	**04/30/14**	**05/01/14**	**05/01/14**	**05/01/14**	**05/01/14**	**05/01/14**	**05/01/14**	**05/01/14**	**08/15/13**	**08/15/13**	**08/29/13**	**08/29/13**	**08/30/13**	**08/30/13**	**08/30/13**	**09/03/13**	**09/03/13**
	NYSDEC SCOs																					
Parameters	**Unrestricted**	**Restricted Residential**	**Industrial**	**Protection of Groundwater**																		
PCBS (µg/kg)																						
Aroclor 1254	-	-	-	-	88.7	3,950	17 U	9,640	67.9	1,760	371	4,770	32,200	39 U	-	950 U	100 U	38 U	40 U	40 U	39 U	40 U
Aroclor 1260	-	-	-	-	14 U	157	14 U	13 U	20.3 J	229	33.4 J	109	589	39 U	-	6,100	11,300	38 U	40 U	40 U	39 U	40 U
Total PCBs	100	1,000	25,000	3,200	88.7	***4,107***	14 U	***9,640***	88.2	***1,989***	404.4	***4,879***	***32,789***	0	-	***6,100***	***11,300***	0	0	0	0	0

				Sample Location:	**LBA-TP-06**	**LBA-TP-08**		**SB-100-SS**	**SS-100**	**SS-101**	**SS-102**	**SB-103-SS**	**SS-103**	**SB-104-SS**	**SS-104**	**SS-106**		**SS-122-SS**	**SS-128-SS**	**DS-1**
				Sampling Entity:	**LaBella**	**LaBella**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**WSP**	**LaBella**
				Depth (feet bgs):	**1**	**5**	**-**	**0-2"**	**0-2"**	**0-2"**	**0-2"**	**0-2"**	**0-2"**	**0-2"**	**0-2"**	**0-2"**	**0-2"**	**0-2"**	**0-2"**	**-**
				Date Sampled:	**08/08/13**	**08/08/13**	**08/08/13**	**11/13/12**	**11/13/12**	**11/14/12**	**11/13/12**	**11/13/12**	**11/14/12**	**11/13/12**	**11/14/12**	**11/14/12 (e)**	**11/14/12 (e)**	**11/13/12**	**11/13/12**	**09/04/13**
	NYSDEC SCOs																			
Parameters	**Unrestricted**	**Restricted Residential**	**Industrial**	**Protection of Groundwater**																
PCBS (µg/kg)																				
Aroclor 1254	-	-	-	-	310	20,000	18,900	35.3 UJ	26.0 UJ	205 UJ	26.6 UJ	21.8 UJ	200 J	21.6 UJ	65.6 J	31.9 U	30.8 UJ	22.7 UJ	22.9 UJ	45 U
Aroclor 1260	-	-	-	-	42 U	2,000 U	28 U	-	-	-	-	-	-	-	-	-	-	-	-	45 U
Total PCBs	100	1,000	25,000	3,200	310	***20,000***	***18,900***	0	0	0	0	0	200	0	65.6	0	0	0	0	0

Boxed values indicate an exceedence of the Unrestricted Use SCOs
Bolded and italicized values indicate an exceedence of the Restricted Residential Use SCOs
Yellow values indicate an exceedence of the Industrial Use SCOs
Blue values indicate an exceedence of the Protection of Groundwater SCOs for CVOCs, barium, or cyanide for specific AOCs (refer to footnote d)

Table 1

Summary of Soil Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)
(2012 to 2015)

a\ NYSDEC = New York State Department of Environmental Conservation; SCO = Soil Cleanup Objective;
VOCs = volatile organic compounds; TIC = tentatively identified compound; CVOC = chlorinated VOC; AOC = area of concern;
SVOCs = semi-volatile organic compounds; PCBs = polychlorinated biphenyls; bgs = below ground surface;
µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram; "-" indicates SCO not developed or
sample not analyzed/result not reported.
Data Qualifiers:
- U = not detected
- J = estimated concentration below reporting limit but above method detection limit
- B = also detected in an associated blank
- P = percent difference between the original and confirmation analysis is greater than 40%
- L = result biased low because sample not collected according to 5035-L/5035A-L low-level specifications
- ^ = instrument-related quality control exceeds the control limits
- R = result rejected

b\ Evaluation criteria are the Soil Cleanup Objectives as listed in NYSDEC Part 375-6.8(b).

c\ Because the concentration reflects the sum reported, qualifiers that may apply to individual TICs are not presented.

d\ The Protection of Groundwater SCOs were only compared to results for samples collected in AOCs where
CVOCs, barium, or cyanide concentrations in groundwater exceed the Part 703 Groundwater Standards:
26, 28, 31, and 34 (CVOCs), 27 (barium), and 27, 28, and 29 (CVOCs and cyanide).

e\ Sample and duplicate.

Table 2
Summary of Sediment Sample Results - Detected Compounds Only
Former Emerson Power Transmission Facility
Ithaca, New York (a)

					Sample Location:	DS-8	DS-13	DS-15	DS-17	DS-18
					Sampling Entity:	LaBella	LaBella	LaBella	LaBella	LaBella
					Depth (feet bgs):	-	-	-	-	-
					Date Sampled:	09/04/13	09/25/13	09/25/13	09/25/13	09/25/13
	NYSDEC SGVs (b)									
	Freshwater Sediment				Wildlife					
Parameters	**Class A**	**Class B**	**Class C**	**PAHs**	**Bioaccumulation**					
SVOCs (µg/kg)										
Acenaphthene	-	-	-	9,820	-	590 U	1,600 J	5,000	2,000 U	2,200 U
Anthracene	-	-	-	11,880	-	-	4,500 J	9,200	2,000 U	2,200 U
Benzo(a)anthracene	-	-	-	16,820	-	210 J	13,000 J	31,000	2,000 U	2,200 U
Benzo(a)pyrene	-	-	-	19,280	-	520 J	12,000 J	30,000	2,000 U	2,200 U
Benzo(b)fluoranthene	-	-	-	19,580	-	500 J	14,000 J	44,000	2,000 U	2,200 U
Benzo(g,h,i)perylene	-	-	-	21,900	-	670	17,000 U	20,000	2,000 U	2,200 U
Benzo(k)fluoranthene	-	-	-	19,600	-	340 J	6,400 J	18,000	2,000 U	2,200 U
Carbazole	-	-	-	-	-	280 J	2,000 J	5,300	2,000 U	2,200 U
Chrysene	-	-	-	16,860	-	590 U	10,000 J	34,000	2,000 U	2,200 U
Dibenzo(a,h)anthracene	-	-	-	22,440	-	620	17,000 U	6,800	2,000 U	2,200 U
Dibenzofuran	-	-	-	-	-	590 U	1,200 J	3,000 J	2,000 U	2,200 U
Fluoranthene	-	-	-	14,160	-	590 U	28,000	73,000	290 J	130
Fluorene	-	-	-	10,780	-	1,000	1,800 J	4,400	2,000 U	2,200 U
Indeno(1,2,3-cd)pyrene	-	-	-	22,300	-	590 U	15,000	20,000	2,000 U	2,200 U
2-Methylnaphthalene	-	-	-	-	-	320 J	500 J	1,000 J	2,000 U	2,200 U
Naphthalene	-	-	-	7,700	-	590 U	920 J	2,200 J	110 J	2,200 U
Phenanthrene	-	-	-	11,940	-	589 U	17,000 J	47,000	150 J	2,200 U
Pyrene	-	-	-	13,960	-	600	23,000	76,000	320 J	2,200 U
Total PAHs (c)	4,000	4,000-35,000	35,000	-	-	950	***150,920***	***429,900***	870	130
Metals (mg/kg)										
Arsenic	10	10-33	33	-	-	8.8	-	10.7	1.3	5.9
Barium	-	-	-	-	-	120	-	161	51.2	68.1
Cadmium	1	1-5	5	-	-	2.3	-	2.8	0.66	0.21 J
Chromium	43	43-110	110	-	-	84.6	-	83	2.3	12.6
Lead	36	36-130	130	-	-	***135***	-	***240***	9.3	30.5
Mercury	0.2	0.2-1	1	-	-	0.12	-	0.3	0.022 U	0.032
Selenium	-	-	-	-	-	2.9	-	1.4 J	1.0	5.30 U
Silver	1	1-2.2	2.2	-	-	0.15 J	-	1.1	0.65 U	0.66 U
Cyanide	-	-	-	-	-	-	1.4 U	1.60 J	0.64	0.03
Herbicides and Pesticides (µg/kg)										
delta-BHC	-	-	-	-	-	3.1 U	120 U	42 JB	20 JB	100 U
gamma-BHC (Lindane)	47	47-78	78	-	-	3.1 U	23	44 JB	98 U	100 U
alpha-Chlordane (d)	-	-	-	-	7.6	3.1 U	120 U	210 U	98 U	100 U
gamma-Chlordane (d)	-	-	-	-	7.6	11	120 U	210 U	98 U	100 U
Dieldrin	180	180-780	780	-	-	31	120 U	210 U	98 U	100 U
4,4'-DDD	-	-	-	-	-	56	120 U	210 U	98 U	100 U
4,4'-DDE	-	-	-	-	-	10	120 U	36 J	98 U	100 U
4,4'-DDT	44	44-48,000	48,000	-	-	89	38	97 J	98 U	100 U
Endosulfan sulfate	1	1-20	20	-	-	11	120 U	210 U	98 U	100 U
Endrin	90	90-220	220	-	1.4	6.1	120 U	210 U	98 U	100 U
Endrin aldehyde	-	-	-	-	-	16	120 U	210 U	98 U	100 U
Endrin ketone					-	13	120 U	210 U	98 U	100 U
Total aldrin and dieldrin (c,e)	-	-	-	-	1.1	31	0	0	0	0
Total BHC isomers (c,e)	-	-	-	-	21	0	23	86	20	0
PCBs (µg/kg)				-	-					
Aroclor 1254	-	-	-	-	-	790	330 U	1,100	110 U	130 U
Aroclor 1260	-	-	-	-	-	60 U	330 U	490 J	110 U	130 U
Total PCBs (c,e)	100	100-1,000	1,000	-	4.1	790	0	***1,590***	0	0

Boxed values indicate an exceedence of the Class A Freshwater SGVs but within Class B SGV range
Bolded and italicized values indicate an exceedence of the Class C SGVs (and Classes A and B)
Yellow values indicate an exceedence of the PAH SGVs
Blue values indicate an exceedence of the Bioaccumulation-Based SGVs for Wildlife

a\ NYSDEC = New York State Department of Environmental Conservation; SGV = Sediment Guidance Values; SVOCs = semivolatile organic compounds; PAHs = polyaromatic hydrocarbons; PCBs = polychlorinated biphenyls; bgs = below ground surface; µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram; "-" indicates screening level not developed or analysis not performed.
Data Qualifiers:
U = not detected above reporting limit
J = estimated below reporting limit but above method detection limit
B = also detected in an associated blank

b\ SGVs identified in "Screening and Assesment of Contaminated Sediment", NYSDEC, Division of Fish, Wildlife and Marine Resources, Bureau of Habitat, June 24, 2014. Freshwater values as listed in Table 5, PAH values as listed in Table 7, and wildlife biaccumulation-based values as listed in Table 8.

c\ Because the concentration reflects the sum reported, qualifiers that may apply to individual parameters are not presented.

d\ Value is for total chlordane.

e\ Value is for sum of: total aldrin and dieldrin; total BHC isomers; or PCBs.

Table 3

Soil and Sediment Sampling and Analytical Program
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York (a)

Planned Area for Restricted Residential Use

Areas of Interest/ Location(s)	Constituents of Concern	Sample Exceedence Interval (feet bgs)	Exceeded SCO/SGV	Proposed Delineation Borings	Sample Intervals for Laboratory Analysis (feet bgs): Immediate	Sample Intervals for Laboratory Analysis (feet bgs): Pending Other Results (b)	Anticipated Depth to Bedrock (feet bgs)
AOC 26 - Building 24 Area							
LBA-SB-401	TCE	1.5, 2.5	PoG	4	0-2, 2-4	NA	<4
SRI-SB-101, SRI-SB-103	TCE	1	PoG	9	0-1.5	NA	<1.5
SRI-SB-104, SRI-SB-106	TCE, cis-1,2-DCE, trans-1,2-DCE	1	RR (TCE only), PoG				
SRI-SB-105, SRI-SB-106	PAHs	1	RR	0 (c)	NA	NA	
AOC 27 - Former Salt Baths Area							
LBA-SB-410	Ba. CN^-	- (d)	RR and PoG (Ba only) (d)	3 (d)	0-0.5	NA	NA
	TCLP metals	- (e)	- (e)	0 (e)	NA	NA	
	Ba, CN^-	- (f)	-	2	0-2, 2-4	4-6, 6-8	<4
AOC 31 - Upper Parking Lot 6 Area							
SB-124	PAHs	0.5-2.5	RR	0 (c)	NA	NA	<6
LBA-TP-16	As, Ba, Cr, Cu	2.5	RR	5	0-2", 2"-2'	NA	
WSP-SB-618	As, Ba, Cr, Cu	0-2, 2-3					
WSP-SB-619	As, Ba, Cr, Cu, Ni	0-2, 2-3					
WSP-SB-620	Ba, Cu	0-2					
	TCE	- (g)	-		0-2, 2-4	4-6, 6-8	
AOC 32 - Former Spray Pond Area							
LBA-TP-06	PAHs	1	RR	4	0-2", 2"-2'	NA	<11
LBA-SS-07	As, Pb	0-2 inches	RR	3	0-2", 2"-2'	NA	
DS-13 (sediment)	PAHs, Total BHCs 4,4-DDT	surface	SGVs	4 borings (h); 3 surface (i)	0-2", 2"-2' (soil borings)	NA	
DS-15 (sediment)	PAHs, PCBs, Total BHCs, 4,4-DDE, 4,4-DDT As, Cd, Cr, Pb, Hg, Ag	surface			0-0.5 (sediments)	- (i)	
AOC 33 - Area West of Building 4							
LBA-SB-425	As, Ba	4	RR	3	0-2", 2"-2', 2-4, 4-6 (j)	6-8, 8-10	NA
AOC 34 - Area East of Buildings 13A and 14							
LBA-SB-223	PCE, TCE, cis-1,2-DCE, PAHs	0.5-1	RR (PCE only), PoG RR	4	0-2", 2"-2', 4-6 (k)	6-8, 8-10	<6
WSP-SB-624	PCE, TCE, cis-1,2-DCE	0-2	RR (PCE only), PoG				
WSP-SB-625	PCE, TCE, cis-1,2-DCE	0-2	RR (PCE only), PoG				
WSP-SB-626	PCE	0-3	PoG				
LBA-SB-303	Cu	5	RR	2 (l)	0-2", 2"-2'	NA	NA
AOC 35 - Isolated Locations (North)							
Building 11A / LBA-SB-250	TCE	4	PoG	1	0-2, 2-4, 4-6	6-8, 8-10	<8
East of Building 24							
SB-101	As	0.5-2.5	RR	0 (c)	NA	NA	NA
SB-102	As	0.5-2.5	RR	0 (c)	NA	NA	NA
SB-103/SB-103-SS	As	0-2 in, 0.5-2.5	RR	3	0-2", 2"-2'	NA	NA
Parking Lot 7							
SB-106	PAHs	0.5-2.5	RR	0 (c)	NA	NA	NA
SB-108	PAHs	0.5-2.5	RR	0 (c)	NA	NA	NA
Medical Parking Lot / SB-109	PAHs	0.5-2.5	RR	0 (c)	NA	NA	NA
Near Parking Lot 4 / SS-100	PAHs	0-2 inches	RR	3	0-2", 2"-2'	NA	NA
West of South Cayuga Street / SS-103	PAHs, Pb	0-2 inches	RR	3	0-2", 2"-2'	NA	NA
South of Parking Lot 3 / LBA-B17-TSS-3	Cd, Pb	0-2 inches	RR	3	0-2", 2"-2'	NA	NA
Parking Lot 3 / LBA-TP-03	PAHs	2	RR	3	0-2", 2"-2'	NA	NA
South of AOC 29 / LBA-SB-205	Ba	3	RR	3	0-2", 2"-2'	NA	NA
Railroad Right-of-Way							
LBA-SB-240	As	1	RR	3	0-2", 2"-2'	8-10, 12-14	<6
DS-1	PAHs	surface	RR	3	0-2", 2"-2'	4-6, 8-10	<6
DS-8 (sediment)	PCBs, gamma chlordane, 4,4-DDT, endosulfan sulfate, endrin, total aldrin/dieldrin, Cd, Cr, Pb	surface	Class C SGV	3 surface	0-0.5 (sediments)	NA	NA
				4 borings	0-2", 2"-2'	NA	NA

Planned Area for Industrial Use

Areas of Interest/ Location(s)	Constituents of Concern	Sample Exceedence Interval (feet bgs)	Exceeded SCO/SGV	Proposed Delineation Borings	Sample Intervals for Laboratory Analysis (feet bgs): Immediate	Sample Intervals for Laboratory Analysis (feet bgs): Pending Other Results	Anticipated Depth to Bedrock (feet bgs)
AOC 28 - Building 30/Oil Shed Area							
LBA-TP-10	PCE, TCE	sidewall	PoG	6	0-2", 2"-2', 2-4, 6-8	10-12, 14-16	<8
WSP-SB-611	TCE	0-3.9	PoG				
WSP-SB-612	PCE, TCE, 1,1,1-TCA	0-2	I (TCE only), PoG				
WSP-SB-613	TCE	0-2.5	PoG				
SB-126	Pb	3-3.8	I	7	0-2", 2"-2', 2-4 (m)	4-6, 6-8 (m)	<8
LBA-TP-12	As	6.5	I				
	CN^-	- (m)	- (m)				
AOC 29 - Former Propane AST Area							
SB-123	PAHs	0.5-2.5, 17-18	I	8	0-2", 2"-2'	NA	NA
LBA-SB-200	As	8.5-9	I				
LBA-SB-203	As	13-23	I				
LBA-SB-518	As	4-6	I				
AOC 30 - Rice Paddy Area							
SB-125	PAHs	0.5-2.5, 18.5-20	I	3 (n)	0-2", 2"-2'	NA	>30
WSP-SB-617	PCBs	8-8.6	I	4 (n)	0-2", 2"-2', 8-10, 12-14, 16-18, 20-22	NA	
LBA-SB-209	As	27	I	0 (n)	NA	NA	
	CN^-	- (n)	- (n)	0 (n)	NA	NA	
AOC 35 - Isolated Locations (South)							
LBA-SB-246	As	10-12	I	3	0-2", 2"-2'	NA	NA

a\ bgs = below ground surface; PCE = tetrachloroethene, TCE = trichloroethene; cis-1,2-DCE = cis-1,2-dichloroethene; PAHs = polynuclear aromatic hydrocarbons; PCBs = polychlorinated biphenyls; RR = Restricted Residential Use; I = Industrial Use; PoG = Protection of Groundwater; TCLP = toxicity characteristic leaching procedure
NA indicates not applicable;
Constituents of concern are those constituents detected:
- in soil at a concentration above the New York Codes, Rules, and Regulations Subpart 375-6 Remedial Program Soil Cleanup Objectives (SCOs for Restricted Residential Use (Mixed Use Areas) or Industrial Use (Industrial Use Areas); refer to the text regarding exceedences of the Protection of Groundwater SCOs in some areas
- in sediment at a concentration above the New York State Department of Environmental Conservation Sediment Guidance Values (SGVs) provided in Screening and Assessment of Contaminated Sediment (2014).

Refer to Figures 5A and 5B and Tables 1 and 2 for specific PAH constituents of concern
The laboratory will report results for all of the constituents associated the specific analytical as defined in Table 4.

b\ The sample depths provided establish a pattern, e.g., 2- or 4-foot centers, which is to be continued to total depth
c\ No further delineation is necessary because the location is covered with asphalt or concrete which is anticipated to stay intact following redevelopment
d\ LBA-SB-410 is a bedrock sample that was collected from a horizontal boring; the concentration exceeded both the Restricted Residential and Protection of Groundwater SCOs. If soil is beneath the building slab in the salt bath area, samples will be collected for analysis of barium and cyanide based on the presence of both at concentrations above the groundwater standard in samples collected from wells LBA-MW-18 and LBA-MW-35
e\ Analysis for TCLP metals will be performed if the material encountered beneath the concrete within or adjacent to a salt bath contains a salt residue
f\ Based on the presence of barium and cyanide at concentrations above the groundwater standard in samples collected from wells LBA-MW-18 and LBA-MW-35 and the presence of barium in above the TCLP limit in a residual sample collected from along the sanitary sewer in this area, analysis for both will be performed
g\ Due to the presence of TCE above the groundwater standard in the sample collected from LBA-MW-15, soil samples will be collected for analysis of VOCs and the results compared to the Protection of Groundwater SCOs.
h\ Samples will also be collected from the easternmost boring associated with LBA-TP-06 and the western most boring associated with LBA-SS-07
i\ An additional two sediment samples each will be collected upstream and downstream of the proposed locations and held for potential analysis pending the results for the initial delineation locations.
j\ Based on exceedences of the groundwater standard for barium downgradient of this area, samples will be collected at depth to evaluate the potential presence of barium at concentrations above the Protection of Groundwater SCO.
k\ Based on exceedences of the Protection of Groundwater SCO in this AOC, additional samples will be collected at depth to further evaluate the extent of the exceedences
l\ Samples will also be collected from the two nearest VOC- and PAH-related borings in this AOC.
m\ Due to the presence of cyanide above the groundwater standard in the sample collected from LBA-MW-13, data for soil samples collected in this area will be compared to the Protection of Groundwater SCO. Samples collected from 2 inches bgs to 2 feet bgs will be analyzed for arsenic and lead (i.e., RCRA metals and cyanide. Samples from 2 to 4 feet bgs will be analyzed for cyanide only; samples collected from greater depths will be held for potential cyanide analysis pending the results for the shallower samples.
n\ Surface soil samples (to 2 feet bgs) will also be collected for potential analysis of PAHs from the four PCB-related borings and for analysis of PCBs from the three three PAH-related borings.
Surface soil samples will be collected from each of the seven PAH/PCB-related borings for analysis arsenic.
Due to the presence of cyanide above the groundwater standardin the sample collected at LBA-MW-14, data for soil samples collectedin this area will be compared to the Protection of Groundwater SCO. Samples will be collected from the southernmost PAH-related boring and the four PCB-related borings at 0 to 2 feet bgs and 4 to 6 feet bgs for analysis of cyanide. Samples will also be collected on 4-foot centers from 8 feet bgs and held for potential cyanide analysis pending the results for the shallower samples.

Table 4

Sample Analytical Methods, Preservation, and Holding Times
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York (a)

Soill, Sediment, Residual Material						
Parameter	**SW-846 Method (b)**	**RL**	**MDL**	**Container**	**Preservation**	**Maximum Holding Time**
VOCs (µg/kg)	5035/8260			G, Teflon-Lined Cap	Method 5035, Cool, 4°C	14 days
Acetone		10	2.8			
Benzene		1	0.34			
Bromobenzene		5	0.25			
Bromochloromethane		5	0.35			
Bromodichloromethane		2	0.21			
Bromoform		2	0.35			
sec-Butylbenzene		5	0.75			
tert-Butylbenzene		5	0.21			
Carbon disulfide		5	0.13			
Carbon tetrachloride		2	0.22			
Chlorobenzene		2	0.16			
Chloroethane		5	0.76			
Chloroform		2	0.17			
p-Chlorotoluene		5	0.27			
Dichlorodifluoromethane		2	0.81			
1,1-Dichloroethane		2	0.27			
1,2-Dichloroethane		2	0.32			
1,1-Dichloroethene		2	0.41			
trans-1,2-Dichloroethene		2	0.42			
1,2-Dichloropropane		2	0.42			
1,3-Dichloropropane		5	0.33			
2,2-Dichloropropane		5	0.56			
1,1-Dichloropropene		5	0.26			
cis-1,3-Dichloropropene		2	0.23			
trans-1,3-Dichloropropene		2	0.26			
Ethylbenzene		2	0.69			
2-Hexanone		10	0.76			
Iodomethane		5	0.25			
Isopropylbenzene		5	0.17			
p-Isopropyltoluene		5	0.17			
4-Methyl-2-pentanone (MIBK)		5	0.54			
Methylene bromide		5	0.46			
Methylene chloride		2	0.53			
Naphthalene		5	0.4			
n-Propylbenzene		5	0.15			
Styrene		5	0.17			
1,1,1,2-Tetrachloroethane		5	0.4			
1,1,2,2-Tetrachloroethane		2	0.39			
Tetrachloroethene		2	0.31			
Toluene		5	0.21			
1,2,3-Trichlorobenzene		5	0.43			
1,2,4-Trichlorobenzene		5	0.51			
1,1,1-Trichloroethane		2	0.22			
1,1,2-Trichloroethane		2	0.57			
Trichloroethene		2	0.24			
Trichlorofluoromethane		2	0.40			
1,2,3-Trichloropropane		5	0.29			
1,2,4-Trimethylbenzene		5	1.4			
1,3,5-Trimethylbenzene		5	1.5			
Vinyl acetate		5	1.5			
Vinyl chloride		2	0.91			
m,p-Xylene		2	0.44			
o-Xylene		2	0.28			
Xylene (total)		2	0.22			

Table 4

Sample Analytical Methods, Preservation, and Holding Times
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York (a)

Parameter	SW-846 Method	RL	MDL	Container	Preservation	Maximum Holding Time
Soill, Sediment, Residual Material						
PAHs (µg/kg)	8270			G, Teflon-Lined Cap	Cool, 4°C	7 days to extraction; 40 days after extraction
Acenaphthene		100	13			
Acenaphthylene		100	10			
Anthracene		100	12			
Benzo(a)anthracene		100	13			
Benzo(a)pyrene		100	11			
Benzo(b)fluoranthene		100	13			
Dibenzo(a,h)anthrancene		100	12			
Fluoranthene		100	14			
Fluorene		100	13			
Indeno(1,2,3-cd)pyrene		100	11			
2-Methylnaphthalene		100	13			
Naphthalene		100	16			
Phenanthrene		100	14			
PCBs (µg/kg)	8082			G, Teflon-Lined Cap	Cool, 4°C	7 days to extraction; 40 days after extraction
Aroclor 1016		50	11			
Aroclor 1221		50	20			
Aroclor 1232		50	20			
Aroclor 1242		50	21			
Aroclor 1248		50	18			
Aroclor 1254		50	22			
Aroclor 1260		50	19			
Pesticides/Herbicides (µg/kg)	8081			G, Teflon-Lined Cap	Cool, 4°C	14 days to extraction; 40 days after extraction
Aldrin		6.4	1.2			
alpha-BHC		6.4	1.6			
beta-BHC		6.4	1.6			
gamma-BHC (Lindane)		6.4	1.4			
Chlordane		64	9.9			
Dieldrin		6.4	1.4			
4,4'-DDD		6.4	1.7			
4,4'-DDE		6.4	1.2			
4,4'-DDT		6.4	1.7			
Endosulfan sulfate		6.4	1.6			
Endosulfan-I		6.4	1.7			
Endosulfan-II		6.4	1.5			
Endrin		6.4	2			
Endrin aldehyde		6.4	1.6			
Heptachlor		6.4	1.8			
Heptachlor epoxide		6.4	1.5			
Methoxychlor		6.4	2.8			
Toxaphene		64	22			
RCRA Metals and Copper (mg/kg)	6010			G, Teflon-Lined Cap	Cool, 4°C	6 months
Arsenic		1.0	0.2			
Barium		5.0	0.054			
Cadmium		0.4	0.024			
Chromium		1.0	0.059			
Copper		2.5	0.16			
Lead		1.0	0.23			
Nickel		4	0.057			
Selenium		1	0.25			
Silver		0.5	0.043			
Mercury	7471	0.0	0.0011			
Cyanide (mg/kg)	9012B	0.120	0.013	Amber	Cool, 4°C	14 days
TCLP Metals (mg/l)	1331 (c)			G, Teflon-Lined Cap	Cool, 4°C	6 months
Arsenic		0.004	0.0024			
Barium		0.05	0.002			
Cadmium		0.004	0.0024			
Chromium		0.010	0.0073			
Lead		0.005	0.0019			
Selenium		0.005	0.0096			
Silver		0.01	0.0027			
Mercury		0.0002	0.000096			

Table 4

Sample Analytical Methods, Preservation, and Holding Times
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York (a)

Groundwater, Seep, Storm Water, Sanitary Sewer Water						
Parameter	**SW-846 Method**	**RL**	**MDL**	**Container**	**Preservation**	**Maximum Holding Time**
VOCs (µg/l)	8260			G, Teflon-Lined Cap	Cool, 4°C, preserve with HCl	14 days
Acetone		10	2.5			
Benzene		0.5	0.32			
Bromobenzene		5	0.35			
Bromochloromethane		5	0.57			
Bromodichloromethane		1	0.34			
Bromoform		1	0.61			
Bromomethane		2	1.8			
2-Butanone (MEK)		5	2.5			
Butylbenzene		5	1.1			
sec-Butylbenzene		5	0.42			
tert-Butylbenzene		5	0.39			
Carbon disulfide		5	0.46			
Carbon tetrachloride		1	0.53			
Chlorobenzene		1	0.43			
Chloroethane		2	0.53			
Chloroform		1	0.41			
Chloromethane		2	1.1			
o-Chlorotoluene		5	0.38			
p-Chlorotoluene		5	0.45			
1,2-Dibromo-3-chloropropane		5	1.9			
Dibromochloromethane		1	0.38			
1,2-Dibromoethane		1	0.87			
1,2-Dichlorobenzene		1	0.32			
1,3-Dichlorobenzene		1	0.56			
1,4-Dichlorobenzene		1	0.36			
Dichlorodifluoromethane		2	0.71			
1,1-Dichloroethane		1	0.36			
1,2-Dichloroethane		1	0.5			
1,1-Dichloroethene		1	0.61			
cis-1,2-Dichloroethene		1	0.84			
trans-1,2-Dichloroethene		1	0.51			
1,2-Dichloropropane		2	0.5			
1,3-Dichloropropane		5	0.89			
2,2-Dichloropropane		5	1.3			
1,1-Dichloropropene		5	0.47			
cis-1,3-Dichloropropene		0.5	0.42			
trans-1,3-Dichloropropene		0.5	0.5			
Ethylbenzene		1	0.38			
2-Hexanone		5	1.6			
Iodomethane		5	0.66			
Isopropylbenzene		5	0.35			
p-Isopropyltoluene		5	0.37			
4-Methyl-2-pentanone (MIBK)		5	0.99			
Methylene bromide		5	0.52			
Methylene chloride		2	0.28			
Methyl tert-butyl ether	(d)	1	0.35			
Naphthalene		5	0.69			
n-Propylbenzene		5	0.49			
Styrene		5	0.85			
1,1,1,2-Tetrachloroethane		1	0.43			
1,1,2,2-Tetrachloroethane		0.5	0.4			
Tetrachloroethene		1	0.59			
Toluene		1	0.33			
1,2,3-Trichlorobenzene		5	0.68			
1,2,4-Trichlorobenzene		5	0.5			
1,1,1-Trichloroethane		1	0.46			
1,1,2-Trichloroethane		1	0.45			
Trichloroethene		1	0.47			
Trichlorofluoromethane		1	0.55			
1,2,3-Trichloropropane		5	0.81			
1,2,4-Trimethylbenzene		5	0.32			
1,3,5-Trimethylbenzene		5	0.38			
Vinyl acetate		5	0.71			
Vinyl chloride		1	0.58			
m,p-Xylene		1	0.93			
o-Xylene		1	0.36			
Xylene (total)		1	0.36			

Table 4

Sample Analytical Methods, Preservation, and Holding Times
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York (a)

Groundwater, Seep, Storm Water, Sanitary Sewer Water						
Parameter	**SW-846 Method**	**RL**	**MDL**	**Container**	**Preservation**	**Maximum Holding Time**
SVOCs (µg/l)	8270			A, G, Teflon-Lined Cap	Cool, 4°C	14 days to extraction; 40 days to analysis
Acenaphthene		2	0.32			
Acenaphthylene		2	0.21			
Aniline		10	0.64			
Anthracene		2	0.19			
Benzidine		5	2.5			
Benzo(a)anthracene		2	0.49			
Benzo(a)pyrene		2	0.16			
Benzo(b)fluoranthene		2	0.25			
Benzo(g,h,i)perylene		2	0.83			
Benzo(k)fluoranthene		2	0.87			
Benzyl Alcohol		10	2.3			
Benzoic Acid		10	2.5			
4-Bromophenyl phenyl ether		5	0.47			
Butyl benzyl phthalate		5	0.53			
Carbazole		2	0.16			
4-Chloro-3-methyl phenol		10	0.83			
4-Chloroaniline		10	0.56			
bis(2-Chloroethoxy)methane		5	0.29			
bis(2-Chloroethyl)ether		5	0.35			
bis(2-Chloroisopropyl)ether		5	0.33			
2-Chloronaphthalene		5	0.31			
2-Chlorophenol		5	0.31			
4-Chlorophenyl phenyl ether		5	0.25			
Chrysene		2	0.17			
Di-n-butyl phthalate		5	0.17			
Di-n-octyl phthalate		5	0.28			
Dibenzo(a,h)anthracene		2	0.64			
Dibenzofuran		2	0.26			
1,2-Dichlorobenzene		5	0.2			
1,3-Dichlorobenzene		5	0.27			
1,4-Dichlorobenzene		5	0.23			
3,3'-Dichlorobenzidine		5	0.27			
2,4-Dichlorophenol		10	0.4			
Diethyl phthalate		5	0.2			
Dimethyl phthalate		5	0.34			
2,4-Dimethylphenol		10	0.56			
4,6-Dinitro-o-cresol		10	1.9			
2,4-Dinitrophenol		20	2.5			
2,4-Dinitrotoluene		10	0.46			
2,6-Dinitrotoluene		10	0.3			
1,2-Diphenylhydrazine		5	0.24			
bis(2-Ethylhexyl)phthalate		2	0.33			
Fluoranthene		2	0.45			
Fluorene		2	0.21			
Hexachlorobenzene		5	0.29			
Hexachlorobutadiene		5	0.22			
Hexachlorocyclopentadiene		10	1.3			
Hexachloroethane		5	0.3			
Indeno(1,2,3-cd)pyrene		2	0.82			
Isophorone		5	0.45			
1-Methylnaphthalene		2	0.42			
2-Methylnaphthalene		2	0.26			
2-Methylphenol		10	0.23			
3&4-Methylphenol		10	0.47			
Naphthalene		2	0.3			
2-Nitroaniline		10	0.4			
3-Nitroaniline		10	1.4			
4-Nitroaniline		10	2.2			
Nitrobenzene		5	0.39			
2-Nitrophenol		10	2.9			
4-Nitrophenol		20	0.53			
n-Nitroso-di-n-propylamine		5	0.4			
n-Nitrosodimethylamine		5	1			
n-Nitrosodiphenylamine		5	0.19			
Pentachlorophenol		10	1.1			
Phenanthrene		2	0.14			
Phenol		5	0.3			
Pyrene		2	0.17			
2,4,5-Trichlorophenol		10	0.37			
2,4,6-Trichlorophenol		10	0.18			

Table 4

Sample Analytical Methods, Preservation, and Holding Times
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York (a)

Groundwater, Seep, Storm Water, Sanitary Sewer Water						
Parameter	**SW-846 Method**	**RL**	**MDL**	**Container**	**Preservation**	**Maximum Holding Time**
TAL Metals (mg/l) (e)	6010			G, Teflon-Lined Cap	Cool, 4°C	6 months
Aluminum		0.2	0.013			
Antimony		0.006	0.0024			
Arsenic		0.004	0.0024			
Barium		0.05	0.002			
Beryllium		0.004	0.00018			
Cadmium		0.004	0.00024			
Calcium		5	0.021			
Chromium		0.01	0.00073			
Cobalt		0.05	0.0006			
Copper		0.025	0.0036			
Iron		0.1	0.0074			
Lead		0.005	0.0019			
Magnesium		5	0.074			
Manganese		0.015	0.00035			
Nickel		0.04	0.00057			
Potassium		5	0.069			
Selenium		0.010	0.0027			
Silver		0.005	0.00096			
Sodium		5	0.022			
Thallium		0.005	0.0015			
Vanadium		0.01	0.00072			
Zinc		0.02	0.0042			
Mercury	7470	0.0002	0.000096			
Cyanide (mg/l)	9012	0.010	0.00135	P, G	Cool, 4°C, preserve with NaOH	14 days

a\ VOCs = volatile organic compounds; PAHs = polynuclear aromatic hydrocarbons; PCBs = polychlorinated biphenyls
TCLP = toxicity characteristic leaching procedure; SVOCs - semi-volatile organic compounds; TAL = Target Analyte List
RL = reporting limit; MDL = method detection limit; G = glass; A = amber; P = plastic; µg/kg = micrograms per kilogram;
mg/kg = milligrams per kilogram; mg/l = milligrams per liter; ^{o}C = degrees Celsius; HCl = hydrochloric acid; HNO_3 = nitric acid;
NaOH = sodium hydroxide.
All laboratory samples are maintained at 4 degrees ± 2 degrees ^{o}C prior to analysis and sample disposal.
b\ U.S. Environmental Protection Agency. 1986. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.
As updated and revised.
c\ Analysis of the TCLP extract will performed using SW-846 Method 6010 for all metals excluding mercury;
analysis for mercury will be performed using SW-846 Method 7470
d\ Not on the standard list; however, laboratory will be asked to report the result for this compound
e\ Only the historical wells will be analyzed for the TAL metals; the remainder of the aqeuos samples
will be analyzed for the RCRA metals, i.e., the TCLP metals list.

Table 5

Historical Well HISTWELL-1 LNAPL Sample Results
(June 23, 2015)
Former Emerson Power Transmission Facility
Ithaca, New York (a)

	Results
VOCs (µg/kg)	
cis-1,2-Dichloroethene	34,000
Trichloroethene	480 J
Vinyl Chloride	900 J
SVOCs (µg/kg)	
Benzo(a)pyrene	65,000
Benzo(b)fluoranthene	81,000
Benzo(g,h,i)perylene	24,000
Benzo(k)fluoranthene	41,000
Chrysene	72,000
Fluoranthene	110,000
Indeno(1,2,3-cd)pyrene	23,000
Pyrene	120,000
Gasoline Range Organics (mg/kg)	
Total Petroleum Hydrocarbons (C6-C10)	100
Diesel Range Organics (mg/kg)	
Total Petroleum Hydrocarbons (C10-C28)	190,000
Hydrocarbons (mg/kg)	
Gasoline	1,500 U
Kerosene	3,800 U
Motor Oil	560,000
Fuel Oil #2	3,800 U
Fuel Oil #4	3,800 U
Fuel Oil #6	3,800 U
Unknown Hydrocarbons	1,500 U
PCBs (mg/kg)	
Total PCBs	ND
TAL Metals (mg/kg)	
Aluminum	249
Arsenic	0.75 J
Barium	6.2
Calcium	113
Chromium	1.4
Cobalt	0.12 J
Copper	5.2
Iron	786
Lead	0.71 J
Magnesium	31.2
Manganese	58.8
Nickel	0.67 J
Potassium	44.7
Sodium	106 J
Vanadium	0.71
Zinc	3.3
General Chemistry	
Flashpoint (°F)	>200
pH	5.17 H
Cyanide, Total (mg/kg)	0.98 U
Sulfide, Reactive (mg/kg)	14

a/ VOC = volatile organic compound; SVOC = semi-volatile organic compound;
PCBs = polychlorinated biphenyls; µg/kg = micrograms per kilogram;
mg/kg = milligrams per kilogram; °F = degrees Fahrenheit;
Data Qualifiers:
U = not detected; result is less than the method detection limit
J = analyte present; reported value may not be accurate or precise
H = sample analyzed beyond holding time

Table 6

Summary of Well Construction Information
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York (a)

Well ID	Installation Date	State Plane Coordinates Easting	State Plane Coordinates Northing	Elevations Ground Surface	Elevations Top of Casing	Total Depth (feet bgs)	Total Depth (feet aMSL)	Screened/ Open	Screened/Open Interval (feet bgs)	Screened/Open Interval (feet aMSL)	Monitored Zone	Casing Diameter (inches)	Casing Material
EB-2/MW-34B	09/18/07	843401.54	887793.73	411.28	411.21	22	389.28	Screen	9.5 - 14.5	401.8 - 396.8	B	2	PVC
EB-3/MW-35T	09/20/07	843564.09	887105.95	517.27	516.95	30.2	487.07	Screen	21 - 26	496.3 - 491.3	B	2	PVC
EB-4/MW-36B	09/19/07	843511.90	887349.68	478.91	478.58	29	449.91	Screen	17 - 22	461.9 - 456.9	B	2	PVC
EB-5/MW-37B	09/14/07	843376.63	887759.70	408.97	408.46	15	393.97	Screen	10 - 15	399.0 - 394.0	B	2	PVC
EB-6/MW-38T	09/10/07	843681.60	886577.30	590.39	590.18	41	549.39	Screen	27 - 37	563.4 - 553.4	B	2	PVC
EB-7/MW-39T	09/12/07	843670.41	886076.19	641.70	641.33	60	581.70	Screen	44 - 54	597.7 - 587.7	C	2	PVC
EB-8/MW-40T	09/07/07	843620.56	886481.76	593.30	592.97	30.6	562.70	Screen	9 - 19	584.3 - 574.3	B	2	PVC
EB-10/MW-42T	09/11/07	843564.43	885888.68	656.35	655.98	48.8	607.55	Screen	33 - 43	623.4 - 613.4	B	2	PVC
EB-11/MW-43T	09/10/07	843289.03	886471.74	565.55	565.18	35	530.55	Screen	14.5 - 24.5	551.1 - 541.1	B	2	PVC
EB-12/MW-44T	09/13/07	842927.90	885982.86	558.67	558.22	50	508.67	Screen	41 - 46	517.7 - 512.7	B	2	PVC
EB-13/MW-45T	09/13/07	842468.45	885373.78	545.92	545.64	30	515.92	Screen	10 - 15	535.9 - 530.9	B	2	PVC
EW-01B	09/13/05	843106.18	886208.09	564.92	564.54	17.5	547.42	Screen	7 - 17	557.9 - 547.9	B	2	PVC
EW-1-62C/EXB-05	08/20/07	843159.95	886285.60	566.59	565.34	62	504.59	Open	18.7 - 62.7	547.9 - 503.9	C	6	NA
EW-2-62C/EW-01	-	843119.30	886255.15	565.33	563.93	60.5	504.82	Open	18.7 - 62.7	546.6 - 502.6	C	2.75	NA
EW-3-60C/EW-02	-	843108.21	886223.35	565.12	563.28	60.6	504.52	Open	19.2 - 60.6	545.9 - 504.5	C	-	-
EW-4	*-*	*-*	*-*	*580.00*	*581.50*	*40*	*540.00*	*Open*	*15 - 40*	*565.0 - 540.0*	*C*	*2.75*	*NA*
EW-4-25B	10/31/08	843107.29	886221.29	564.04	562.90	25.5	538.54	Screen	15 - 25	549.0 - 539.0	B	-	-
EW-5-25B	09/16/08	843100.60	886196.14	564.49	563.37	25.2	539.29	Screen	15 - 25	549.5 - 539.5	B	-	-
EW-6-60C/EW-03	-	843099.51	886194.81	564.49	563.84	54	510.51	Open	19.2 - 60.6	545.3 - 503.9	C	-	NA
EW-7-25B	09/19/08	843084.17	886176.33	563.28	561.76	25	538.28	Screen	15 - 25	548.3 - 538.3	B	-	-
EW-8-62C/EXB-06	08/29/07	843076.90	886167.91	562.94	561.82	61.5	501.44	Open	23.5 - 61.5	539.4 - 501.4	C	-	NA
EW-9-86C/EXB-08 (b)	*08/01/07*	*843129.61*	*886129.91*	*587.56*	*586.97*	*100*	*487.56*	*Open*	*20 - 100*	*567.6 - 487.6*	*C*	*-*	*NA*
EW-9R-72C	06/02/15	-	-	-	-	79.3	-	Open	55 - 79.3	-	C	4	NA
EW-10-25B	09/18/08	843068.65	886158.34	563.04	561.82	25	538.04	Screen	15 - 25	548.0 - 538.0	B	-	-
EW-11-43C/MW-14C	03/15/11	843153.00	886142.06	586.61	588.31	45	541.61	Open	25 - 45	561.6 - 541.6	C	4	NA
EW-12-45C/EXB-02	08/16/07	843190.54	886146.14	587.05	586.47	80	507.05	Open	25 - 45	562.1 - 542.1	C	4	NA
EXB-01	*08/21/07*	*843139.01*	*886121.51*	*587.45*	*587.03*	*81*	*506.45*	*Open*	*19.5 - 81*	*568.0 - 506.5*	*C*	*-*	*NA*
EXB-07	08/23/07	843046.56	886317.64	529.19	529.06	25	504.19	Open	5 - 25	524.2 - 504.2	C	-	NA
EXB-09	05/29/08	843148.53	886342.70	565.83	565.19	64	501.83	Open	- 64	- 501.8	C	-	NA
EXB-10	05/23/08	843018.96	886104.16	560.34	560.07	64	496.34	Open	- 64	- 496.3	C	-	NA
EXB-11	05/30/08	843046.16	886295.68	532.82	532.43	80	452.82	Open	- 80	- 452.8	C	-	NA
MW-1	04/16/87	843135.39	886267.09	566.03	565.77	39.2	526.83	Open	19 - 39.2	547.0 - 526.8	C	3.75	PVC
MW-1B	07/09/04	843143.24	886274.67	566.40	566.34	19.8	546.60	Screen	14.8 - 19.8	551.6 - 546.6	B	4	SS
MW-2	04/16/87	843111.39	886231.18	565.04	567.12	38.3	526.74	Open	13.5 - 38.3	551.5 - 526.7	B	3.75	NA
MW-2B	10/16/03	843116.22	886211.86	564.74	564.00	20.5	544.24	Screen	10.5 - 20.5	554.2 - 544.2	B	4	PVC
MW-3B	10/14/03	843101.31	886199.75	564.46	564.24	25	539.46	Screen	15 - 25	549.5 - 539.5	B	4	-
MW-3-13	04/20/87	843096.66	886194.82	564.42	564.15	12	552.42	Screen	4 - 12	560.4 - 552.4	A/B	4	PVC
MW-3-31	*04/20/87*	*843091.96*	*886191.40*	*564.12*	*566.25*	*38*	*526.12*	*Open*	*21 - 38*	*543.1 - 526.1*	*C*	*3*	*NA*
MW-3-100	07/08/88	843099.75	886201.33	564.49	564.15	100	464.49	Screen	80 - 100	484.5 - 464.5	D	2	SS
MW-3-150	08/12/88	843103.97	886197.68	564.47	564.24	150.5	413.97	Screen	130.5 - 150.5	434.0 - 414.0	D	3	SS
MW-4	08/10/89	843530.13	886136.74	622.18	625.81	47	575.18	Open	12 - 47	610.2 - 575.2	B	3	NA
MW-4B	07/08/04	843025.61	886110.77	561.36	563.83	23	538.36	Screen	15 - 20	546.4 - 541.4	B	4	-
MW-5B	10/17/03	843087.01	886183.36	563.35	563.22	21	542.35	Screen	11 - 21	552.4 - 542.4	B	4	-
MW-5-25	07/18/88	843185.23	886140.54	587.03	586.55	36	551.03	Screen	3.6 - 12	583.4 - 575.4	B	2	SS
MW-5-40	07/14/88	843192.04	886147.65	587.03	586.42	40.3	546.73	Open	17.3 - 40.3	569.7 - 546.7	B	3	NA
MW-5-100	08/13/89	843188.52	886143.83	587.03	586.23	99	488.03	Screen	79 - 99	508.0 - 488.0	C	2	SS
MW-6B	10/20/03	843468.17	886629.39	560.01	559.59	20	540.01	Screen	10 - 20	550.0 - 540.0	B	4	-
MW-6-25	*07/14/88*	*842996.52*	*886073.08*	*558.52*	*NA*	*11*	*547.52*	*Open*	*4 - 11*	*554.5 - 547.5*	*B*	*2*	*SS*
MW-6-40	*07/11/88*	*843033.62*	*886098.28*	*559.51*	*NA*	*38.9*	*520.61*	*Open*	*18.9 - 38.9*	*540.6 - 520.6*	*B*	*3*	*NA*
MW-6-100	*07/22/88*	*843006.61*	*886084.69*	*558.51*	*NA*	*99.5*	*459.01*	*Open*	*79.5 - 99.5*	*479.0 - 459.0*	*C*	*2*	*SS*
MW-7B	08/24/07	843133.79	886125.10	587.53	587.26	21	566.53	Screen	10 - 20	577.5 - 567.5	B	4	-
MW-7-40	07/29/88	842994.20	886304.99	531.11	533.00	38	493.11	Open	18 - 38	513.1 - 493.1	B	3	NA
MW-8B	08/27/07	843183.09	886137.66	587.12	586.64	21.3	565.82	Screen	10 - 20	577.1 - 567.1	B	4	-
MW-8-40	07/15/88	843130.89	886507.35	518.27	517.98	43.2	475.07	Open	17.1 - 43.2	501.2 - 475.1	B	3	NA
MW-9B	04/27/10	843126.26	886060.58	587.03	586.63	30.4	556.63	Open	17 - 27	570.0 - 560.0	B	2	NA
MW-9-40	08/22/89	843066.70	886464.51	507.17	507.01	40	467.17	Open	7.5 - 40	499.7 - 467.2	B	3	NA
MW-9-100	08/18/89	843064.73	886467.78	506.76	506.17	101	405.76	Screen	80 - 100	426.8 - 406.8	C	2	SS
MW-10B	04/27/10	843078.79	886022.81	587.24	586.88	27.5	559.74	Screen	22 - 27	565.2 - 560.2	B	2	PVC
MW-10-40	*08/24/89*	*842917.05*	*886896.95*	*417.22*	*417.22*	*40*	*377.22*	*Open*	*11 - 40*	*406.2 - 377.2*	*B*	*3*	*NA*

Table 6

Summary of Well Construction Information
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York (a)

Well ID	Installation Date	State Plane Coordinates Easting	State Plane Coordinates Northing	Elevations Ground Surface	Elevations Top of Casing	Total Depth (feet bgs)	Total Depth (feet aMSL)	Screened/ Open	Screened/Open Interval (feet bgs)	Screened/Open Interval (feet aMSL)	Monitored Zone	Casing Diameter (inches)	Casing Material
MW-11B	03/17/11	843058.95	886003.55	587.07	586.73	27	560.07	Screen	17 - 27	570.1 - 560.1	B	2	PVC
MW-11-40	08/18/89	842984.36	885929.00	585.61	585.61	40	545.61	Open	23 - 40	562.6 - 545.6	B	3	NA
MW-12B	03/18/11	843047.28	886050.95	555.66	555.20	15.4	540.26	Screen	5.4 - 15.4	550.3 - 540.3	B	2	PVC
MW-12C	04/27/10	843197.93	886141.73	586.94	586.35	30	556.94	Screen	24.3 - 29.3	562.6 - 557.6	C	2	PVC
MW-13C	04/27/10	843177.31	889115.68	587.13	586.62	30	557.13	Screen	24.3 - 29.8	562.8 - 557.3	C	2	PVC
MW-13-25	07/15/88	843081.98	886015.43	587.11	586.60	18.3	568.81	Screen	8.3 - 18.3	578.8 - 568.8	B	2	SS
MW-15C	03/16/11	843210.89	886168.65	586.76	586.27	45	541.76	Open	25 - 45	561.8 - 541.8	C	2	NA
MW-15-40	07/14/88	842841.44	885781.25	584.11	583.66	38.2	545.91	Open	18.7 - 38.2	565.4 - 545.9	B	3	NA
MW-16C	06/29/12	843236.77	886129.32	586.89	589.24	45	541.89	Open	25 - 45	561.9 - 541.9	C	2	NA
MW-16B/C	06/29/12	843227.25	886138.74	586.89	589.24	30	556.89	Screen	25 - 30	561.9 - 556.9	C/B	2	SS
MW-16-100	08/02/88	843001.02	886309.73	530.86	533.47	100	430.86	Screen	80 - 100	450.9 - 430.9	C	2	SS
MW-17B	06/27/12	843207.05	886117.19	586.74	588.42	14.5	572.24	Screen	4 - 14	582.7 - 572.7	B	2	SS
MW-17-40	07/26/88	842562.71	886569.16	394.89	394.21	47.9	346.99	Open	37.9 - 47.9	357.0 - 347.0	B	3	NA
MW-18A	02/07/05	842535.84	886413.92	396.38	396.13	20	376.38	Screen	10 - 20	386.4 - 376.4	B	-	-
MW-18B	06/01/12	843109.91	885990.51	586.68	587.95	28	558.68	Screen	23 - 28	563.7 - 558.7	B	2	SS
MW-19A	02/08/05	842560.06	886630.33	395.72	394.23	20	375.72	Screen	10 - 20	385.7 - 375.7	A	-	-
MW-20B	03/23/05	843121.55	886496.75	517.53	517.26	20.2	497.33	Screen	15.2 - 20.2	502.3 - 497.3	B	-	-
MW-21B	03/25/05	843176.61	886673.81	493.54	593.34	16	477.54	Screen	11 - 16	482.5 - 477.5	B	-	-
MW-22B	03/21/05	843247.83	886844.08	490.95	490.63	16.5	474.45	Screen	11.5 - 16.5	479.5 - 474.5	B	-	-
MW-23B (c)	02/11/05	842991.51	886718.73	458.60	458.15	18.1	440.50	Screen	13.1 - 18.1	445.5 - 440.5	B	-	-
MW-24B	06/05/08	842872.18	886742.42	414.25	414.00	14.1	400.15	Screen	9 - 14.1	405.3 - 400.2	B	-	-
MW-24B supplemental	08/24/12	843094.53	886009.88	586.35	586.94	30	556.35	Open	14 - 30	572.4 - 556.4	B	4	NA
MW-25A	03/22/05	842284.56	886406.03	392.42	390.96	18.5	373.92	Screen	8.5 - 18.5	383.9 - 373.9	A	-	-
MW-25B	08/22/12	843090.54	886035.33	587.21	586.84	30	557.21	Open	20 - 30	567.2 - 557.2	B	4	NA
MW-26A	03/22/05	842355.88	886058.61	397.49	395.91	17.5	379.99	Screen	7.5 - 17.5	390.0 - 380.0	A	-	-
MW-26B	08/22/12	843070.27	886031.75	586.66	586.19	30	556.66	Open	21.5 - 30	565.2 - 556.7	B	4	NA
MW-27B	08/03/05	843399.99	886730.22	551.12	550.64	28.5	522.62	Screen	20.5 - 28.5	530.6 - 522.6	B	-	-
MW-28B	07/28/05	843448.61	886791.27	551.92	551.53	33	518.92	Screen	25 - 32	526.9 - 519.9	B	-	-
MW-29B	08/01/05	843523.46	886797.40	552.73	552.31	22	530.73	Screen	13.5 - 21.5	539.2 - 531.2	B	-	-
MW-30B	08/04/05	842868.03	886178.14	532.55	534.64	24.5	508.05	Screen	17.5 - 24.5	515.1 - 508.1	B	-	-
MW-31B	08/05/05	842942.15	886296.68	532.52	534.61	24.5	508.02	Screen	17.5 - 24.5	515.0 - 508.0	B	-	-
MW-32B	08/09/05	843045.08	886412.97	514.49	513.95	11	503.49	Screen	5 - 11	509.5 - 503.5	B	-	-
MW-33B	07/19/13	843156.15	886190.58	584.00	586.56	16	568.00	Screen	6 - 16	578.0 - 568.0	A/B	-	-
MW-34B	07/18/13	843146.83	886180.38	582.71	584.85	14.6	568.11	Screen	4.6 - 14.6	578.1 - 568.1	A/B	-	-
MW-35B	07/16/13	843139.35	886172.52	581.00	583.52	13	568.00	Screen	3 - 13	578.0 - 568.0	A/B	-	-
MW-36B	07/15/13	843143.34	886140.70	586.34	588.78	19	567.34	Screen	9 - 19	577.3 - 567.3	A/B	-	-
MW-37B	07/17/13	843158.48	886129.64	587.00	586.65	20	567.00	Screen	10 - 20	577.0 - 567.0	A/B	-	-
P-1	-	843115.80	886240.26	564.92	564.44	34.6	530.30	Open	-	-	B	-	NA
P-2	-	843106.31	886213.53	564.76	564.59	12.7	552.03	Open	-	-	B	-	NA
PTW-1	03/18/14	843074.63	886022.87	587.19	589.36	33	554.19	Screen	23 - 33	564.2 - 554.2	B	4	SS
PZ-1	03/18/14	843076.51	886025.33	587.17	588.07	33	554.17	Screen	23 - 33	564.2 - 554.2	B	2	PVC
PZ-2	03/19/14	843077.75	886026.67	587.19	588.51	33	554.19	Screen	23 - 33	564.2 - 554.2	B	2	PVC
PZ-5	03/19/14	843069.72	886028.12	586.78	588.30	33	553.78	Screen	23 - 33	563.8 - 553.8	B	2	PVC
PZ-3	03/19/14	843078.92	886028.12	587.20	588.67	33	554.20	Screen	23 - 33	564.2 - 554.2	B	2	PVC
PZ-4	03/20/14	843081.28	886030.22	587.18	588.66	33	554.18	Screen	23 - 33	564.2 - 554.2	B	2	PVC
RW-4B/SB-4R	06/11/08	842888.94	885583.10	599.56	599.06	9.8	589.76	Screen	4 - 9	595.6 - 590.6	A	4	-
RW-15/SB-15R	06/05/08	843047.95	886006.04	586.67	586.36	25.4	561.27	Screen	15 - 25	571.7 - 561.7	A	4	-
RW-15A/SB-15A	06/04/08	843065.92	886029.61	586.66	586.24	22.4	564.26	Screen	12 - 22	574.7 - 564.7	A	4	-
RW-24B/SB-24b	06/05/08	843170.00	886124.39	587.17	586.76	14.1	573.07	Screen	9 - 14	578.2 - 573.2	A	4	PVC

Table 6

Summary of Well Construction Information
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York (a)

Well ID	Installation Date	State Plane Coordinates Easting	State Plane Coordinates Northing	Elevations Ground Surface	Elevations Top of Casing	Total Depth (feet bgs)	Total Depth (feet aMSL)	Screened/ Open	Screened/Open Interval (feet bgs)	Screened/Open Interval (feet aMSL)	Monitored Zone	Casing Diameter (inches)	Casing Material
LBA-MW-01	2013	-	-	-	-	60	-	Screen	40 - 60	-	C	2	PVC
LBA-MW-02	2013	-	-	-	-	34	-	Screen	24 - 34	-	C	2	PVC
LBA-MW-03	2013	-	-	-	-	39	-	Screen	29 - 39	-	C	2	PVC
LBA-MW-04	2013	-	-	-	-	25.4	-	Screen	15.4 - 25.4	-	B	2	PVC
LBA-MW-05	2013	-	-	-	-	21	-	Screen	6 - 21	-	B	2	PVC
LBA-MW-06	2013	-	-	-	-	18.3	-	Screen	8.3 - 18.3	-	B	2	PVC
LBA-MW-07	2013	-	-	-	-	18.5	-	Screen	3.5 - 18.5	-	A/B	2	PVC
LBA-MW-08	2013	-	-	-	-	18.4	-	Screen	3.4 - 18.4	-	A/B	2	PVC
LBA-MW-09	2013	-	-	-	-	23.6	-	Screen	8.6 - 23.6	-	B	2	PVC
LBA-MW-10	2013	-	-	-	-	18.2	-	Screen	8.2 - 18.2	-	B	2	PVC
LBA-MW-11	2013	-	-	-	-	21.7	-	Screen	6.7 - 21.7	-	B	2	PVC
LBA-MW-12	2013	-	-	-	-	42.5	-	Screen	22.5 - 42.5	-	C	2	PVC
LBA-MW-13	2013	-	-	612.0	-	25	587.0	Screen	15 - 25	597 - 587	A/B	2	PVC
LBA-MW-14	2013	-	-	608.0	-	38.5	569.5	Screen	28.5 - 38.5	579.5 - 569.5	A/B	2	PVC
LBA-MW-15	2013	-	-	712.0	-	20.1	691.9	Screen	10.1 - 20.1	701.9 - 691.9	B	2	PVC
LBA-MW-16	2013	-	-	-	-	13.1	-	Screen	3.1 - 13.1	-	A/B	2	PVC
LBA-MW-17	2013	-	-	-	-	18.1	-	Screen	8.1 - 18.1	-	B	2	PVC
LBA-MW-18	2013	-	-	-	-	13.4	-	Screen	3.4 - 13.4	-	B	2	PVC
LBA-MW-19	2013	-	-	-	-	11	-	Screen	3 - 11	-	B	2	PVC
LBA-MW-20	2013	-	-	-	-	55	-	Screen	35 - 55	-	C	2	PVC
LBA-MW-21	2013	-	-	-	-	20	-	Screen	10 - 20	-	A/B	2	PVC
LBA-MW-22	2013	-	-	586.5	-	20	566.5	Screen	10 - 20	576.5 - 566.5	B	2	PVC
LBA-MW-23	2013	-	-	580.0	-	22.8	557.2	Screen	7.8 - 22.8	572.2 - 557.2	B	2	PVC
LBA-MW-24	2013	-	-	594.5	-	57	537.5	Screen	37 - 57	557.5 - 537.5	C	2	PVC
LBA-MW-25	2013	-	-	-	-	60	-	Screen	50 - 60	-	C	2	PVC
LBA-MW-26	2013	-	-	585.5	-	44	541.5	Screen	34 - 44	551.5 - 541.5	C	2	PVC
LBA-MW-27	2013	-	-	587.0	-	50	537.0	Screen	35 - 50	552 - 537	C	2	PVC
LBA-MW-28	2013	-	-	-	-	45	-	Screen	30 - 45	-	C	2	PVC
LBA-MW-29	*2013*	-	-	-	-	50	-	Screen	*20 - 50*	-	*B/C*	2	PVC
LBA-MW-30	2013	-	-	567.5	-	25	542.5	Screen	15 - 25	552.5 - 542.5	B	2	PVC
LBA-MW-31	2013	-	-	-	-	19.8	-	Screen	4.8 - 19.8	-	B	2	PVC
LBA-MW-32	2013	-	-	-	-	35	-	Screen	15 - 35	-	B/C	2	PVC
LBA-MW-33	2013	-	-	-	-	14.5	-	Screen	4.5 - 14.5	-	B	2	PVC
LBA-MW-34N	2013	-	-	587.0	-	21	566.0	Open	4 - 21	583 - 566	B	4	NA
LBA-MW-34S	2013	-	-	587.0	-	44	543.0	Screen	34 - 44	553 - 543	C	2	PVC
LBA-MW-35	2013	-	-	-	-	32	-	Open	5.1 - 32	614.9 - 588	B	4	NA
LBA-MW-36	2013	-	-	-	-	35	-	Open	7 - 35	-	C	4	NA
LBA-MW-37	2013	-	-	587.0	-	44	543.0	Screen	37 - 44	550 - 543	C	2	PVC
LBA-MW-38	2013	-	-	-	-	35	-	Open	11 - 35	-	B	4	NA
LBA-MW-39	2013	-	-	586.0	-	25.5	560.5	Open	14 - 25.5	572 - 560.5	B	4	NA
LBA-MW-40N	2013	-	-	-	-	18	-	Open	6 - 18	-	B	4	NA
LBA-MW-40S	2013	-	-	-	-	57	-	Screen	49 - 57	-	C	2	PVC
LBA-MW-41	2013	-	-	594.5	-	25.5	569.0	Open	5 - 25.5	589.5 - 569	B	4	NA
LBA-MW-42N	2014	-	-	-	-	25	-	Open	4 - 25	-	B	4	NA
LBA-MW-42S	2014	-	-	-	-	46	-	Screen	36 - 46	-	C	2	PVC
LBA-MW-43N	2014	-	-	-	-	25	-	Open	8 - 25	-	B	4	NA
LBA-MW-43S	2014	-	-	620.0	-	47	573.0	Screen	36 - 47	584 - 573	C	2	PVC
LBA-MW-44E	2014	-	-	-	-	12	-	Open	5 - 12	-	B	4	NA
LBA-MW-44W	2014	-	-	604.0	-	40	564.0	Screen	30 - 40	574 - 564	C	2	PVC

a/ aMSL = above mean sea level; bgs = below ground surface; A = overburden; B = B zone; C = C zone; D = D zone; PVC = polyvinyl chloride; SS = stainless steel; NA = not applicable;
"-" information not available.
All of the elevations provided for the LBA-series wells are estimated; the locations and elevations of the wells have not been surveyed.
b/ This is an angled boring.
c/ MW-23B was replaced in October 2008. The original well could not be uncovered and was, consequently, never abandoned.

Table 7

Groundwater Sample Results for
CVOCs, Barium, and Cyanide (a)
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York

Location:	MW-5B	MW-7-40	MW-6B*	MW-7B*	MW-8-40	MW-8-B*	MW-9-100	MW-9B	MW-10B	MW-11B	MW-12B	MW-12C	MW-13-25	MW-13C	MW-14C	MW-15C	MW-16-100	MW-16C
Old well ID:																		
Date Sampled:	06/17/14	03/26/14		09/13/07	03/26/14	09/13/07		05/21/10	07/21/13	07/21/13	03/24/11	05/21/10	09/18/89	05/21/10	03/20/12	03/23/11	03/26/14	07/18/12
Parameters																		
CVOCs (µg/l)																		
Tetrachloroethene	ND	ND	NS	1.5	ND	ND	NS	ND	5.7	ND	ND	ND	ND	ND	14.5	1.1	ND	ND
Trichloroethene	272	ND	NS	1,900 D	ND	2,600 J	NS	ND	417	1	3.2	1	24	339	58,900	1,290 D	ND	ND
cis-1,2-Dichloroethene	515	138	NS	ND	ND	ND	NS	3.1	19,700	5.5	3.3	3	ND	41.8	20,400	544 D	137	ND
trans-1,2-Dichloroethene	6.8	1.4	NS	7.2	ND	ND	NS	ND	241	ND	ND	ND	ND	ND	ND	11.6	0.8 J	ND
1,1,1-Trichloroethane	ND	ND	NS	ND	ND	ND	NS	2.2	6.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	ND	ND	NS	ND	ND	ND	NS	ND	0.6 J	ND	ND	ND	ND	ND	1.4	ND	ND	ND
Vinyl chloride	5.60	22.6	NS	230 D	ND	ND	NS	ND	2,040	4.6	9.9	ND	21	3.9	531	14.6	23.5	ND
Total CVOCs	799.4	162	NS	2,139		2,600		5.3	22,411	11.1	16.4	4	45	385	79,847	1,861	161	ND
Date Sampled:					09/18/89		09/18/89				11/24/14		09/13/89					
Barium (µg/l)	NS	NS	NS	NS	715	NS	59.3	NS	NS	NS	54.5	NS	93.8	NS	NS	NS	NS	NS
Cyanide (mg/l)	NS	NS	NS	NS	NA	NS	NA	NS	NS	NS	NA	NS	NS	NS	NS	NS	NS	NS

Location:	MW-16C/B	MW-17-40	MW-17B	MW-18A	MW-18B	MW-19A	MW-20B	MW-21B	MW-22B	MW-23B	MW-24B	MW-25A	MW-25B	MW-26A	MW-26B	MW-42T	MW-43T	MW-44T
Old well ID:																EB-10/	EB-11/	EB-12/
Date Sampled:	07/07/12	03/25/14		03/25/14	07/18/12	03/25/14	03/26/14	03/26/14	03/25/14	03/27/14	03/26/14	03/25/14	07/21/13	03/26/14	07/21/13	10/16/07	10/16/07	10/16/07
Parameters																		
CVOCs (µg/l)																		
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8 J	ND	ND	ND	ND	0.6 J	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	1.3	ND	ND	ND	ND	1.5	ND	11.6	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	3.2	ND	ND	ND	ND	ND	ND	ND	6	ND	2,620	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	23.8	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	ND	1,100	ND	ND	ND
Total CVOCs	ND	ND	ND	ND	3.2	ND	ND	1.3	ND	0.8	ND	ND	13.5	ND	3,756	ND	ND	ND
Date Sampled:								11/25/14							11/24/14			
Barium (µg/l)	NS	NS	NS	NS	NS	NS	NS	43.6	NS	NS	NS	NS	NS	NS	157	NS	NS	NS
Cyanide (mg/l)	NS	NS	NS	NS	NS	NS	NS	NA	NS	NS	NS	NS	NS	NS	NA	NS	NS	NS

Location:	MW-45T	MW-34B	MW-35T	MW-36B	MW-37B	MW-38T	MW-39T	MW-40T	EW-2-62C	EW-3-60C	EW-4-25B	EW-5-25B	EW-6-60C	EW-8-62C	EXB-01	EXB-02	EXB-07	EXB-09
Old well ID:	EB-13/	EB-2/	EB-3/	EB-4/	EB-5/	EB-6/	EB-7/	EB-8/	EW-2/	EW-3/	MW-3B			EXB-8				
Date Sampled:	10/16/07	10/15/07	10/16/07	10/16/07	10/17/07	10/16/07	10/16/07	10/16/07	09/04/08	09/04/08	03/27/14	10/18/13	10/18/13	09/13/07	03/24/14	03/24/14	06/17/14	06/17/14
Parameters																		
CVOCs (µg/l)																		
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.2	ND	2.8	ND	ND	ND	1.1 J
Trichloroethene	8	ND	ND	0.88 J	2.2 J	ND	ND	15	20,000	500	69	1,420	23,000	7200	48	6,130	45	0.8 J
cis-1,2-Dichloroethene	1.9 J	ND	ND	ND	6.9	ND	ND	62	4,300	200	377	897	15,400	ND	2,360	11,700	368	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	0.77	ND	ND	8.6	8.8	55.9 J	52	28.6	59	8.5	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4
1,2-dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4
Vinyl chloride	ND	ND	ND	ND	4.8 J	ND	ND	11	ND	ND	83.5	21.7	ND	320	569	184	6.6 J	ND
Total CVOCs	9.9	ND	ND	0.88	13.9	ND	ND	88.77	24,300	700	538.1	2,351	38,456	7,575	3,006	18,073	428.1	3.3
Date Sampled:																		
Barium (µg/l)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cyanide (mg/l)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 7

Groundwater Sample Results for
CVOCs, Barium, and Cyanide (a)
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York

Location:	**EXB-10**	**EXB-11**	**MW-1**	**MW-1B**	**MW-2**	**MW-2B**	**MW-3-100**	**MW-3-13**	**MW-3-150**
Old well ID:									
Date Sampled:	**06/18/14**	**06/12/08**	**09/04/08**	**03/27/14**	**09/04/08**	**03/27/14**	**09/04/08**	**09/04/08**	**09/04/08**
Parameters									
CVOCs (µg/l)									
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	2.6	1.3	1.1	5,100	13,800	940	25	770
cis-1,2-Dichloroethene	2.4	210 D	41	0.8 J	4,200	6,230	12,000	160	4,800
trans-1,2-Dichloroethene	ND	1.7		ND	ND	24 J	ND	2.5	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	5	5.3	2.3	ND	ND	53	1600	56	540
Total CVOCs	7.4	220	44.6	1.9	9300	20,107	14,540	244	6,110
Date Sampled:							**09/14/89**	**09/14/89**	
Barium (µg/l)	NS	NS	NS	NS	NS	NS	387	503	NS
Cyanide (mg/l)	NS	NS	NS	NS	NS	NS	NA	NA	NS

Location:	**MW-3-31**	**MW-4B**	**MW-5-100**	**MW-5-25**	**MW-5-40**	**MW-27B**	**MW-28B**	**MW-29B**	**MW-30B**
Old well ID:									
Date Sampled:	**09/04/08**	**03/27/14**	**03/27/14**	**02/01/90**	**03/27/14**	**08/18/05**	**08/18/05**	**08/18/05**	**12/18/09**
Parameters									
CVOCs (µg/l)									
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	24,000 D	ND	ND	ND	6,080 U	ND	ND	ND	ND
cis-1,2-Dichloroethene	7,400	0.6 J	2	ND	10,900	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	101	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	6.6	3.3	155	657	ND	ND	ND	ND
Total CVOCs	31,400	7.2	5.3	155	17,738	ND	ND	ND	ND
Date Sampled:	**09/14/89**				**02/01/90**				**11/25/14**
Barium (µg/l)	2,640	NS	NS	NS	2,155	NS	NS	NS	43.1
Cyanide (mg/l)	0.021	NS	NS	NS	NA	NS	NS	NS	NA

Location:	**MW-31B**	**MW-32B**	**MW-33B**	**MW-35B**	**PTW-1**	**MW-34B**	**MW-36B**	**MW-37B**
Old well ID:								
Date Sampled:	**08/18/05**	**03/26/14**	**08/06/13**	**08/06/13**	**07/21/13**	**08/06/13**	**08/06/13**	**08/06/13**
Parameters								
CVOCs (µg/l)								
Tetrachloroethene	ND	ND	ND	ND	1.2	ND	0.81 J	1.2
Trichloroethene	5.5	39.2	5.7 J	6.6	126	28.3	700	358
cis-1,2-Dichloroethene	1.3	25.1	0.8 J	3.1	3,900	374	1,320 J	546
trans-1,2-Dichloroethene	ND	ND	ND	ND	44.8	1.8	19.4	7.1
1,1,1-Trichloroethane	ND	ND	ND	ND	1.1	ND	ND	ND
1,2-dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	269	25.1	157	122
Total CVOCs	6.8	64.3	6.5	9.7	4,342	429	2,197	1,034
Date Sampled:		**11/25/14**						
Barium (µg/l)	NS	65.1	NS	NS	NS	NS	NS	NS
Cyanide (mg/l)	NS	NA	NS	NS	NS	NS	NS	NS

Notes:
CVOCs - chlorinated volatile organic compounds
ND - not detected; NA - not analyzed; NS - not sampled; D - diluted
The data presented in this table represents the most recent sample results per well; dates range from 1989 to 2015.
Duplicate well IDs exist; please see end of table.
MW-06B, MW-07B, and MW-08B* are product recovery wells but have been sampled. MW-06B data not located to date.
EB-2/MW-34B, EB-4/MW-36B; EB-5/MW-37B: these well locations refer to the Clinton Street area (and data is from 2007).

Table 7 (continued)

Groundwater Sample Results for
CVOCs, Barium, and Cyanide (a)
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York
(2013 and 2014)

Location:	LBA-MW-01	LBA-MW-02	LBA-MW-03	LBA-MW-04	LBA-MW-05	LBA-MW-06	LBA-MW-07 (b)		LBA-MW-08		LBA-MW-09	LBA-MW-10	LBA-MW-11	LBA-MW-12	LBA-MW-13
Sample Interval (feet bgs):	40-60	24-34	29-39	15.4-25.4	6-21	8.3-18.3	3.5-18.5		3.4-18.4		8.6-23.6	8.2-18.2	6.7-21.7	22.5-42.5	15-25
Sampling Entity:	LaBella	LaBella	LaBella	LaBella	LaBella	LaBella	LaBella	WSP	LaBella	WSP	LaBella	LaBella	LaBella	LaBella	WSP
Date Sampled:	09/09/13	09/18/13	09/09/13	09/09/13	09/09/13	09/09/13	09/10/13	07/22/14	09/10/13	07/23/14	09/10/13	09/13/13	09/10/13	09/10/13	09/11/13
Parameters															
CVOCs (µg/l)															
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	0.73 J
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND
Total CVOCs	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	0.73
Barium (µg/l)	NA	NA	660	520	110	410	860	NA	760	N	220	NA	120	69	170
Cyanide (mg/l)	NA	NA	NA	NA	0.039	0.039	NA	0.67	NA	8.4	0.14	NA	0.0079 J	NA	1.3

Location:	LBA-MW-14	LBA-MW-15	LBA-MW-16	LBA-MW-17	LBA-MW-18		LBA-MW-19		LBA-MW-20	LBA-MW-21
Sample Interval (feet bgs):	28.5-38.5	10.1-20.1	3.1-13.1	8.1-18.1	3.4-13.4		3-11		35-55	10-20
Sampling Entity:	WSP	LaBella	WSP	LaBella	WSP	WSP	WSP	LaBella	LaBella	LaBella
Date Sampled:	09/11/13	09/12/13	09/12/13	09/12/13	09/13/13	08/11/14 (d)	09/10/13	11/26/13	09/13/13	09/12/13
Parameters										
CVOCs (µg/l)										
1,2-Dichloroethane	ND	ND	ND	ND	ND	NA	ND	NA	ND	0.98
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND
Trichloroethene	ND	6.3	ND	ND	ND	NA	ND	NA	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND
Total VOCs	ND	6.3	ND	ND	ND	NA	ND	NA	ND	0.98
Barium (µg/l)	239	68	724	51	NA	5,710	NA	180	NA	87
Cyanide (mg/l)	0.37	0.017	0.62	0.39	NA	0.62	NA	0.31	NA	0.022

Table 7 (continued)

Groundwater Sample Results for
CVOCs, Barium, and Cyanide (a)
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York
(2013 and 2014)

Location:	LBA-MW-22	LBA-MW-23	LBA-MW-24	LBA-MW-25	LBA-MW-26	LBA-MW-27	LBA-MW-28	LBA-MW-29	LBA-MW-30	LBA-MW-31	LBA-MW-32	LBA-MW-33	LBA-MW-34N		
Sample Interval (feet bgs):	10-20	7.8-22.8	37-57	50-60	34-44	35-50	30-45	20-50	15-25	4.8-19.8	15-35	4.5-14.5	13-21		
Sampling Entity:	LaBella	LaBella	LaBella	LaBella	LaBella	LaBella	LaBella	LaBella	LaBella	LaBella	LaBella	LaBella	LaBella	WSP	WSP
Date Sampled:	09/16/13	09/16/13	09/16/13	09/18/13	09/14/13	09/14/13	09/17/13	09/17/13	09/16/13	10/06/13	12/04/13	10/06/13	12/22/13	12/22/13	07/23/14
Parameters															
CVOCs (ug/l)															
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	8.3	3.7	ND	ND	8.1	ND	1,000	ND	ND	2.4	ND	5.9	5.3	136
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	20	ND	ND	ND	ND	ND	ND	1.5
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	3.3	ND	ND	ND	ND	ND	ND	8
Trichloroethene	0.49 J	ND	1.4	ND	ND	0.6 J	ND	4.6	ND	ND	ND	ND	2.5	2.3	10.2
Vinyl chloride	ND	ND	ND	ND	ND	2	ND	380	ND	ND	ND	ND	ND	ND	42.5
Total CVOCs	0.49	8.3	5.1	ND	ND	10.7	ND	1,408	ND	ND	2.4	ND	8.4	7.6	198
Barium (µg/l)	NA	99	210	NA	8,600	170	380	2,900	1,300	69	NA	210	10,800	6,150	9,110
Cyanide (mg/l)	NA	0.14	NA	NA	0.053	0.14	0.021	NA	0.11	0.015	NA	NA	NA	NA	NA

Location:	LBA-MW-34S	LBA-MW-35		LBA-MW-36	LBA-MW-37	LBA-MW-38		LBA-MW-39		LBA-MW-40N
Sample Interval (feet bgs):	34-44	5.1-32		7-35	37-44	11-35		14-25.5		6-18
Sampling Entity:	WSP	WSP	WSP	WSP	WSP	LaBella	WSP	WSP	WSP	WSP
Date Sampled:	12/22/13	01/16/14	07/23/14	01/16/14	12/22/13	12/22/13	12/22/13	01/15/14	07/29/14 (f)	01/16/14
Parameters										
CVOCs (µg/l)										
1,2-Dichloroethane	ND	ND	NA	ND	ND	NA	ND	NA	ND	ND
cis-1,2-Dichloroethene	ND	ND	NA	ND	ND	NA	7.2	NA	2.9	ND
trans-1,2-Dichloroethene	ND	ND	NA	ND	ND	NA	ND	NA	ND	ND
1,1,1-Trichloroethane	ND	ND	NA	ND	ND	NA	ND	NA	99.3	ND
Trichloroethene	ND	ND	NA	ND	ND	NA	ND	NA	0.92 J	ND
Vinyl chloride	ND	ND	NA	ND	ND	NA	1.1	NA	ND	ND
Total CVOCs	ND	ND	NA	ND	ND	NA	8.3	NA	103.12	ND
Barium (µg/l)	78.1	NA	4,680	689	NA	990	NA	936	NA	746
Cyanide (mg/l)	NA	NA	0.4	12.2	NA	NA	NA	0.18	NA	NA

Table 7 (continued)

Groundwater Sample Results for
CVOCs, Barium, and Cyanide (a)
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York
(2013 and 2014)

Location:	LBA-MW-40S	LBA-MW-41	LBA-MW-42N	LBA-MW-42S	LBA-MW-43N	LBA-MW-43S
Sample Interval (feet bgs):	49-57	5-25.5	4-25	36-46	8-25	36-47
Sampling Entity:	WSP	WSP	WSP	WSP	WSP	WSP
Date Sampled:	01/16/14	07/30/14 (g)	01/16/14	01/16/14	01/15/14	01/15/14
Parameters						
CVOCs (µg/l)						
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	104	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	0.97 J	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	5.3	ND	ND	ND	ND
Vinyl chloride	ND	10.1	ND	ND	ND	ND
Total CVOCs	ND	120.37	ND	ND	ND	ND
Barium (µg/l)	136	902	687	2,700	699	6,230
Cyanide (mg/l)	NA	NA	NA	NA	2.6	0.38

Location:	LBA-MW-44E		LBA-MW-44W	
Sample Interval (ft-bgs):	30-40		30-40	
Sampling Entity:	LaBella	WSP	LaBella	WSP
Date Sampled:	01/16/14 (i)	01/16/14 (i)	01/15/14	07/22/14
Parameters				
VOCs (µg/l)				
1,2-Dichloroethane	NA	ND	ND	NA
cis-1,2-Dichloroethene	NA	ND	ND	NA
trans-1,2-Dichloroethene	NA	ND	ND	NA
1,1,1-Trichloroethane	NA	ND	ND	NA
Trichloroethene	NA	ND	ND	NA
Vinyl chloride	NA	ND	ND	NA
Total CVOCs	NA	ND	ND	NA
Barium (µg/l)	283	NA	2,430	1,180
Cyanide (mg/l)	0.56	NA	0.65	1

J = estimated concentration between the reporting limit and method detection limit

d\ Aliquots were collected from LBA-MW-18 on 08/11/14 following purging of the well on 07/30/14; aliquots were collected on 08/13/14
e\ Sample and duplicate. The duplicate is identified as LBA-MW-126 on the chain-of-custody form and laboratory deliverable.
f\ Sample and duplicate. The duplicate is identified as LBA-MW-49 on the chain-of-custody form and laboratory deliverable.
g\ The VOC aliquot from LBA-MW-41 was collected on 07/30/14; the cyanide aliquot was collected on 08/13/14 following purging of the well and setting a prepack screen on 08/11/14.

i\ The VOC aliquots from LBA-MW-44E were collected on 01/16/14; the metals and cyanide aliquots were collected on 01/17/14.

Table 8

Groundwater Sampling and Analytical Program
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York (a)

Historical Well Groundwater Sampling Event

COCs/ Locations	Monitored Zone	Screened/ Open Interval (feet bgs)	Screened/ Open Interval (feet aMSL)
VOCs, SVOCs, TAL Metals, and Cyanide			
HISTWELL-1	deep bedrock	tbd - 142	tbd
MW-27B	B	20.5 - 28.5	529.45 - 520.97
MW-28B	B	25 - 32	525.75 - 518.36
MW-29B	B	13.5 - 21.5	538.06 - 529.64

COCs/ Locations	Monitored Zone	Screened/ Open Interval (feet bgs)	Screened/ Open Interval (feet aMSL)
VOCs, TAL Metals, and Cyanide			
HISTWELL-2	deep bedrock	tbd	tbd
HISTWELL-3	deep bedrock	tbd - 214	tbd
MW-3-100	C	80 - 100	484.5 - 464.5
MW-3-150	D	130.5 - 150.5	434.0 - 414.0
MW-9-100	C	80 - 100	426.8 - 406.8
MW-16-100	C	80 - 100	450.9 - 430.9

Initial Groundwater Sampling Event

COCs/ Locations	Monitored Zone	Screened/ Open Interval (feet bgs)	Screened/ Open Interval (feet aMSL)
VOCs			
Building 24 Area			
EB-6/MW-38T	B	27 - 37	563.4 - 553.4
EB-8/MW-40T	B	9 - 19	584.3 - 573.97
MW-21B	B	11 - 16	482.5 - 477.5
MW-22B	B	11.5 - 16.5	479.5 - 474.5
MW-27B	B	20.5 - 28.5	529.45 - 520.97
MW-28B	B	25 - 32	525.75 - 518.36
MW-29B	B	13.5 - 21.5	538.06 - 529.64

COCs/ Locations	Monitored Zone	Screened/ Open Interval (feet bgs)	Screened/ Open Interval (feet aMSL)
Barium			
Building 24 Area			
LBA-MW-41 (b)	C	5 - 25.5	589.5 - 569
Building 2 Area			
MW-4	B	12 - 47	610.2 - 575.2
MW-20B	B	15.47 - 20.47	500.89 - 495.62
MW-32B	B	5 - 11	508.32 - 501.78
LBA-MW-37 (b)	C	34 - 44	553 - 543
Western Property Boundary			
MW-3B	B	15 - 25	549.5 - 539.5
MW-4B	B	15 - 20	546.4 - 541.4
MW-5B	B	11 - 21	552.4 - 542.4
MW-5-40	B	17.3 - 40.3	569.7 - 546.7
MW-15C	C	25 - 45	561.8 - 541.8
MW-16C	C	25 - 45	561.9 - 541.9
MW-17B	B	4 - 14	582.7 - 572.7
MW-31B	B	17.5 - 24.5	515.0 - 508.0

Table 8

Groundwater Sampling and Analytical Program
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York (a)

Follow-Up Groundwater Sampling Event

COCs/ Locations	Monitored Zone	Screened/ Open Interval (feet bgs)	Screened/ Open Interval (feet aMSL)
VOCs			
Building 24 Area			
EB-6/MW-38T	B	27 - 37	563.4 - 553.4
EB-8/MW-40T	B	9 - 19	584.3 - 573.97
MW-21B	B	11 - 16	482.5 - 477.5
MW-22B	B	11.5 - 16.5	479.5 - 474.5
MW-27B	B	20.5 - 28.5	529.45 - 520.97
MW-28B	B	25 - 32	525.75 - 518.36
MW-29B	B	13.5 - 21.5	538.06 - 529.64
LBA-MW-22 (b)	B	10 - 20	576.5 - 566.5
LBA-MW-23 (b)	B	7.8 - 22.8	572.2 - 557.2
LBA-MW-24 (b)	C	37 - 57	557.5 - 537.5
LBA-MW-41 (b)	B	5 - 25.5	589.5 - 569
WSP-MW-01B	B	tbd	tbd
Buildings 4 and 5 Area			
EB-12/MW-44T	C	41 - 46	518 - 512
LBA-MW-26 (b)	C	34 - 44	551.5 - 541.5
LBA-MW-27 (b)	C	35 - 50	552 - 537
LBA-MW-39 (b)	B	14 - 25.5	572 - 560.5
WSP-MW-02B	B	tbd	tbd
WSP-MW-02C	C	tbd	tbd
WSP-MW-03B	B	tbd	tbd
Building 30 Area			
LBA-MW-13 (b)	A/B	15 - 25	597 - 587
WSP-MW-04B	B	tbd	tbd
Parking Lot 6			
LBA-MW-13 (b)	A/B	15 - 25	597 - 587
LBA-MW-14 (b)	A/B	28.5 - 38.5	579.5 - 569.5
LBA-MW-15 (b)	***A/B***	10.1 - 20.1	701.9 - 691.9
WSP-MW-05B	B	tbd	tbd

COCs/ Locations	Monitored Zone	Screened/ Open Interval (feet bgs)	Screened/ Open Interval (feet aMSL)
Barium			
MW-4	B	12 - 47	610.2 - 575.2
MW-4B	B	15 - 20	546.4 - 541.4
MW-8-40	B	17.1 - 43.2	501.2 - 475.1
MW-9-100	C	80 - 100	426.8 - 406.8
MW-32B	B	5 - 11	508.32 - 501.78
MW-20B	B	15.47 - 20.47	500.89 - 495.62
LBA-MW-30 (b)	B	15 - 25	552.5 - 542.5
LBA-MW-34N (b)	B	4 - 21	583 - 566
LBA-MW-34S (b)	C	34 - 44	553 - 543
LBA-MW-37 (b)	C	37 - 44	550 - 543
Western Property Boundary (c)			
MW-3B	B	15 - 25	549.5 - 539.5
MW-4B	B	15 - 20	546.4 - 541.4
MW-5B	B	11 - 21	552.4 - 542.4
MW-5-40	B	17.3 - 40.3	569.7 - 546.7
MW-15C	C	25 - 45	561.8 - 541.8
MW-16C	C	25 - 45	561.9 - 541.9
MW-17B	B	4 - 14	582.7 - 572.7
MW-31B	B	17.5 - 24.5	515.0 - 508.0
MW-31-100	C	80 - 100	484.5 - 464.5
Former Salt Baths Area			
LBA-MW-26 (b)	C	34 - 44	551.5 - 541.5
LBA-MW-35 (b)	B	5.1 - 32	614.9 - 588
LBA-MW-43S (b)	C	36 - 47	584 - 573
LBA-MW-44W (b)	C	30 - 40	574 - 564
WSP-MW-02B	B	tbd	tbd
WSP-MW-02C	C	tbd	tbd
WSP-MW-06C	C	tbd	tbd
WSP-MW-07B	B	tbd	tbd
WSP-MW-07C	C	tbd	tbd

COCs/ Locations	Monitored Zone	Screened/ Open Interval (feet bgs)	Screened/ Open Interval (feet aMSL)
Cyanide			
Former Salt Baths Area			
LBA-MW-04 (b)	B	15.4 - 25.4	579.6 - 569.6
WSP-MW-06C	C	tbd	tbd
WSP-MW-07B	B	tbd	tbd
WSP-MW-07C	C	tbd	tbd
Former Oil Shed/Rice Paddy Area			
LBA-MW-13	***A/B***	15 - 25	597 - 587
LBA-MW-14	***A/B***	29 - 39	579 - 569
WSP-MW-04B	B	tbd	tbd
WSP-MW-08B	B	tbd	tbd

Bold and italicized information indicates exceedence of NYSDEC Part 703 groundwater standard

a\ COC = constituent of interest; VOC = volatile organic compound; SVOC = semi-volatile organic compound; TAL = Target Analyte List; bgs = below ground surface; aMSL = above mean sea level; tbd = to be determined.
Evaluation criteria are the Groundwater Standards as listed in New York State Department of Environmental Conservation Part 703.
b\ Elevations for the LBA-series wells are estimated based on available topographic information; the elevations were not surveyed.
c\ A portion of these wells will be sampled during the follow-up groundwater monitoring event based on the initial results and in consultation with NYSDEC.

Table 9

Summary of Seep Sample Results - Exceeds Only
Phase II Supplemental Remedial Investigation
Former EPT Facility
Ithaca, New York (a)
(2013)

Parameters	NYSDEC Groundwater Standards (b)	B24-Ext-Seep		B18-Seep-1		B18-Seep-2	LD-Seep-3
	Sampling Entity:	LaBella	WSP	LaBella	WSP	LaBella	LaBella
	Date Sampled:	12/11/13	12/11/13	08/28/13	07/24/14	08/28/13	09/25/13
VOCs (µg/l)							
cis-1,2-Dichloroethene	5	2.1	1 U	15	1 U	0.65 J	10 U
Trichloroethene	5	31	25.6	5 U	1 U	3.6 J	7.9 J
Vinyl chloride	2	1 U	1 U	9.6	1 U	5 U	10 U

Boxed values indicate an exceedence of the Groundwater Standard

a\ NYSDEC = New York State Department of Environmental Conservation; µg/l = micrograms per liter.
Data Qualifiers:
U = constituent not detected at the reporting limit noted
J = estimated concentration between the reporting limit and method detection limit
b\ Evaluation criteria are the Groundwater Standards as listed in NYSDEC Part 703.
Boxed values exceed the groundwater standard

Table 10

Summary of Residual Material TCLP Sample Results
Phase II Supplemental Remedial Investigation
Former Emerson Power Transmission Facility
Ithaca, New York
(2013 - 2014) (a)

Sample Location:		B13A-MW-1/MH-A1		MH-A2	MH-A3	B13A-MH-3/MH-A4		B13A-MW-2/MH-A20	
Sampling Entity:		LaBella	WSP	WSP	WSP	LaBella	WSP	LaBella	WSP
Sample Date:		08/27/13	08/28/14	08/28/14	08/28/14	08/27/13	08/28/14	08/27/13	08/28/14
Parameters	TCLP / Hazardous Waste Criteria (b)								
TCLP Metals (mg/l)									
Arsenic	5	0.0203	0.0024 U	0.0024 U	0.0024 U	0.0203	0.004 J	0.0269	0.0024 U
Barium	100	11.6	1.4	40.6	17.4	11.6	19.5	238	112
Cadmium	1	0.0023 J	0.011	0.0024 J	0.0018 J	0.0023 J	0.0023 J	0.0034	0.0089
Chromium	5	0.0037 J	0.083	0.0022 J	0.002 J	0.0037 J	0.0061 J	0.00064 U	0.0018 J
Lead	5	0.0042 U	0.003 J	0.0033 J	0.0019 U	0.0042 U	0.0019 U	0.0046 B	0.0019 U
Mercury	0.2	0.000028 U	0.0001 UJ	0.0001 UJ	0.0001 U	0.000028 U	0.0001 UJ	0.000028 U	0.0001 UJ
Selenium	1	0.012 U	0.0069 J	0.0062 J	0.0062 J	0.012 U	0.0069 J	0.012 U	0.0066 J
Silver	5	0.0069 U	0.00096 U	0.0013 J	0.00096 U	0.0069 U	0.00096 U	0.007 B	0.001 J
General Chemistry									
Corrosivity as pH (s.u.)	<2 or >12.5	7.6	6.9	7.6	7.8	7.6	7.8	-	8.3
Ignitability/Flashpoint (°F)	<140	>140	>230	>230	>230	>140	>230	-	>230
Cyanide Reactivity (mg/kg)	-	<2.1	<1.9	<2.8	<2.6	<2.1	<3.2	-	<2.6
Sulfide Reactivity (mg/kg)	-	1,000	<62	<94	<85	1,000	<110	-	<85
Solids (percent)	-	NR	80.2	52.9	56.9	NR	47.1	NR	58.5

Sample Location:		MH-B2	MH-B3	MH-C3	MH-C4	B8-MW-1/MH-D1		B4-MW-1/MH-D2	
Sampling Entity:		WSP	WSP	WSP	WSP	LaBella	WSP	LaBella	WSP
Sample Date:		08/28/14	08/28/14	08/28/14	08/28/14	08/27/13	08/28/14	08/27/13	08/28/14
Parameters	TCLP / Hazardous Waste Criteria (b)								
TCLP Metals (mg/l)									
Arsenic	5	0.0024 U	0.0024 U	0.0024 U	0.0024 U	0.0134 B	0.0024 U	0.0124 J	0.0024 U
Barium	100	1.5	0.25 J	3.8	3.6	1.17	0.47 J	2.55	2.2
Cadmium	1	0.044	0.0052	0.025	0.018	0.0176	2.8	0.0032 J	0.038
Chromium	5	0.0066 J	0.0047 J	0.0047 J	0.0015 J	0.0188 J	0.0092 J	0.00064 U	0.0014 J
Lead	5	0.0039 J	0.0019 U	0.029	0.0019 U	0.0042 U	0.0039 U	0.0042 U	0.0019 U
Mercury	0.2	0.0001 U	0.0001 UJ	0.0001 U	0.0001 U	0.000028 U	0.0001 U	0.000045 J	0.0001 UJ
Selenium	1	0.0062 J	0.0083 J	0.0086 J	0.0087 J	0.012 U	0.0092 J	0.012 U	0.0072 J
Silver	5	0.00096 U	0.0011 J	0.00096 U	0.0014 J	0.0069 U	0.0014 J	0.0069 U	0.0016 J
General Chemistry									
Corrosivity as pH (s.u.)	<2 or >12.5	7.5	7.5	7.6	8.0	7.0	7.8	7.0	7.9
Ignitability/Flashpoint (°F)	<140	>230	>230	>230	>230	>140	>230	>140	>230
Cyanide Reactivity (mg/kg)	-	<2.1	<2.6	<1.7	<2.7	<1.4	<2.4	<2.3	<2.5
Sulfide Reactivity (mg/kg)	-	<71	<86	<56	<90	100	<82	2,700	<82
Percent Solids	-	68.6	57.9	89.7	55.7	NR	61.3	NR	60.9

Boxed values indicate an exceedence of the TCLP limit

a\ TCLP = toxicity characteristic leaching procedure; mg/l = milligrams per liter; s.u. = standard unit; °F = degrees Farenheit; mg/kg = milligrams per kilogram; "NR" = not reported; "-" indicates no criterion developed or analysis not performed
Data Qualifiers:
U = constituent not detected at the noted reporting limit
J,B = estimated concentration between the reporting limit and method detection limit
b\ Source: 40 Code of Federal Regulations Part 261.

Table 11

Storm Water and Sanitary Sewer Sampling and Analytical Program
Phase II Supplemental Remedial Investigation
Former EPT Facility
Ithaca, New York (a)

Sample Type/Location	Constituents of Concern
Railroad Ditch Discharge Samples/Open Ditch 1 (b)	
(1) SRI-SW-01	VOCs, RCRA metals, CN^-
(2) SRI-SW-02	VOCs. RCRA metals. CN^-
(3) SRI-SW-03	VOCs, RCRA metals, CN^-
Sanitary Sewer Samples (c)	
SRI-SN-01 through SRI-SN-05	
Aqueous	RCRA Metals, Ba, CN^-
Residuals	RCRA Metals, Ba, CN^-

a/ VOC = volatile organic compound; RCRA = Resource Conservation and Recovery Act.
b/ An additional sample may be collected from the continuous discharge to Open Ditch 3 observed during the Facility Inspection Report (NYSDEC, July 27, 2015).
c/ Additional samples will be collected from additional manholes/manways within the manufacturing portion of the facility. Refer to the text.

Appendix A – Self Implementing PCB Remediation Completion Report

Self-Implementing PCB Remediation Completion Report

Former Emerson Power Transmission Site
Building 24
Ithaca, New York

July 16, 2015

WSP Project No. 4255

WSP

SELF-IMPLEMENTING PCB REMEDIATION COMPLETION REPORT

Former Emerson Power Transmission Site
Building 24
Ithaca, New York

July 16, 2015

Client

Steve Clarke
Director, Environmental Affairs
Emerson
8000 West Florissant Avenue
St. Louis, Missouri 63136

Consultant

WSP USA Corp.
11190 Sunrise Valley Drive Suite 300
Reston, Virginia 20191

WSP Contacts

Scott Haitz
Scott.Haitz@wspgroup.com

Dave Rykaczewski
Dave.Rykaczewski@wspgroup.com

Table of Contents

1 Introduction 1
2 Site Background 2
2.1 Site Description and History 2
2.2 Investigation and Delineation Activities 2
2.3 Remediation Objectives 3
3 Remediation Activities 4
3.1 Pre-remediation Planning 4
3.1.1 Health and Safety Plan 4
3.1.2 Community Air Monitoring Plan 4
3.2 Site Preparation 5
3.2.1 Utility Location 5
3.2.2 High-Voltage Electric Line Relocation 5
3.2.3 Erosion and Sedimentation Controls 5
3.2.4 Asbestos Abatement 5
3.3 Waste Characterization Sampling 6
3.4 Transformer Pad Removal and Excavation 6
3.4.1 Transformer Pad Removal 6
3.4.2 Excavation 7
3.5 Confirmation Sampling 8
3.6 Transportation and Disposal 9
3.7 Site Restoration 9
4 Summary and Conclusions 11
5 Acronyms 12

Figures

Figure 1 – Site Location
Figure 2 – Site Layout
Figure 3 – Site Characterization Results - PCBs
Figure 4 – Final Limits of Excavation and Confirmation Sampling Results

Table
Table 1 – Confirmation Sampling Results

Appendices
Appendix A - WSP Standard Operating Procedures
Appendix B - Community Air Monitoring Plan
Appendix C - Utility Location Documentation
Appendix D - Asbestos Abatement Documentation
Appendix E - Waste Characterization Analytical Data Reports
Appendix F - EPA Region 1 SOP for Sampling Porous Surfaces for PCBs
Appendix G - Confirmation Sampling Analytical Data Reports
Appendix H - Hazardous Waste Transportation and Disposal Documentation
Appendix I - Non-Hazardous Waste Transportation and Disposal Documentation
Appendix J - Decontamination Fluids Transportation and Disposal Documentation
Appendix K - Photographs

1 Introduction

WSP, on behalf of EMERSUB 15, LLC, has prepared this Self-Implementing Polychlorinated Biphenyl (PCB) Remediation Completion Report for the former Emerson Power Transmission facility (Site) located at 620 South Aurora Street in Ithaca, New York (Figure 1). This completion report describes the remedial activities completed in the area of the former transformer pad located on the west side of Building 24 (Figure 2) to address the media affected by PCBs. Remediation work was completed as detailed in the Self-Implementing PCB Remediation Work Plan (work plan) dated October 28, 2014 that was submitted with the notification and certification in accordance with the Code of Federal Regulations (CFR) Part 761.61(a)(3). The U.S. Environmental Protection Agency (EPA) Region 2 approved the work plan on November 24, 2014.

Site investigation activities were completed in compliance with 40 CFR 761.61(a)(2) which requires site characterization in accordance with 40 CFR 761 Subpart N. PCB-affected media were defined as porous surfaces per 40 CFR 761.3. The limits of the remedial activities were determined by identifying and delineating concrete and soil containing PCBs at concentrations greater than high occupancy cleanup criterion of 1 milligram per kilogram (mg/kg) defined in 40 CFR 761.61(a)(4).

Remedial activities commenced March 18, 2015 and included site preparation, removal of the former transformer pad, removal of gravel fill beneath the pad, removal of asphalt, sub-base, and soil from areas surrounding the pad, offsite disposal of impacted materials, and restoration. Confirmation samples were collected in accordance 40 CFR 761.61(a)(6) which incorporates by reference the requirements of Subpart O of this Part. Excavation and confirmation sampling continued until all samples of each type of media achieved the high occupancy cleanup criterion. The site was restored to beneficial use as a high occupancy area. Final restoration was completed May 8, 2015.

Ontario Specialty Contracting, Inc. (OSC) of Buffalo, New York completed the PCB remediation at the site. WSP provided full time oversight of all remedial activities and conducted the confirmation sampling. Site activities were performed in accordance with applicable sections of 40 CFR 761 and the approved work plan.

2 Site Background

The following section provides a brief description of the site, the site history and location, and PCB investigations completed at the site prior to implementation of remediation activities.

2.1 Site Description and History

The former Emerson Power Transmission facility is located at 620 South Aurora Street in Ithaca, New York (Figure 1). The site is approximately 100 acres. There is one main structure consisting of a series of connected buildings and two separate buildings (Buildings 21 and 24) located in the northern portion of the site (Figure 2). Undeveloped woodland borders the site to the southwest along the steep embankments of the hill. West Spencer Street, which runs parallel to the property, marks the western limit of the wooded area and the base of South Hill. Beyond Spencer Street to the west and in areas along the steep northern approach to South Hill and the Site are residential areas. These neighborhoods are bordered by Six Mile Creek, which flows north along the base of South Hill and eventually empties into Cayuga Lake, approximately 2 miles northwest of the property. The site has been vacant since 2011.

The original buildings at the site were constructed in 1906 by Morse Industrial Corporation, which manufactured steel roller chain for the automobile industry. From approximately 1928 to 1983, Borg-Warner Corporation owned the property and manufactured automotive components and power transmission equipment using similar processes, but not necessarily the same materials, as those conducted by Emerson. In 1983, Morse Industrial Corporation was purchased from Borg-Warner Corporation by Emerson and became known as Emerson Power Transmission. Emerson Power Transmission manufactured industrial roller chain, bearings, and clutching for the power transmission industry until ceasing operations in 2009.

Building 24 is located on the northeast portion of the property. An elevated concrete pad which housed one or more transformers was located on the west side of Building 24. The pad measured 22 feet long by 9 feet wide and the concrete surface was 8 inches thick. A wooden roof supported by metal fence posts covered the pad and the pad was enclosed by chain-link fencing. Steel rails were embedded in the concrete at approximately 8-inch intervals. The pad was raised above the surrounding ground approximately 3.75 feet on the south end and 5 feet on the north end (variance is due to the slope of the surrounding ground surface). A diagram of the transformer pad is illustrated in Figure 3. There are no records indicating the installation or removal dates of the transformers.

A man-door entrance to Building 24 with a concrete landing, referred to the raised concrete pad in this report, was located north of the former transformer pad. Grassed areas are located north of the raised concrete pad and south of the former transformer pad. An earthen ditch flows toward the north between the former transformer pad and asphalt-paved area. A culvert conveys the flow in the ditch beneath a concrete ramp near the raised concrete pad. Areas to the west of the transformer pad area paved with asphalt. These features are shown on Figure 3.

2.2 Investigation and Delineation Activities

Four phases of investigation and delineation sampling were conducted in 2013 and 2014 to fulfill the site characterization requirements described in 40 CFR 761.61(a)(2). Characterization samples were collected from each type of media present within or near the transformer pad including concrete in the floor and walls of the pad, gravel beneath the pad, soil north and south of the pad, asphalt sub-base west of the pad, and bedrock beneath the entire area. Sampling activities were conducted in accordance with WSP's Standard Operating Procedures (SOPs; Appendix A). A detailed description of each phase of sampling, the sampling methods, laboratory analyses, and results were provided in the work plan. The site characterization results are shown on Figure 3 and summarized below.

A total of 26 concrete chip samples, 24 soil/sub-base samples, and 5 bedrock/gravel samples were collected during the 4 phases of investigation. In summary:

- Four of 12 concrete samples from the transformer pad base contained PCBs over 50 mg/kg. The remaining 8 samples contained less than 50 mg/kg PCBs, of which 3 samples were less than 1 mg/kg.
- Two of 10 concrete samples from the sidewalls of the transformer pad contained PCBs over 50 mg/kg. The remaining 8 samples contained less than 50 mg/kg, of which 6 were less than 1 mg/kg.
- Four concrete samples from the raised concrete pad adjacent to the transformer pad contained less than 1 mg/kg total PCBs.
- One of 8 soil samples north of the transformer pad contained PCBs over 1 mg/kg at a concentration of 1.97 mg/kg. The remaining 7 samples were less than 1 mg/kg.
- Two of 4 soil samples south of the transformer pad contained PCBs over 1 mg/kg; the highest was 3.25 mg/kg.
- Four of 12 asphalt sub-base samples west and northwest of the transformer pad contained PCBs over 1 mg/kg; the highest was 21.2 mg/kg.
- One sample of the gravel beneath the transformer pad contained 3.54 mg/kg total PCBs.
- All four bedrock samples contained less than 1 mg/kg total PCBs.

Concrete from the transformer pad and walls was the only media investigated that contained PCBs over 50 mg/kg.

2.3 Remediation Objectives

The remedial action goal was to remediate PCB-affected areas to the high occupancy cleanup level of 1 mg/kg and to restore the site for beneficial reuse without further restrictions. The primary elements of the approved work plan implemented to achieve this goal included:

- Location and protection of active utility services within the work area.
- Removal of the concrete pad (surface and sidewalls) and gravel beneath the pad
- Removal of asphalt, sub-base material, and soil that containing PCBs greater than 1 mg/kg from areas surrounding the former transformer pad.
- Transportation and offsite disposal of materials containing PCB concentrations above 1 mg/kg. All materials were transported to licensed and permitted disposal facilities.
- Collection of confirmation samples of each type of media to verify attainment of the high occupancy cleanup level.
- Restoration of affected areas for beneficial reuse.

3 Remediation Activities

Implementation of the remediation activities commenced on March 18, 2015. Remediation activities consisted of site preparation, removal of the former transformer pad including the sidewalls and underlying gravel, remediation of soil in asphalt and grassed areas surrounding the transformer pad, confirmation sampling, waste management, and site restoration. Remediation was completed by OSC with continuous oversight conducted by WSP. Final restoration was completed May 8, 2015. The following sections describe the remediation activities.

3.1 Pre-remediation Planning

Before beginning any remediation activities at the site, WSP conducted pre-remediation planning work that included preparation of a site specific Health and Safety Plan (HASP) and a Community Air Monitoring Plan (CAMP).

3.1.1 Health and Safety Plan

The site-specific HASP was prepared in compliance with 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response regulations. The HASP included the following information:

- Organization of the Health and Safety Program
- Identification of the health and safety hazards pertaining to each major site task
- Identification of the medical monitoring requirements
- Identification of the training requirements including OSHA's hazard communication requirements
- Establishment of site control procedures
- Identification of appropriate levels of personal protective equipment (PPE)
- Establishment of communication procedures
- Establishment of personnel and equipment decontamination procedures
- Identification of appropriate exposure monitoring requirements
- Establishment of emergency response procedures

The major site activities associated with WSP's responsibilities included oversight and confirmation sampling. OSC prepared their own HASP commensurate with WSP's that included site preparation activities, excavation, material staging and loading, transportation and disposal, and restoration.

3.1.2 Community Air Monitoring Plan

A site-specific CAMP was prepared and implemented to monitor ambient air during the PCB remediation as required by the New York State Department of Health (NYSDOH). The purpose of the CAMP was to ensure that any site-related constituents (airborne particulates containing PCBs or volatile organic compounds [VOCs]) that may be released during pad demolition and ground intrusive work, were detected, measured, and mitigated to protect the nearby community receptors from unnecessary exposures. The site-specific CAMP is provided in Appendix B.

Two monitoring locations were established upwind and downwind of the predominant wind direction as established daily by local weather station data. Continuous particulate monitoring and periodic VOC monitoring was completed. Continuous particulate monitoring was performed using a Thermo Andersen MIE DATARAM 4000 with audible alarm and data-logging capabilities to indicate exceedance of the action level. Periodic VOC monitoring was completed using a MiniRAE 2000 photoionization detector (PID). No exceedances of particulates or VOC concentrations were recorded during execution of the work.

3.2 Site Preparation

Site preparation activities included public and private utility locating, electrical line relocation, installation of erosion and sedimentation controls, and asbestos abatement. These site preparation activities are described in the following sections.

3.2.1 Utility Location

The Dig Safely New York One Call (ticket # 03175-540-042-00) was submitted by OSC March 17, 2015. A private utility locating firm, New York State Lead Detection Inc., marked the locations of underground utilities within the excavation area on March 18, 2015. Two abandoned high voltage electrical service conduits, a sanitary sewer, a storm sewer, and unknown underground line were identified and marked. Utility locating documentation is provided in Appendix C. OSC used special precautions while excavated above and near the identified utility lines. A clay tile drainage pipe was damaged during the excavation work and was repaired during site restoration activities.

3.2.2 High-Voltage Electric Line Relocation

While the transformers had been previously removed from the site, an aboveground high-voltage electrical line ran through the former transformer pad enclosure. WSP contracted with Matco Electric of Ithaca, New York to de-energize and reroute the high-voltage electric service away from the transformer pad. After relocating, the high-voltage line was re-energized to provide electrical service to Building 24.

3.2.3 Erosion and Sedimentation Controls

Best Management Practices (BMPs) were implemented to minimize the potential for erosion and sedimentation in surface water runoff. The flow from the drainage ditch was temporarily rerouted during the work. A sump and gravel berm was installed south of the work area within the ditch parallel to Building 24 to intercept storm water flow from the south. Storm water collected at the sump was pumped around the work area to the northeast and discharged to a downgradient portion of the drainage ditch culvert. A drainage pipe from Building 24 within the excavation area was temporarily diverted to the downgradient portion of the ditch. The temporary controls were removed during site restoration activities.

Dust suppression measures were established before work began. Water from a nearby hydrant was used sparingly to dampen excavated materials and to minimize dust emissions resulting from the remediation activities.

3.2.4 Asbestos Abatement

Approximately 285 square feet of non-friable organically bound (NOB) asbestos material was identified in the roof of the transformer pad enclosure. An asbestos notification for removal of the asbestos was submitted by OSC (License No. 34820) to the New York State Department of Labor (NYSDOL). Roof removal was completed on April 8, 2015 in accordance with NYSDOL CR 56-11.1 In-Plant Operations regulation. The pre-removal and final visual inspection was completed by Herbert D. Thompson (Cert. No. 08-13705) of Parsons Brinckerhoff (NYSDOL License No. 28575). The NOB waste was wrapped in polyethylene sheeting, loaded to a roll-off box, and transported by Earthwatch Waste Systems, Inc. to the Chemung County Landfill, a division of Casella Waste Management NY, in Elmira, New York for disposal. Documentation of the asbestos abatement is provided in Appendix D.

3.3 Waste Characterization Sampling

Waste characterization sampling for landfill profiling and acceptance was conducted before excavation to minimize contractor downtime and material handling. OSC, under WSP supervision, collected four samples representing each type of waste expected to be generated including concrete containing PCBs greater than 50 mg/kg; concrete, soil, sub-base, and asphalt containing less than 50 mg/kg; non-porous demolition debris (fence, rails, posts); and porous demolition debris (wood). Analytical parameters for waste characterization were selected based on the disposal facilities' requirements. It is important to note that while PCB analysis of waste characterization samples was required for landfill acceptance, material segregation and disposal decisions were made based on the as-found concentrations of PCBs. Waste characterization and analyses included:

- Concrete containing greater than 50 mg/kg PCBs - A discrete sample of concrete containing PCBs greater than 50 mg/kg was collected from the middle of the transformed pad. The sample was collected using a decontaminated rotary hammer drill, outfitted with chisel and auger bits. The sample was analyzed for total metals, toxicity characteristic leaching procedure (TCLP) metals, and PCBs based on the profiling requirements of the selected hazardous waste disposal facility, CWM Chemical Services, L.L.C of Model City, New York. The sample contained 77 mg/kg total PCBs.
- Materials containing less than 50 mg/kg PCBs - A composite sample proportionally representative of the soil, concrete, asphalt, and sub-base containing less than 50 mg/kg of PCBs was collected from the areas delineated for removal. The sample was analyzed for PCBs and hazardous waste characteristics for toxicity (TCLP VOCs, semi-VOCs, and metals), reactivity (cyanide and sulfide), ignitability (flashpoint), and corrositivity (pH). The sample contained 12.4 mg/kg total PCBs.
- Porous demolition debris - A composite sample was collected from the underside of the wooden roof of the transformer pad enclosure. Equal portions of wood from four locations were composited and analyzed for PCBs. PCBs were not detected in the sample and the roof structure was removed as a unit and disposed of as a NOB asbestos waste as described in Section 3.2.4.
- Non-porous materials - A composite wipe sample of the non-porous surfaces of the transformer pad enclosure was collected in accordance with CFR 761.312(b). Three wipe samples were collected from the chain-link fencing, posts, and rails and composited into a single sample. PCBs were not detected in the sample and the non-porous materials were disposed of with the porous demolition debris.

Analytical data reports for the waste characterization samples are provided in Appendix E.

3.4 Transformer Pad Removal and Excavation

Following the completion of site preparation activities, the transformer pad removal and excavation began on April 9, 2015. Air monitoring was conducted throughout the duration of pad removal and excavation in accordance with the HASP and CAMP. A decontamination station was constructed to contain equipment decontamination water generated during the remediation activities. Decontamination wastewater was managed as described in Section 3.6.

3.4.1 Transformer Pad Removal

Concrete was the only media found to contain PCBs above 50 mg/kg during the investigation phase. As shown on Figure 3, concrete samples from two locations near the center of the pad and one location from the front wall of the pad contained PCB concentrations greater than 50 mg/kg. WSP marked out the locations of concrete to be managed as a hazardous waste (Figure 3). OSC saw cut the concrete, size-reduced the concrete with a hydraulic hammer, and loaded the concrete directly to a roll-off box. Polyethylene sheeting was placed adjacent to the transformer pad to collect debris during pad demolition. Gravel directly below the concrete was also removed and placed in the roll-off box. No free liquids were present in the gravel beneath the pad. Competent bedrock was encountered at a depth of approximately 2 feet below the top of the pad. A total of 17.73 tons of concrete and gravel were transported to CWM Chemical Services, L.L.C of Model City, New York for disposal. Transportation and disposal details are provided in Section 3.6.

The remainder of the transformer pad materials from the northern and southern sides contained PCBs less than 50 mg/kg. In a similar manner, the concrete was reduced in size and loaded with the underlying gravel to a separate roll-off box. A total of 17.29 tons of concrete and gravel were transported to Ontario County Landfill of Stanley, New York for disposal. Transportation and disposal details are provided in Section 3.6.

After pad removal, the entire Building 24 foundation wall from the roof to the exposed bedrock was pressure washed to remove residual solids. Approximately 2 vertical feet of foundation wall was exposed as a result of the transformer pad removal. Water generated from the pressure washing was combined with equipment decontamination fluids and transferred to a 300-gallon tank for subsequent characterization and disposal as described in Section 3.6.

3.4.2 Excavation

Following removal of the transformer pad, WSP marked the initial limits of excavation in the areas north, northwest, west, and south of the former transformer pad (Figure 4). Each area was identified by the following scheme:

- Excavation area E1 – Soil excavation area north of the transformer pad encompassing soil boring SB-632 that contained 1.97 mg/kg total PCBs.
- Excavation area E2 – Asphalt/sub-base excavation area northwest of the transformer pad encompassing soil boring SB-645 that contained up to 21.2 mg/kg total PCBs.
- Excavation area E3 – Asphalt/sub-base excavation area west of the transformer pad encompassing soil borings MW-24 and SB-630 that contained 11.3 mg/kg and 3.39 mg/kg total PCBs, respectively.
- Excavation area E4 – Soil excavation are north of the transformer pad encompassing soil borings SB-639 and SB-640 that contained 3.25 mg/kg and 2.46 mg/kg total PCBs, respectively.

OSC saw cut the asphalt in excavation areas E2 and E3 and excavated soil, asphalt, and sub-base from all areas to the prescribed limits down to the competent bedrock surface which was generally encountered 1 to 2 feet below ground surface. Excavated materials were loaded directly to roll-off boxes. A total of 146.30 tons of soil, asphalt, and sub-base were transported to Ontario County Landfill for disposal. Transportation and disposal details are provided in Section 3.6.

Additional excavation was performed based on the results of the confirmation sampling results described in Section 3.5. One of 5 soil samples collected beneath the raised concrete pad (sample “BD24-RPAD-03”; Figure 4) contained PCBs greater than 1 mg/kg. Based on this result, the decision was made to remove the entire raised concrete pad, the concrete ramp, and the drainage culvert beneath the ramp. Soil and sub-base beneath these features were excavated to the top of bedrock, which was encountered at a depth of approximately 4.5 feet below the raised concrete pad. Several utility conduits, both active and abandoned, were present beneath the raised concrete pad. A clay tile drainage pipe that was damaged during excavation was repaired with polyvinyl chloride (PVC) pipe and Fernco fittings.

Additional excavation was performed in excavation areas E2 and E3 based on confirmation sample results. At locations where the perimeter confirmation samples were greater than 1 mg/kg, the excavations were extended outward one 5-foot grid node followed by additional confirmation sampling. When completed, the final excavation limits formed one contiguous area that included soil along the drainage ditch from the upgradient side of the transformer pad to the grate-covered concrete channel near the roll-up door entrance to Building 24 (Figure 4). The limits of excavation along the drainage ditch were defined by sample “BD24-E4-01” (0.988 mg/kg PCBs) on the upgradient side and “WSP-SB-637” (0.837 mg/kg PCBs) on the downgradient side. All of the areas were excavated to the top of competent bedrock. The final limits of excavation are shown on Figure 4.

3.5 Confirmation Sampling

Following excavation to the initial limits, confirmation samples were collected in accordance with 40 CFR 761 Subpart O to verify that remaining media contained less than 1 mg/kg of total PCBs. A 5-foot grid was interlaid within the original 10-foot grid and confirmation samples were collected at the base of the excavations and along the perimeters of the excavations at the nodes of the 5-foot grid. No confirmation samples were collected from the excavation perimeters that were bound by investigation samples containing PCBs less than 1 mg/kg or bound by the area of inference as defined in 40 CFR 761.283(d).

Reusable sampling equipment (drill bits, augers, and trowels) were decontaminated before each use by washing with non-phosphate detergent, rinsing with distilled water, wiping with hexane, and air drying. A total of six equipment rinsate blanks were collected by pouring distilled water over the decontaminated equipment and into sample jars. PCBs were not detected in any of the rinsate samples.

Because the excavations were advanced to the top of bedrock, confirmation samples at the base of the excavations were collected from the bedrock surface. Bedrock confirmation samples were collected in accordance with the U.S. EPA Region 1 document titled "Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (May 5, 2011; Appendix F). Bedrock confirmation samples were collected as discrete samples using a rotary impact hammer drill equipped with a decontaminated 1-inch diameter drill bit. The drill bits were advanced to a maximum of 3 inches and the powder collected and placed in laboratory-supplied sample jars.

Confirmation samples along the excavation perimeter, soil in excavation areas E1 and E4 and asphalt sub-base in excavation areas E2 and E3, were collected as discrete samples using a decontaminated hand auger or stainless steel trowel in accordance with WSP's SOPs (Appendix A). Samples were homogenized and placed in laboratory-supplied jars.

Two asphalt confirmation samples were collected as composite samples from excavation areas E2 and E3. Equal portions of asphalt from 5 grid nodes in excavation area E2 and 4 grid nodes in excavation area E3 were combined and thoroughly homogenized before placing in laboratory-supplied jars. Using procedures similar to the bedrock sampling, three confirmation samples were collected from the concrete wall of Building 24.

All samples were labeled, packed in a cooler with ice, and submitted under a chain of custody to Accutest Analytical Laboratories in Marlborough, Massachusetts for analysis of PCBs by EPA SW-846 Method 8082A.

The confirmation sample locations are shown on Figure 4 and the results provided in Table 1. The analytical data reports are provided in Appendix G. Based on the results of the initial confirmation sampling, additional excavation was required in certain areas to meet the 1 mg/kg high occupancy cleanup level. These areas included the soil beneath the raised concrete pad, the drainage ditch, additional areas adjacent to excavation areas E2 and E3, and a 50-square foot area of bedrock (described below). The excavation and confirmation sampling process continued until all confirmation samples contained less than 1 mg/kg total PCBs. The final limits of excavation and confirmation sampling results are shown on Figure 4.

The results of two bedrock confirmation samples in adjacent grid nodes contained PCBs greater than 1 mg/kg. Bedrock represented by these two samples was removed by hydraulic hammer to an approximate depth of 6 inches. Confirmation samples at the 6-inch depth contained PCBs less than 1 mg/kg.

In summary, a total of 63 confirmation samples were collected and analyzed for PCBs, of which 26 were soil or sub-base, 32 were bedrock, 3 were foundation wall samples from Building 24, and 2 were composite asphalt samples. Eleven of the 26 soil/sub-base samples exceeded the 1 mg/kg high occupancy cleanup level and resulted in additional excavation and confirmation sampling. Two of the 32 bedrock samples exceeded the 1 mg/kg cleanup level and resulted in additional bedrock removal and confirmation sampling. None of the Building 24 foundation wall and asphalt samples exceeded the 1 mg/kg cleanup level. All of the final confirmation sampling results met the 1 mg/kg cleanup level.

3.6 Transportation and Disposal

Materials generated during the transformer pad removal and PCB remediation were managed based on the as-found concentrations of PCBs and included concrete with PCBs greater than 50 mg/kg; concrete, soil, sub-base, asphalt, and bedrock with PCBs less than 50 mg/kg; non-friable NOB asbestos material, non-porous materials, and decontamination fluids. The quantities, transporters, and disposal facilities for each waste stream are presented below.

In accordance with 40 CFR 761.61(a)(5)(i)(B)(2)(iii), concrete containing PCBs greater than 50 mg/kg was disposed of in a permitted hazardous waste landfill. A total of 17.73 tons of concrete was transported under hazardous waste manifest by Tonawanda Tank Transport Service, Inc. on April 15, 2015 for disposal at CWM Chemical Services, L.L.C. of Model City, New York. Hazardous waste transportation and disposal documentation is provided in Appendix H.

In accordance with 40 CFR 761.61(a)(5)(i)(B)(2)(ii), materials containing less than 50 mg/kg PCBs were disposed of in a permitted non-hazardous waste landfill. A total of 146.3 tons of concrete, asphalt, soil, sub-base, and bedrock were transported under non-hazardous waste manifest by Riccelli Enterprises, Inc. for disposal at Ontario County Landfill, a division of Casella Waste Systems of Stanley, New York. Non-hazardous waste transportation and disposal documentation is compiled in Appendix I.

After confirming that the wood portions of the transformer pad roof did not contain detectable concentrations of PCBs, the NOB asbestos material was transported by Earthwatch Waste Systems for disposal at the Chemung County Landfill in Elmira, New York. Transportation and disposal documentation for the NOB asbestos waste is included in Appendix D. The chain-link fence, posts, and rails did not contain PCBs in wipe samples and were disposed with the NOB asbestos waste. A total of 4.01 tons of asbestos and demolition debris were disposed of at the Chemung County Landfill.

A total of 220 gallons of water were generated during decontamination of the Building 24 wall and the remediation equipment. A sample of the water was collected for characterization purposes and analyzed for hazardous waste characteristics (toxicity, reactivity, corrosivity, and ignitability) and PCBs. The water contained PCBs at a concentration of 0.83 micrograms per liter. The water was transferred from the polyethylene tank into 4 drums, then transported under bill of lading by Clean Harbors Environmental Services, Inc. for disposal at Clean Harbors Reidsville, LLC of Reidsville, North Carolina. Transportation and disposal documentation for the decontamination fluids is provided in Appendix J.

3.7 Site Restoration

The total excavation footprint encompassed an approximate area of 1,250 square feet. The excavated areas were backfilled in lifts using New York State Department of Transportation (NYSDOT) Type 4 gravel. Each lift was compacted with a minimum of three passes by a walk-behind vibratory plate compactor. Backfill in the asphalt areas was placed to a depth to accommodate 4 inches of asphalt. Other areas, with the exception of the former transformer pad, were backfilled to the original grade. Gravel backfill was placed as bedding for the culvert, which was reinstalled at its original location and grade. Flared end sections were installed at each end of the culvert to replace the concrete collars that were not replaced. Additional gravel was place above and around the culvert.

Two 2-inch layers of hot-mix asphalt were placed to restore the parking area west of the transformer pad. The asphalt was extended over the culvert to form a ramp. The raised concrete pad was not replaced; however, a small volume of concrete was placed near the man-door (Figure 4) that was slightly undermined during excavation beneath the raised concrete pad. The bedrock outcrop beneath the former transformer pad remains exposed.

Grass-seeded fibermesh with hay was installed at the north and south ends of the excavation and the restored drainage ditch adjacent to Building 24.

A drainage pipe was present within the excavation area below the former transformer pad. This pipe was extended using PVC pipe from the building to the drainage culvert to minimize the potential for erosion. The pipe was covered with gravel for protection. Final restoration of the site was completed May 8, 2015. Photographs of the work and final conditions are provided in Appendix K.

4 Summary and Conclusions

The Self-Implementing PCB Remediation was completed on May 8, 2015. The remedial objective was the removal of the former transformer pad and materials containing PCB concentrations greater than the high occupancy cleanup level of 1 mg/kg. Delineation activities were completed in compliance with CFR Part 761.61(a)(2). A site specific CAMP and HASP were implemented during the construction period and no exceedances of CAMP criteria were recorded.

The total excavation footprint encompassed an approximate area of 1,250 square feet. Excavated materials were segregated based on PCB concentrations above and below 50 mg/kg and approximately 164 tons of PCB-affected materials were disposed of offsite at permitted disposal facilities. No excavated materials were reused on site.

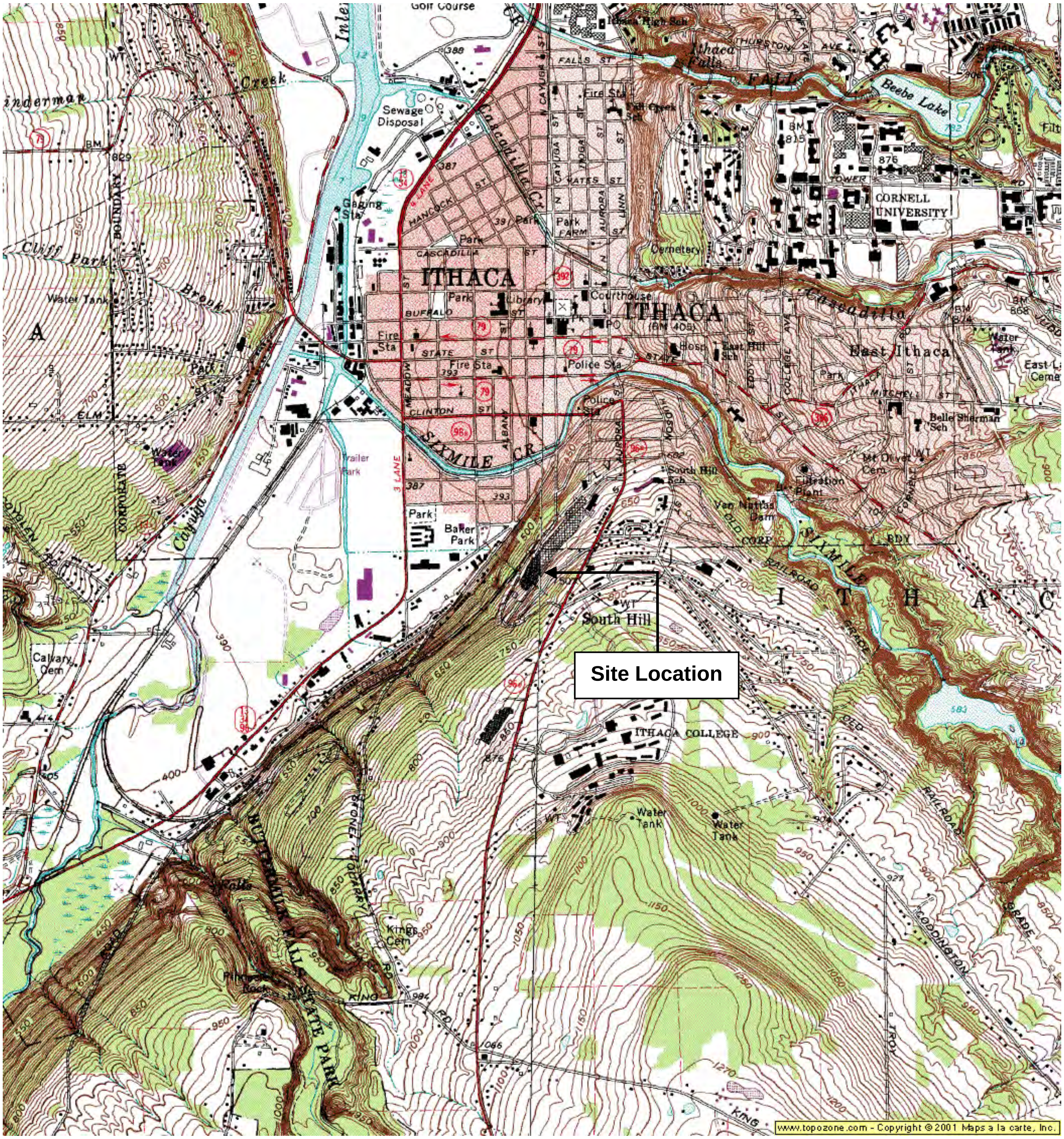
Confirmation sampling was completed in accordance with 40 CFR 761 Subpart O and included bedrock sampling at the base of all excavation areas; perimeter sampling of asphalt, soil, and sub-base in areas north, west, and south of the former transformer pad; and sampling of the Building 24 foundation wall. Confirmation samples verified the remaining media contains less than high occupancy cleanup level of 1 mg/kg of PCBs.

Following remediation and confirmation sampling, the site was restored for beneficial reuse.

5 Acronyms

BMPs	Best Management Practices
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
HASP	Health and Safety Plan
mg/kg	milligram per kilogram
NYSDEC	New York State Department of Environmental Conservation
NOB	Non-friable organically bound
NYSDOH	New York State Department of Health
NYSDOL	New York State Department of Labor
NYSDOT	New York State Department of Transportation
OSC	Ontario Specialty Contracting, Inc.
PCB	Polychlorinated Biphenyl
PID	Photoionization Detector
PVC	Polyvinyl Chloride
PPE	Personal Protective Equipment
SOPs	Standard Operating Procedures
TCLP	Toxicity Characteristic Leaching Procedure
VOC	Volatile Organic Compound

Figures



Reference
7.5 Minute Series Topographic Quadrangle
Ithaca East, New York
Photorevised 1976 Scale 1:25,000 Metric

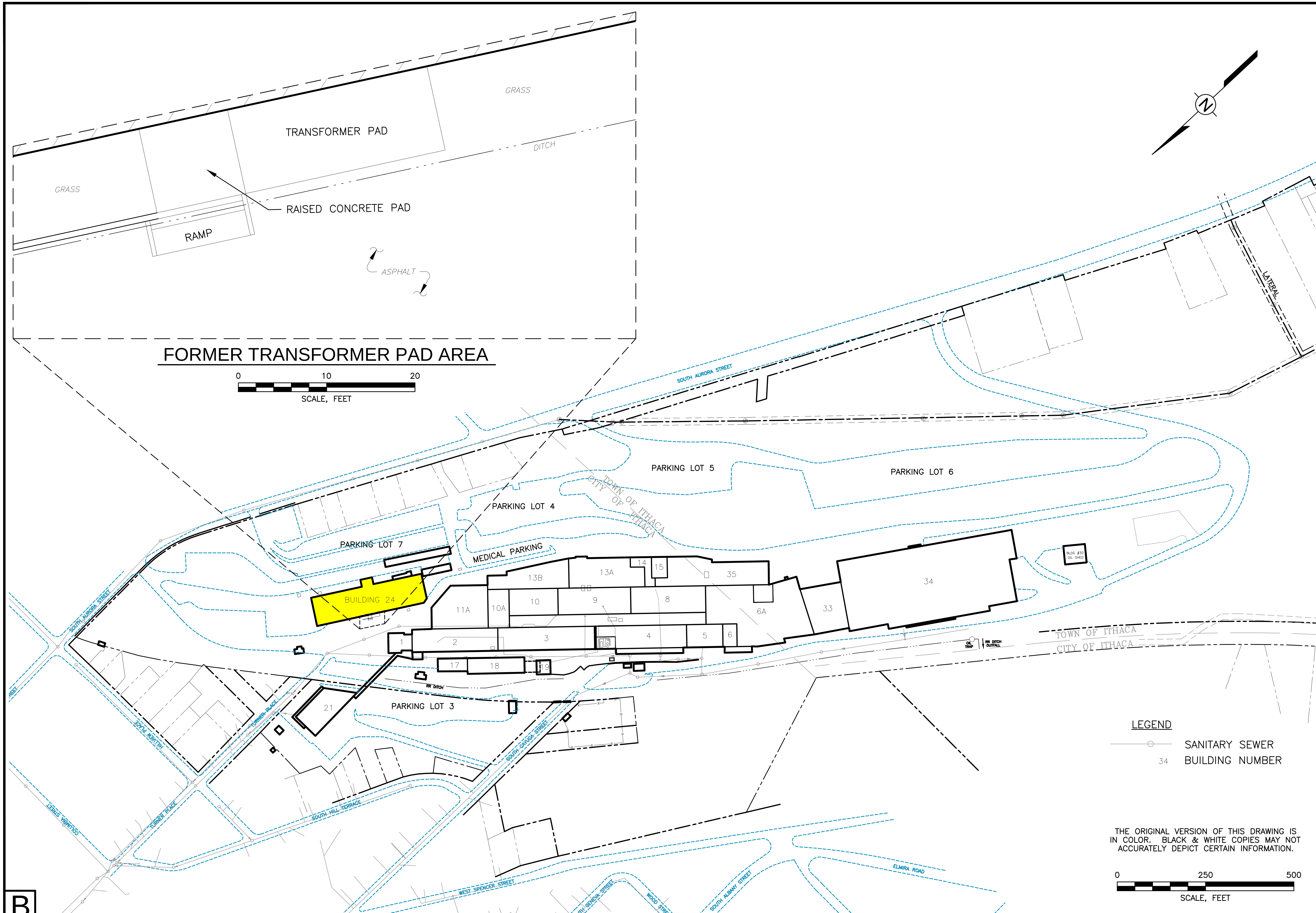
N

Quadrangle Location

Scale in Meters
0 500 1000
0 1000 2000
Scale in Feet

WSP USA Corp.
11190 Sunrise Valley Drive
Suite 300
Reston, Virginia 20191
703-709-6500

Figure 1
Site Location
Emerson Power Transmission
Ithaca, New York



Drawn By: RAZ 10/20/2014
Checked: JAR 07/01/2015
Approved: TMM 07/02/2015
DWG Name: 00004255-B04

EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

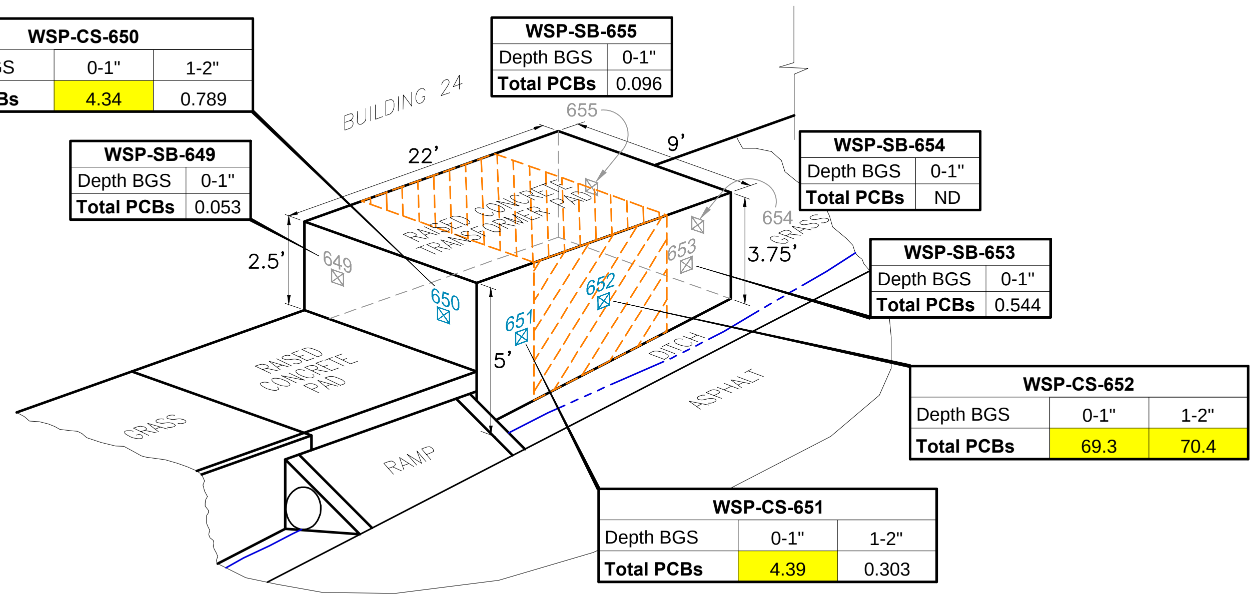
PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

FIGURE 2

SITE LAYOUT

WSP
WSP USA Corp.
11190 Sunrise Valley Drive, Suite 300
Reston, Virginia 20191
(703) 709-6500
www.wspgroup.com/usa

R:\CADAcad\CADD\00004\00004255-Ithaca_NY\CAD\00004255-B04.dwg 7/2/2015 1:07 PM Usrz01165



TRANSFORMER PAD DETAIL

NOT TO SCALE

WSP-CS-650		
Depth BGS	0-1"	1-2"
Total PCBs	4.34	0.789

WSP-SB-655	
Depth BGS	0-1"
Total PCBs	0.096

WSP-SB-649	
Depth BGS	0-1"
Total PCBs	0.053

WSP-SB-654	
Depth BGS	0-1"
Total PCBs	ND

WSP-SB-653	
Depth BGS	0-1"
Total PCBs	0.544

WSP-CS-652		
Depth BGS	0-1"	1-2"
Total PCBs	69.3	70.4

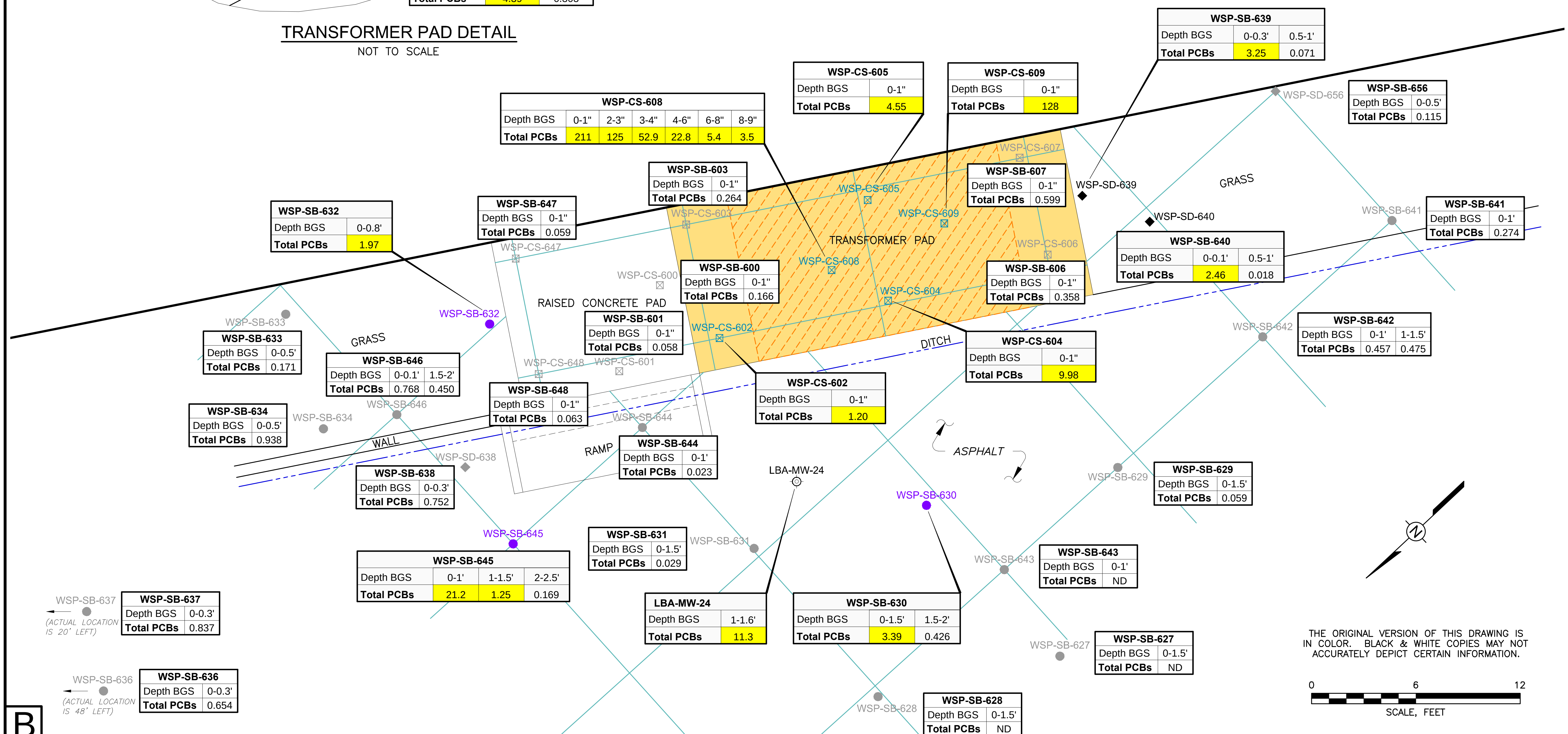
WSP-CS-651		
Depth BGS	0-1"	1-2"
Total PCBs	4.39	0.303

NOTES:

1. TOTAL PCB CONCENTRATION IN MILLIGRAMS PER KILOGRAM (mg/kg).
2. YELLOW HIGHLIGHT EXCEEDS EPA HIGH OCCUPANCY CLEANUP LEVEL.
3. WSP–CS–608/8–9" IS GRAVEL LAYER BELOW CONCRETE PAD.
4. SAMPLE LOCATION NAMES HAVE BEEN CHANGED FROM THE ORIGINAL DESIGNATION FOUND IN THE LOGBOOK AND LABORATORY DATA PACKAGE. THE ORIGINAL FIRST THREE LETTERS DESIGNATION WAS LBA– AND HAS BEEN CHANGED TO WSP–, WHILE THE REMAINDER OF THE LABEL REMAINS THE SAME.

LEGEND

- LABELLA MONITORING WELL
- WSP SOIL BORING
- WSP CHIP SAMPLE
- WSP SURFACE SOIL SAMPLE
- 1 mg/kg — EPA HIGH OCCUPANCY CLEANUP LEVEL
- BGS — BELOW GROUND SURFACE
- ND — NOT DETECTED
- PORTION OF CONCRETE AND UNDERLYING GRAVEL MANAGED AS A HAZARDOUS WASTE (>50 mg/kg PCBs)



WSP-SB-639		
Depth BGS	0-0.3'	0.5-1'
Total PCBs	3.25	0.071

WSP-CS-605	
Depth BGS	0-1"
Total PCBs	4.55

WSP-CS-609	
Depth BGS	0-1"
Total PCBs	128

WSP-SB-656	
Depth BGS	0-0.5'
Total PCBs	0.115

WSP-CS-608						
Depth BGS	0-1"	2-3"	3-4"	4-6"	6-8"	8-9"
Total PCBs	211	125	52.9	22.8	5.4	3.5

WSP-SB-603	
Depth BGS	0-1"
Total PCBs	0.264

WSP-SB-607	
Depth BGS	0-1"
Total PCBs	0.599

WSP-SB-632	
Depth BGS	0-0.8'
Total PCBs	1.97

WSP-SB-647	
Depth BGS	0-1"
Total PCBs	0.059

WSP-SB-641	
Depth BGS	0-1'
Total PCBs	0.274

WSP-SB-640		
Depth BGS	0-0.1'	0.5-1'
Total PCBs	2.46	0.018

WSP-SB-600	
Depth BGS	0-1"
Total PCBs	0.166

WSP-SB-606	
Depth BGS	0-1"
Total PCBs	0.358

WSP-SB-601	
Depth BGS	0-1"
Total PCBs	0.058

WSP-SB-633	
Depth BGS	0-0.5'
Total PCBs	0.171

WSP-SB-646		
Depth BGS	0-0.1'	1.5-2'
Total PCBs	0.768	0.450

WSP-CS-604	
Depth BGS	0-1"
Total PCBs	9.98

WSP-SB-642		
Depth BGS	0-1'	1-1.5'
Total PCBs	0.457	0.475

WSP-CS-602	
Depth BGS	0-1"
Total PCBs	1.20

WSP-SB-648	
Depth BGS	0-1"
Total PCBs	0.063

WSP-SB-634	
Depth BGS	0-0.5'
Total PCBs	0.938

WSP-SB-644	
Depth BGS	0-1'
Total PCBs	0.023

WSP-SB-638	
Depth BGS	0-0.3'
Total PCBs	0.752

WSP-SB-629	
Depth BGS	0-1.5'
Total PCBs	0.059

WSP-SB-631	
Depth BGS	0-1.5'
Total PCBs	0.029

WSP-SB-643	
Depth BGS	0-1'
Total PCBs	ND

WSP-SB-645			
Depth BGS	0-1'	1-1.5'	2-2.5'
Total PCBs	21.2	1.25	0.169

LBA-MW-24	
Depth BGS	1-1.6'
Total PCBs	11.3

WSP-SB-630		
Depth BGS	0-1.5'	1.5-2'
Total PCBs	3.39	0.426

WSP-SB-637	
Depth BGS	0-0.3'
Total PCBs	0.837

WSP-SB-627	
Depth BGS	0-1.5'
Total PCBs	ND

WSP-SB-636	
Depth BGS	0-0.3'
Total PCBs	0.654

WSP-SB-628	
Depth BGS	0-1.5'
Total PCBs	ND

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

Drawn By: RAE 06/25/2015
Checked: DAR 07/01/2015
Approved: TMM 07/02/2015
DWG Name: 00004255-B10

EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

FIGURE 3

SITE CHARACTERIZATION RESULTS – PCBs
BUILDING 24 TRANSFORMER PAD

WSP
WSP USA Corp.
11190 Sunrise Valley Drive, Suite 300
Reston, Virginia 20191
(703) 709-6500
www.wspgroup.com/usa

R:\CAD\Acad\CAD\00004\00004255-Ithaca_NY\CAD\00004255-B10.dwg 7/2/2015 1:08 PM Usr201165

B

LEGEND

- BEDROCK CONFIRMATION SAMPLE (0 TO 3")
- BEDROCK CONFIRMATION SAMPLE (6 TO 9")
- SOIL CONFIRMATION SAMPLE
- WALL SAMPLE
- MONITORING WELL
- WSP SOIL BORING (SITE CHARACTERIZATION)
- 10' GRID LINE
- 5' GRID LINE
- INITIAL LIMITS OF EXCAVATION
- FINAL LIMIT OF EXCAVATION
- LIMIT OF BEDROCK EXCAVATION (6")

PCB CONCENTRATIONS ARE IN mg/kg

RED INDICATES CONCENTRATION ABOVE HIGH OCCUPANCY CLEANUP LEVEL OF 1 mg/kg

GREEN INDICATES CONCENTRATION BELOW HIGH OCCUPANCY CLEANUP LEVEL OF 1 mg/kg

BR – BEDROCK

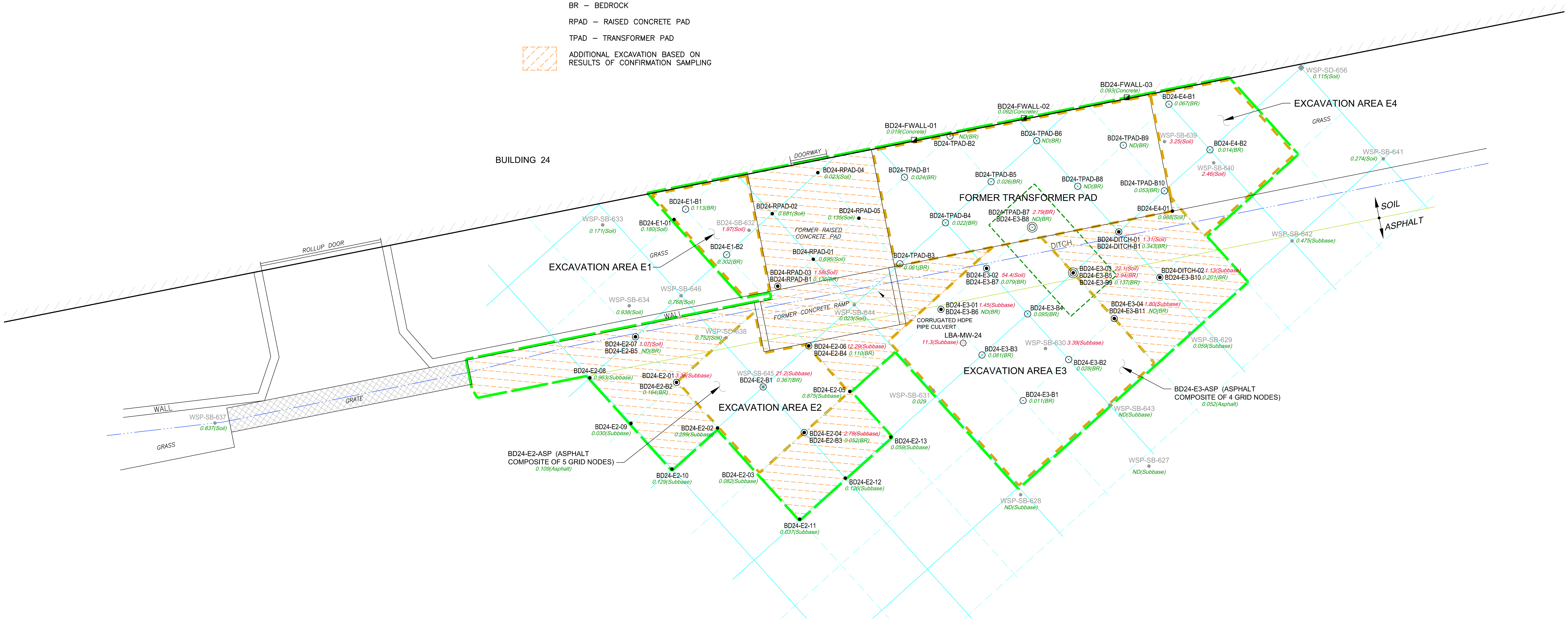
RPAD – RAISED CONCRETE PAD

TPAD – TRANSFORMER PAD

ADDITIONAL EXCAVATION BASED ON RESULTS OF CONFIRMATION SAMPLING

NOTES:

1. ALL AREAS WERE EXCAVATED TO THE TOP OF COMPETENT BEDROCK.
2. AFTER INITIAL EXCAVATION AND CONFIRMATION SAMPLING, ADDITIONAL SOIL, SUBBASE, AND BEDROCK CONTAINING PCB CONCENTRATIONS GREATER THAN 1 mg/kg WERE EXCAVATED, FOLLOWED BY ADDITIONAL CONFIRMATION SAMPLING.
3. WALL SAMPLES WERE COLLECTED APPROXIMATELY 1 FOOT BELOW LOCATION OF CONCRETE SLAB.
4. ASPHALT SURFACING WAS RESTORED IN KIND FOLLOWING CONFIRMATION SAMPLING.
5. AREAS BETWEEN BUILDING 24 AND ASPHALT WERE RESTORED WITH GRAVEL.



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

SCALE, FEET (4 0 4 8)

SAMPLE NOTE:

SAMPLE LOCATION NAMES HAVE BEEN CHANGED FROM THE ORIGINAL DESIGNATION FOUND IN THE LOGBOOK AND LABORATORY DATA PACKAGE. THE ORIGINAL FIRST THREE LETTERS DESIGNATION WAS LBA– AND HAS BEEN CHANGED TO WSP–, WHILE THE REMAINDER OF THE LABEL REMAINS THE SAME.

D

REVISIONS

REV	DESCRIPTION

DRAWN BY
CHECKED
APPROVED

DATE

SEAL

FINAL LIMITS OF EXCAVATION AND CONFIRMATION SAMPLE LOCATIONS AND RESULTS

EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

WSP
WSP USA Corp.
11190 Sunrise Valley Drive, Suite 300
Reston, Virginia 20191
(703) 709-6500
www.wspgroup.com/usa

FIGURE 4

Drawing Number
00004255–D13

Table

Table 1

Confirmation Sample Results
Building 24 Transformer Pad
Emerson Power Transmission
Ithaca, New York (a)

Media	Sample ID	Date	Total PCBs (c)	Polychlorinated Biphenyls (PCBs) (µg/kg) (b) Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
Soil/ Subbase	BD24-E1-01	04/07/15	180	8.9 U (d)	17 U	17 U	18 U	16 U	64	116
	BD24-E4-01	04/07/15	988	8.4 U	16 U	16 U	17 U	15 U	782	206
	BD24-DITCH-01	04/08/15	**1,307**	10 U	20 U	20 U	21 U	18 U	817	490
	BD24-RPAD-01	04/08/15	696	7.9 U	15 U	15 U	16 U	14 U	574	122
	BD24-RPAD-02	04/08/15	681	8.3 U	16 U	16 U	17 U	15 U	556	125
	BD24-RPAD-03	04/08/15	**1,583**	9 U	17 U	17 U	18 U	16 U	772	811
	BD24-RPAD-04	04/08/15	22.6	7.5 U	15 U	14 U	15 U	13 U	22.6 J	13 U
	BD24-RPAD-05	04/08/15	134.5	8.3 U	16 U	16 U	17 U	15 U	66.2	68.3
	BD24-E2-01	04/10/15	**3,376**	11 U	4.8 U	11 U	12 U	14 U	**2,990**	386 J
	BD24-E2-02	04/10/15	288.7	10 U	4.5 U	10 U	11 U	13 U	219	69.7
	BD24-E2-03	04/10/15	82.5	10 U	4.6 U	11 U	11 U	13 U	45.3	37.2
	BD24-E2-04	04/10/15	**2,782**	11 U	4.9 U	12 U	12 U	14 U	**2,520**	262 J
	BD24-E2-05	04/10/15	875	11 U	4.8 U	11 U	12 U	13 U	785	90 J
	BD24-E2-06	04/10/15	***12,290***	11 U	4.6 U	11 U	12 U	13 U	**4,500**	**7,790**
	BD24-E2-07	04/16/15	**1,068**	11 U	9.8 U	12 U	12 U	14 U	675	393
	BD24-E2-08	04/16/15	963	13 U	11 U	13 U	14 U	16 U	374	589
	BD24-E2-09	04/16/15	30.1	10 U	9.1 U	11 U	11 U	13 U	18.9 J	11.2 J
	BD24-E2-10	04/16/15	129.3	10 U	8.8 U	10 U	11 U	12 U	106	23.3 J
	BD24-E2-11	04/16/15	37.2	11 U	9.6 U	11 U	12 U	14 U	19.3 J	17.9 J
	BD24-E2-12	04/16/15	126.1	9.9 U	8.7 U	10 U	11 U	12 U	93.9	32.2 J
	BD24-E2-13	04/16/15	58.7	11 U	9.5 U	11 U	12 U	13 U	47.1	11.6 J
	BD24-E3-01	04/16/15	**1,448**	11 U	9.3 U	11 U	12 U	13 U	703	745
	BD24-E3-02	04/16/15	***54,400***	11 U	9.4 U	11 U	12 U	13 U	9.8 U	***54,400***
	BD24-E3-03	04/16/15	***22,100***	11 U	9.3 U	11 U	12 U	13 U	9.7 U	***22,100***
	BD24-E3-04	04/16/15	**1,804**	10 U	9 U	11 U	11 U	13 U	**1,460**	344
	BD24-DITCH-02	04/16/15	**1,128**	11 U	9.4 U	11 U	12 U	13 U	**1,060**	67.7
Bedrock	BD24-E1-B1	04/10/15	113	9.3 U	4.1 U	9.7 U	10 U	12 U	113	4.8 U
	BD24-E1-B2	04/10/15	301.8	9.4 U	4.1 U	9.8 U	10 U	12 U	293	8.8 J
	BD24-E4-B1	04/10/15	67	9.8 U	4.3 U	10 U	11 U	12 U	9 U	67
	BD24-E4-B2	04/10/15	14.4	9.8 U	4.3 U	10 U	11 U	12 U	9 U	14.4 J
	BD24-E2-B1	04/16/15	366.5	9.7 U	8.6 U	10 U	11 U	12 U	271	95.5
	BD24-E2-B2	04/16/15	163.9	9.6 U	8.4 U	9.9 U	11 U	12 U	140	23.9 J
	BD24-E2-B3	04/16/15	52.1	9.5 U	8.4 U	9.9 U	10 U	12 U	32.2 J	19.9 J
	BD24-E2-B4	04/16/15	109.9	9.4 U	8.3 U	9.8 U	10 U	12 U	83.4	26.5 J
	BD24-E3-B1	04/16/15	11.1	9.4 U	8.2 U	9.7 U	10 U	12 U	8.6 U	11.1 J
	BD24-E3-B2	04/16/15	28.3	9.6 U	8.5 U	10 U	11 U	12 U	20.2 J	8.1 J

Table 1

Confirmation Sample Results
Building 24 Transformer Pad
Emerson Power Transmission
Ithaca, New York (a)

Media	Sample ID	Date	Total PCBs (c)	Polychlorinated Biphenyls (PCBs) (µg/kg) (b)						
				Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
	BD24-E3-B3	04/16/15	81	9.4 U	8.3 U	9.7 U	10 U	12 U	38.6	42.4
	BD24-E3-B4	04/16/15	95.2	9.6 U	8.4 U	9.9 U	11 U	12 U	26.8 J	68.4
	BD24-E3-B5	04/16/15	**2,940**	9.8 U	8.6 U	10 U	11 U	12 U	9 U	**2,940**
	BD24-DITCH-B1	04/16/15	342.5	9.6 U	8.4 U	9.9 U	11 U	12 U	248	94.5
	BD24-RPAD-B1	04/16/15	135.8	9.5 U	8.4 U	9.9 U	10 U	12 U	113	22.8 J
	BD24-TPAD-B1	04/16/15	24.3	9.2 U	8.1 U	9.5 U	10 U	11 U	8.4 U	24.3 J
	BD24-TPAD-B100 (e)	04/16/15	82.8	9.1 U	8 U	9.5 U	10 U	11 U	62.3	20.5 J
	BD24-TPAD-B2	04/16/15	12 U	9.8 U	8.7 U	10 U	11 U	12 U	9.1 U	5.1 U
	BD24-TPAD-B3	04/16/15	60.7	9.5 U	8.4 U	9.9 U	10 U	12 U	49.2	11.5 J
	BD24-TPAD-B10	04/17/15	52.8	9.6 U	8.4 U	9.9 U	11 U	12 U	8.8 U	52.8
	BD24-TPAD-B4	04/17/15	22.3	9.1 U	8.1 U	9.5 U	10 U	11 U	8.4 U	22.3 J
	BD24-TPAD-B5	04/17/15	26.2	9.6 U	8.5 U	10 U	11 U	12 U	8.8 U	26.2 J
	BD24-TPAD-B6	04/17/15	12 U	9.6 U	8.4 U	9.9 U	11 U	12 U	8.8 U	4.9 U
	BD24-TPAD-B7	04/17/15	**2,790**	9.3 U	8.2 U	9.7 U	10 U	12 U	8.6 U	**2,790**
	BD24-TPAD-B8	04/17/15	12 U	9.6 U	8.5 U	10 U	11 U	12 U	8.8 U	5 U
	BD24-TPAD-B9	04/17/15	12 U	9.6 U	8.5 U	10 U	11 U	12 U	8.9 U	5 U
	BD24-E2-B5	04/24/15	82 U	66 U	58 U	68 U	72 U	82 U	61 U	34 U
	BD24-E3-B10	04/24/15	201	50 U	44 U	51 U	54 U	61 U	201	26 U
	BD24-E3-B11	04/24/15	60 U	49 U	43 U	50 U	53 U	60 U	45 U	25 U
	BD24-E3-B6	04/24/15	73 U	59 U	52 U	61 U	65 U	73 U	54 U	31 U
	BD24-E3-B7	04/24/15	79.3	56 U	49 U	58 U	62 U	69 U	79.3 J	29 U
	BD24-E3-B8	04/24/15	74 U	60 U	52 U	62 U	65 U	74 U	55 U	31 U
	BD24-E3-B9	04/24/15	137	71 U	63 U	74 U	78 U	88 U	137 J	37 U
Wall	BD24-FWALL-01	04/17/15	18.8	9.2 U	8.1 U	9.5 U	10 U	11 U	8.4 U	18.8 J
	BD24-FWALL-02	04/17/15	92.3	9.6 U	8.4 U	9.9 U	11 U	12 U	8.8 U	92.3
	BD24-FWALL-03	04/17/15	92.5	9.4 U	8.2 U	9.7 U	10 U	12 U	8.6 U	92.5
Asphalt	BD24-E2-ASP	04/07/15	109.4	6.9 U	13 U	13 U	14 U	12 U	71	38.4
	BD24-3-ASP	04/08/15	52	7 U	14 U	13 U	14 U	12 U	17.8 J	34.2

Shading indicates value greater than high occupancy area cleanup level (1 ppm); additional excavation and confirmation sampling was performed

a/ µg/kg = micrograms per kilogram (ppb); ID = identification; ppm = parts per million (milligrams per kilogram [mg/kg]).
b/ Reported as individual Aroclors.
c/ Sum of the detected or estimated individual Aroclor concentrations.
d/ Data Qualifiers:
U = analyte not detected above reporting limit
J = analyte detected below the reporting limit and above the methold detection limit, estimated concentration.
e/ Duplicate of previous sample.

Appendix B – Community Action Monitoring Plan

11190 Sunrise Valley Drive
Suite 300
Reston, VA 20191
Main: 703 709 6500
www.wspgroup.com/usa

Community Air Monitoring Plan

This Community Air Monitoring Plan (CAMP) outlines real-time monitoring requirements for volatile organic compounds (VOCs) and particulates at the upwind (particulates only) and downwind perimeters of each designated work area when intrusive activities are being conducted. The CAMP is intended to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses) from potential airborne contaminant releases as a direct result of the remedial work activities. Since the facility is not active, there no onsite workers not directly involved with the subject work activities are expected to be onsite. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, this CAMP helps to confirm that work activities have not spread contamination offsite through the air.

Reliance on the CAMP will not preclude simple, common-sense measures to keep chemicals, dust, and odors at a minimum around the work areas. **Continuous monitoring will be conducted for all ground intrusive activities, including soil borings and monitoring well installation.**

Periodic monitoring for VOCs will be conducted during non-intrusive, ancillary activities such as the collection of soil samples or the collection of groundwater samples from monitoring wells. Periodic monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location.

VOC Monitoring, Response Levels, and Actions

VOCs will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work will be performed using a photoionization detector equipped with a 10.6 electron volt lamp. The equipment will be calibrated at least daily and will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less; but, in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.
4. All 15-minute readings must be recorded and be available for New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH)

personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at four temporary particulate monitoring stations (two upwind; two downwind). The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (µg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 µg/m3 above the upwind level and no visible dust is migrating from the work area.
2. If, after implementing dust suppression techniques, downwind PM-10 particulate levels are greater than 150 µg/m3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 µg/m3 of the upwind level and in preventing visible dust migration.
3. All readings will be recorded and be available for the NYSDEC, the NYSDOH, and County Health personnel to review.

Appendix C – WSP Standard Operating Procedures

FIELD STANDARD OPERATING PROCEDURE #1
Note Taking and Field Book Entries Procedure

The field book is a record of the day's activities that serves as a reference for future reporting and analyses. The field book is also a legal record for projects that may become involved in litigation. It is of the utmost importance that your notes be complete and comprehensive. The user is advised to read the entire standard operating procedure (SOP) and review the site health and safety plan (HASP) before beginning any onsite activities.

1.1 Acronyms and Abbreviations

HASP	health and safety plan
IDW	investigation-derived waste
SOP	standard operating procedure

1.2 Materials

- Permanently-bound waterproof field book (e.g., Rite-in-the-Rain® #550, or equivalent)
- Black or blue ballpoint pen (waterproof ink recommended; do not use felt-tip pens)

1.3 Preconditions and Background

This SOP has been prepared as part of the WSP USA Corp. Environmental Quality Management Plan and is designed to provide detailed procedures for common field practices. Compliance with the methods presented in this document is mandatory for all field personnel and will ensure that the tasks are performed in safe and consistent manner, are in accordance with federal and state guidance, and are technically defensible.

This SOP is written for the sole use of WSP employees and will be revised periodically to reflect updates to WSP policies, work practices, and the applicable state and/or federal guidance. WSP employees must verify that this document is the most recent version of the WSP SOPs. WSP employees are also strongly advised to review relevant state and/or federal guidance, which may stipulate program-specific procedures, in advance of task implementation.

The purpose of the field book is to provide a log of all of field events and conditions. The notes must include sufficient detail (i.e., who, what, when, where, why, and how) to enable others to reconstruct the day's activities for analysis, reporting, or litigation. It is important to be objective, factual, and thorough. Language must be free of personal comments or terminology that might prove inappropriate. Additional data logs or worksheets, such as low flow groundwater sampling sheets, may be used as a supplement; however, under no circumstances should the data sheets be used as a substitute for the daily record of events to be recorded in the field book.

The field book forms the foundation upon which most of the project work (reports, subsequent work plans, etc.) will be based. It is critical that field book chain of custody is maintained at all times.

1.4 Set-Up Procedures

The first step in setting up a new field book is to add the information necessary for you to identify the field book in the future and for others to return the book to WSP, should it be lost. On the first page of the field book (or, for some field books, the inside cover), place a "Return for Reward" notice. Include the following information:

- An “If Found – Return for Reward” notice in bold letters
- Our company name
- Our company address (usually the office where the project is being managed)
- Our company phone number

Reserve the second page of the field book for project-specific information, such as:

- The project name and number
- The project manager’s name
- The site telephone number, address, and onsite contact (if appropriate)
- The names and telephone numbers for all key (onsite) personnel
- The emergency telephone numbers including the police, fire, and ambulance (found in the HASP)

Business cards from individuals who visit the site, (including the person in charge of the field book) can be affixed to the inside back cover.

1.5 Field Book Entries

Start each day on a new page. Include the following information in the header of the first page (and all subsequent pages):

- The date
- The project name
- The page number (often pre-printed in Rite-in-the-Rain® style field books)

Precede field book entries by the time entered along the left margin of the page using a 24-hour or military clock (e.g., 1330 for 1:30 PM). The first entry of the day must include your and your subcontractor’s arrival time at the site, a description of the planned activities, key onsite personnel (including subcontractors), and the weather forecast. The first entry must also detail the tailgate review of the site-specific HASP with the onsite personnel. Be sure that field book entries are LEGIBLE and contain factual, accurate, and inclusive documentation of project field activities. <u>Do not leave blank lines between field book entries.</u> If a mistake is made in an entry, cross out the mistake <u>with a single line</u> and place your initials the end of the line. Any acronyms written in the field book (including your initials) must be spelled out prior to the first use. Record your initials and date at the bottom of each page.

Subsequent log entries must document the day’s activities in sequence and must be completed throughout the day as events occur (i.e., do not wait until the end of the work day to complete the notes); should out of sequence notes need to be entered, please identify using a footnote or by clearly indicating “Late Entry.” Notes must be descriptive and provide location information or diagrams (if appropriate) of the work area or sample locations. Note any changes in the weather and document all deviations from the work plan. Arrival and departure times of all personnel, and operational periods of standby, decontamination, and specific activities must be recorded.

List all field equipment used (e.g., photoionization detector, water testing equipment, personal protective equipment, etc.) and equipment calibration activities, and record field measurements, including distances, monitoring and testing instrument readings. Include the following information in entries describing sampling activities:

- The equipment and materials used by subcontractors, if appropriate (e.g., drill rig type, boring sizes, well casing materials, etc.)
- The sample media and analyses to be performed

- The sampling procedures (e.g., split-spoon sampling, hand trowel, low flow, etc.)
- The equipment used to obtain the sample (e.g., bailers, pump types, geochemical monitoring equipment, etc.)
- The sizes and types of containers, preservation (if any), and any resulting reactions
- The sample identification (especially for duplicate samples)
- The sample collection time
- The shipping and handling procedures, including chain-of-custody, air bill, and seal numbers
- If supplemental data recording logs (digital or hard copy), such as low flow groundwater sheets, the above information must be entered in the field book and the supplemental records cross-referenced.

For most sampling activities, the log entries must also include:

- The decontamination and disposal procedures for all equipment, samples, and protective clothing
- An inventory of the investigation-derived waste (IDW) materials generated during the site activities
- A description of the IDW labeling procedures and the onsite staging information

Maintain a sequential log if the sample locations and areas of interest are photographed (strongly recommended). The photographic log must include:

- The date and time of the photograph
- The sequential number of the photograph (e.g., photograph-1, photograph-2, etc.)
- The general direction faced when the photograph was made
- A description of the subject in the image

1.6 Closing Notes

The last entry of the day must include a brief wrap up of the work accomplished, a description of how the site is being secured, and a description of any near hits, accidents, and incidents that occurred during the day's work. Draw a line through the remainder of the page from the row of text diagonally through any blank lines and initial at the end of the diagonal line.

FIELD STANDARD OPERATING PROCEDURE #2

Utility Locating Procedure

The purpose of this procedure is to ensure that all required and appropriate procedures are followed to locate and mark subsurface utilities (e.g., electrical lines, natural gas lines, communication lines) before initiating any intrusive field activities (e.g., drilling, test pits, trenching, excavation). WSP's preference, as indicated in our standard and remediation subcontractor agreement templates, is for our Contractors to be responsible for both public and private utility mark-outs; this includes contacting the public authority and obtaining a subcontractor for private utility locating services, if needed. Guidance for Contractor's to follow to conduct utility clearance is provided in our Request for Proposal (RFP) template and must be included in all RFP's for intrusive field activities. **In certain extraordinary circumstances, WSP may choose to be responsible for clearing utilities, this will require a change in the template language of our subcontractor agreement and the revised agreement requires the approval and signature of a member of the Environmental Leadership Team (ELT)**.

For projects where WSP will be responsible for clearing utilities, compliance with this procedure is mandatory. **ALL** deviations from this standard operating procedure (SOP) **MUST** be approved by the project manager and a member of the ELT **BEFORE** beginning intrusive work.

Field personnel have the authority and responsibility to postpone intrusive activities if a Contractor has not completed utility clearances to WSP's satisfaction; if sufficient information, as stipulated in this SOP, is not available; or if onsite reconnaissance identifies inconsistencies in the findings of utility locators. In these instances, field personnel must notify the project manager or the WSP health and safety officer, or their designee, before proceeding with the proposed work; approval from a member of the ELT is required before the work commences.

The user is advised to read the entire SOP and review the site health and safety plan (HASP) before beginning any onsite activities.

2.1 Acronyms and Abbreviations

HASP	health and safety plan
ELT	Environmental Leadership Team
RFP	Request for Proposal
SOP	standard operating procedure

2.2 Materials

- Utility Locating Form (Attachment 1)
- Field book
- Wood stakes
- Spray paint
- Flagging tape
- As-built drawings for sub grade utilities (if available)
- Hand auger or post-hole digger

2.3 Preconditions and Background

This SOP has been prepared as part of the WSP USA Corp. Environmental Quality Management Plan and is designed to provide detailed procedures for common field practices. Compliance with the methods presented in this document is mandatory for all field personnel and will ensure that the tasks are performed in a safe and consistent manner, are in accordance with federal and state guidance, and are technically defensible.

This SOP is written for the sole use of WSP employees and will be revised periodically to reflect updates to WSP policies, work practices, and the applicable state and/or federal guidance. WSP employees must verify that this document is the most recent version of the WSP SOPs. WSP employees are also strongly advised to review relevant state and/or federal guidance, which may stipulate program-specific procedures, in advance of task implementation.

This procedure is intended to allow the work to proceed safely and minimize the potential for damaging underground and aboveground utilities. Intrusive work includes all activities that require WSP's employees or its subcontractors to penetrate the ground surface. Examples of intrusive work include, but are not limited to, hand augering, probing, drilling, injections, test pit excavations, trenching, and remedial excavations.

This SOP assumes the user is familiar with basic field procedures, such as recording field notes (SOP 1).

2.4 Pre-Field Mobilization Procedures

Regardless of who is responsible for completing these activities (WSP or a Contractor), public rights-of-way and private property must be cleared of potential buried utilities before any intrusive work can begin. The first step in this process is notifying the state public utility locating service of the planned work. These services provide a link between the entities performing the work and the various utility operators (e.g., the water company, the electric company, etc.). All of the public utility locating service call centers in the United States have been streamlined under a single "Call Before You Dig" phone number: 811.

Please note, some state laws have changed such that the person who will actually be conducting the intrusive work must be the person who places the call to the public utility locating service. This means that WSP cannot make this call on the Contractor's behalf; the Contractor must place the call in those states where required. The Common Ground Alliance has established a web site that includes state-specific information to assist in making this determination (http://www.call811.com/state-specific.aspx) for sites in the US and some parts of Canada. If there is any doubt about the requirements for the state where a project is located, the relevant state authority must be contacted.

When the call center is contacted, information regarding the site (e.g., location, nearest cross street, township, etc.) and work activity (e.g., drilling, excavation) will need to be provided to the operator to aid in locating the likely utilities at the work site. The information provided on WSP's Utility Locating Form (Attachment 1) must be recorded (by the Contractor or WSP) and a completed copy of this form must be maintained as part of the project file. Be aware that several states, including California, require that the proposed drilling locations be marked with white spray paint before contacting the locating services.

The following information must accompany the WSP field team at all times during the field project:

- The utility clearance ticket number
- The ticket's legal dig date
- The ticket's expiration date
- Utility providers that were contacted

The ticket number serves as a point of reference for both the utility service providers and for WSP or Contractor personnel should follow up (e.g., renewing the ticket) with the locating service be required. The legal dig and expiration dates reflect the times when it will be legal to perform the proposed work. The legal dig date reflects the lead time necessary, typically between 48 and 72 hours <u>after</u> you call, for the utility service providers to mark the utilities in you work area. Be sure to include this delay when planning your work. Most utility clearance tickets expire about 2 weeks after the legal dig date. If your work is delayed beyond the expiration date, 811 will need to be called again and the ticket renewed. The renewed ticket will have a new legal dig date that incorporates the same lead-time as the original ticket.

The locating service will also provide the caller with a list of utility companies that will be notified. Compare this list with utilities generally expected at all sites (e.g., sewer, water, gas, communication, and electric). Some utilities (e.g., sewer, water, cable TV) may not be included. If any expected utilities are absent from the contact list, you **MUST** contact the utilities directly for clearance before the start of intrusive activities. Record all contacts on the Utility Locating Form.

2.4.1 Private Utility Locators and Other Sources

Public utility service providers will generally mark their underground lines within the public right-of-way up to the private property boundary. You can request that the utility companies locate their utilities in work areas on private property; however, be aware that most service providers will not mark their utilities on private property. If your work is to be conducted on private property, you **MUST** use a private utility locating service. These companies typically use a variety of methods (e.g., electromagnetic detectors, ground-penetrating radar, acoustic plastic pipe locator, trace wire, etc.) to locate buried utilities in both inside and outside locations (witching is not an acceptable method).

For all operating facilities and the extent possible for closed facilities, identify a site contact familiar with the utilities on the property (e.g., plant manager, facility engineer, maintenance supervisor), and provide this individual with a site plan showing the proposed locations of all soil borings, monitoring wells, test pits, and other areas where intrusive activities will be conducted. These individuals often have knowledge of buried structures or process-specific utilities that may not be identified by the private utility locator. This is particularly important for work performed inside industrial buildings where reinforced concrete and other metallic components of the structure may interfere with the scanning devices used by the private utility locator. You should ask the site contact for all drawings concerning underground utilities in the proposed work areas for future reference.

Keep in mind that no intrusive work may be done before the legal dig date provided by the state utility locating service and no digging, drilling, or other ground-breaking activities may be begin until all utilities on the list have been marked and visually verified in the work area (see below). It is **NOT ACCEPTABLE** to rely solely on as-built drawings or verbal utility clearances from the site contact (these should be used as guides only). A private locator may not be necessary in rare instances; however, nonconformity with the private locate requirement must be approved by the project manager **AND** a member of the ELT before work proceeds.

2.5 Site Mobilization Procedures

Upon arrival, the first step in determining if you are clear of buried and overhead utilities is to locate all of the proposed drilling and trenching locations and mark them with spray paint, stakes, or other appropriate markers. This will help you judge distances from marked utilities and minimizes any potential misunderstandings regarding the locations between you, the subcontractors (drillers, excavators, private utility locator), and the site contact.

Once you have the proposed work areas marked, verify that ALL utility companies listed by the state public utility locating service, and any contacted directly by WSP or the Contractor, have either marked the underground lines in the specified work areas or have responded (via telephone, facsimile, or e-mail) with “no conflict.” Document on the Utility Locating Form (Attachment 1) and in the field book as each utility mark is visually confirmed. When receiving verbal clearances by telephone from utility companies, or their subcontractors, it is imperative that you verify which utilities are being cleared, particularly when dealing with subcontractors that may be marking more than one utility.

Review all available as-built utility diagrams and plans and conduct a site walk to identify potential areas where underground lines may be present; include the site contact in these activities. It is a good idea to survey your surroundings during the walk to identify any features that may indicate the presence of underground utilities, such as linear depressions in the ground, old road cuts, catch basins, or manholes. Keep in mind that many sewer lines can be offset from catch basins. The presence of aboveground utilities, such as parking lot lights or pad-mounted transformers, is also a good indicator of buried electrical lines. Check these items against the Utility Locating Form checklist and discuss the locations with the private utility locating service.

2.5.1 Safe Working Distances and Hand Clearing

A minimum of 4 feet clearance must exist between utilities and proposed drilling locations, and a minimum of 6 feet between utilities and proposed trenching locations. Be aware that some states and localities (e.g., New York City, Long Island) may require greater minimum working distances, depending on the utility (e.g., for high pressure gas mains). A minimum distance of 15 feet must be maintained by heavy equipment (e.g., excavator buckets, drill rig towers and rods) from overhead power lines and a safe distance of 25 feet must be maintained from high-tension overhead power lines. In the event that work must be conducted within 25 feet of high tension wires, the lines must be wrapped and insulated by the local utilities. Increase these minimum distances whenever possible to offer additional assurance that buried or overhead utilities will not be encountered.

If a utility conflict is identified within the minimum safe clearance distance, adjust the proposed location(s) using the criteria given above. It is a good idea to have the private utility locator sweep a relatively large area (e.g., a 20-foot circle around a proposed drilling location) to provide room for adjustment should the proposed drilling or excavation area need to be moved to avoid a buried utility.

Uncertainty may exist in some circumstances (inside a building, for example) even after the area has been swept for utilities. In these cases, advance the first few feet of a soil boring (or probe the area for excavation) using a hand auger or post-hole digger. If hand digging is unable to penetrate the subsurface soils, soft dig or air knife equipment service providers are often retained to clear the location. This equipment applies high pressure air to penetrate, loosen, and extract subsurface soils in the borehole, thereby safely exposing any utilities. If using either hand digging or soft digging, the probe hole should be advanced a minimum of 5 feet below ground surface at each proposed drilling or excavation location. Complete a sufficient number of probe holes so that the area is cleared for the proposed intrusive activity (i.e., use several holes for a proposed excavation). The use of hand digging or soft digging methods **does not** replace the need for state and private utility locating services.

2.5.2 Expanded Work Areas and Ticket Renewal

Many projects begin with well-defined work areas only to expand quickly as the investigation or remediation progresses. If the scope of the intrusive activity locations changes, the scope of intrusion expands or includes new onsite or offsite area(s), you will need to review the existing ticket and work performed by the private utility locator to determine whether work can progress into the new area safely. It may be necessary, depending on the scope, to contact (or for the Contractor to contact) the state locating service and request another clearance for the new area(s) of investigation and retain a private locating service. Remember, the new request will provide a new legal dig date before which NO INTRUSIVE WORK CAN BEGIN. Additionally, if a clearance ticket will expire while the work is ongoing (typically after 14 days), a new clearance must be requested before the first ticket expires so that work can continue uninterrupted. Refer to the Utility Locating Form (Attachment 1) for the legal dig date time frame required by the state locating service.

2.5.3 Utility Damage

It is possible, even if you followed all of the procedures outlined in this SOP, to damage an underground or overhead utility. Assuming it can be done safely, quickly turn off the drilling or excavating equipment, or move the equipment from the damaged line. Avoid contact with escaping liquids, live wires, and open flames. Abandon the equipment, evacuate the personnel from the area, and maintain a safe perimeter if there are any concerns about safety. If a fiber optic cable is damaged, do not handle the cable or look into the end of the cable as serious eye damage may occur. Once personnel are in a secure location, immediately notify the facility operator or site contact, 811, and the WSP project manager. If the damaged utility has the potential to cause, or is causing, dangerous conditions, immediately notify the local emergency response number listed in your HASP.

** This form is mandatory for all intrusive work performed by WSP or a WSP subcontractor, regardless of who is responsible for the public and/or private locate.

Utility Locating Form

Project Name	Project No. and Task	Work being done for (Company or Individual Name)	Project Manager

WSP Office Address	WSP Office Phone	WSP Field Contact	WSP Field Contact Phone

Project Location: Street Address	City/Township	County	State

Nearest Intersecting Street

Description of Work Area (street working on, which side of street, how far in which direction from nearest intersecting street; etc.)

Type of Work	Explosives (Y/N)	Directional Borings (Y/N)	Dig Locations Marked (Y/N)	Mark Type (e.g., stake)

Scheduled Work Start (Date & Time)	Estimated Work Stop Date	One-call Phone Number/Website Address	One-call Service Name

Call/Web Notification Made By (Name, Title and Company)	Date & Time of Call/Web Notification	Operator Name

Ticket No.	Legal Dig Date	Ticket Expiration Date	Ticket Renewal Date

Utilities Notified	Complete After Receiving Notification (e.g., e-mail, facsimile) from Utilities or Subcontactor		
	Utilities Present (Y/N)	Onsite Meeting (Y/N; if "Y" Date & Time)	Contact Name and Phone
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Form Completed By (Signature)	
	(e-mail completed page 1 to Project Manager)

WSP

** This form is mandatory for all intrusive work performed by WSP or a WSP subcontractor, regardless of who is responsible for the public and/or private locate.

Utility Locating Form

Private Utility Locator Information Company	Contact Name	Phone	E-mail

Who Contracted Locator?	Scheduled Start (Date & Time)	WSP Contract Executed (Y/N/NA)

Onsite Visual Confirmation of Utilities

Marking Color	Utility Type and Visual Clues	Cleared or Marked (Y/N)	No Markings - Comments
Blue	Potable water: fire hydrant, manholes; water meter, ASTs, interior connections, hose bib, valve box		
Yellow	Gas, oil steam, petroleum: gas meter, manholes; yellow bollards, interior connections, valve box		
Red	Electric power lines, lighting cables, parking lot lights, overhead lines (telephone poles), conduits: interior connections, underground vaults, manholes, transformers/switchgear, conduit on buildings		
Green	Sewer and drain lines: underground vaults, manholes, drain grates, leach field, sand mound, no evidence of sanitary sewer (for septic system)		
Orange	Communication, alarm or signal lines, cables or conduits: red/orange bollards, telephone poles, interior connections; manholes; conduit on buildings		
Purple	Reclaimed water, irrigation, and slurry lines: sprinkler heads, hose bibs		
Pink	Survey markings		
White	Proposed locations for excavation and drilling		

Project Manager Notified of any Conflicts? (Y/N)

Notes:

Marks Verified By (Signature)

(scan and save to client file)

WSP

FIELD STANDARD OPERATING PROCEDURE #3
Sample Packaging and Shipment Procedure

Shipping samples is a basic but important component of field work. Nearly all of the WSP activities include the collection of environmental samples. Proper packing and preservation of those samples is critical to ensuring the integrity of WSP's work product. The user is advised to read the entire standard operating procedure (SOP) and review the site health and safety plan (HASP) before beginning any onsite activities. In accordance with the HASP, proper personal protective equipment (PPE) must be selected and used appropriately.

3.1 Acronyms and Abbreviations

CFR	Code of Federal Regulations
DOT	U.S. Department of Transportation
IATA	International Air Transport Association
HASP	health and safety plan
PPE	personal protective equipment
SOP	standard operating procedure

3.2 Materials

- Suitable shipping container (e.g., plastic cooler or lab-supplied styrofoam-insulated cooler)
- Chain-of-custody forms
- Custody seals
- WSP mailing labels
- Tape (strapping, clear packing, or duct tape)
- Heavy-duty zipper-style plastic bags
- Knife or scissors
- Permanent marker
- PPE
- Large plastic garbage bag
- Wet ice (as necessary)
- Bubble wrap or other packing material
- Universal sorbent materials
- Sample container custody seals (if required)
- Shipping form (with account number)

3.3 Preconditions and Background

This SOP has been prepared as part of the WSP USA Corp. Environmental Quality Management Plan and is designed to provide detailed procedures for common field practices. Compliance with the methods presented in this document is mandatory for all field personnel and will ensure that the tasks are performed in a safe and consistent manner, are in accordance with federal and state guidance, and are technically defensible.

This SOP is written for the sole use of WSP employees and will be revised periodically to reflect updates to WSP policies, work practices, and the applicable state and/or federal guidance. WSP employees must verify that this document is the most recent version of the WSP SOPs. WSP employees are also strongly advised to review relevant state and/or federal guidance, which may stipulate program-specific procedures, in advance of task implementation.

This SOP is designed to provide the user with a general outline for shipping samples and assumes the user is familiar with basic field procedures, such as recording field notes (SOP 1), sample collection and quality assurance procedures (SOP 4), and investigation derived waste management procedures (SOP 5), and has a current certificate for WSP's U.S. Department of Transportation (DOT) Hazardous Materials training.

> **NOTE: WSP employees shipping samples regulated as hazardous materials or exempt hazardous materials by air must have International Air Transport Association (IATA) training. IATA training is a separate training required in addition to DOT hazardous materials training for such shipments. Most WSP employees do not have IATA training and therefore, anyone who needs to ship by air MUST consult with a WSP IATA-trained compliance professional. The remainder of Section 3.3 covers shipments regulated by DOT only.**

Environmental samples can meet the definition of DOT hazardous materials when shipped by air, ground, or rail from a project site to the laboratory. As such, field staff must work with their assigned WSP compliance professional to determine whether the sample shipment is subject to any specific requirements (e.g., packaging, marking, labeling, and documentation) under the DOT hazardous materials regulations.

Title 49 Code of Federal Regulations (CFR) Section 171.8 defines a "hazardous material" as a substance which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated. DOT hazardous materials are listed in the hazardous materials table at 49 CFR 172.101.

In most cases, WSP is collecting environmental samples in order to determine whether any hazardous chemicals are present in the sampled media. Therefore, we would not have the appropriate information to make a hazardous materials classification for the samples prior to shipment. 49 CFR 172.101(c)(11) allows the use of a tentative classification where the shipper is uncertain of the material's hazard class. Where WSP does not know the physical characteristics of the samples, a non-hazardous material classification may be made. Non-hazardous materials are not subject to the DOT hazardous materials regulations.

There are certain cases where the characteristics and hazard class of the samples are known (e.g., samples of free product, samples preserved with a hazardous material [TerraCore® samplers]). Contact your assigned WSP compliance professional or an internal DOT contact for guidance on shipment of these materials.

3.4 Sample Shipment Procedures

The two major concerns in shipping samples are incidental breakage during shipment and complying with applicable DOT and courier requirements for hazardous materials shipments.

> **NOTE: Many couriers, including Federal Express and UPS, have requirements that WSP register with them before shipping hazard materials. In most cases, it is the sampling location, not the WSP office address, which needs to be registered. Therefore, each project will likely have unique requirements. Please contact your WSP compliance**

professional to determine whether or not you will be required to register for your shipment.

Protecting the samples from incidental breakage can be achieved using "common sense." Pack all samples in a manner that will prevent them from moving freely about in the cooler or shipping container. Do not allow glass surfaces to contact each other. When possible, repack the sample containers in the same materials that they were originally received in from the laboratory. Cushion each sample container with plastic bubble wrap, styrofoam, or other nonreactive cushioning material. A more detailed procedure for packing environmental samples is presented below.

3.4.1 Non-Hazardous Material Environmental Samples

The first step in preparing your samples for shipment is securing an appropriate shipping container. In most cases, the analytical laboratory will supply the appropriate container for bottle shipment, which can be used to return samples once they have been collected. Be sure that the container is large enough to contain the samples plus a sufficient amount of packing materials, and if applicable, enough wet ice to maintain the samples at the preservation temperature (usually 4° Celsius). Use additional shipping containers as needed so that sample containers are protected from breakage due to overcrowding. Do not use lunch-box sized coolers or soft-sided coolers, which do not offer sufficient insulation or protection from damage.

3.4.1.1 Temperature-Preserved Samples Container Preparation

Temperature-preserved samples should be shipped to the laboratory in an insulated container (e.g., cooler). If using a plastic cooler with a drain, securely tape the inside of the drain plug with duct tape or other material to ensure that no water leaks from the cooler during shipment. Place universal sorbent materials (e.g., sorbent pads, Pig-brand absorbent blankets) in the bottom of the shipping container. The amount of sorbent material must be sufficient to absorb any condensation from the wet ice and a reasonable volume of water from melted wet ice (if a bag were to rupture) or a damaged (aqueous) sample container.

The next step is to line the shipping container with a large, heavy-duty plastic garbage bag. Place 2 to 4 inches of bubble wrap or other appropriate packing material inside the heavy-duty plastic bag in the bottom of the shipping container to form a cushion for the sample containers. Place the samples on the packing materials with sufficient space to allow for the addition of more bubble wrap or other packing material between the sample containers. Place large or heavy sample containers on the bottom of the cooler with lighter samples placed on top to minimize the potential for breakage. Place all sample containers in the shipping container right-side up. Do not overfill the cooler with samples; leave sufficient room for the wet ice if the samples are to be preserved during transit. Place wet ice to be used for sample preservation inside two sealed heavy-duty zipper-style plastic bags (1 gallon-sized, or less). Place the bags of ice on top of or between the samples. Place as much ice as possible into the cooler to ensure the samples arrive at the lab at the required preservation temperature, even if the shipment is delayed. Fill any remaining space in the container with bubble wrap or other packing material to limit the airspace and minimize the in-transit melting of ice. Securely close the top of the heavy-duty plastic bag and seal with tape.

3.4.1.2 Non-Temperature-Preserved Samples Container Preparation

Non-temperature-preserved samples should be shipped to the laboratory in a durable package (e.g., hard plastic container or cardboard box). If shipping breakable sample containers (e.g., glass), place bubble wrap or other packing materials on the bottom of the container. Place the samples on the packing materials with sufficient space to allow for the addition of more bubble wrap or other packing material between and on top of the sample containers. Place large or heavy sample containers on the bottom of the container with lighter samples placed on top to minimize the potential for breakage. Place all sample containers within the shipping container right-side up.

3.4.1.3 Container Shipment

Place the original, white top copy chain-of-custody form into a heavy-duty zipper-style plastic bag, affix the bag to the shipping container's inside lid, and then close the shipping container. Only one chain-of-custody form is required to accompany one of the shipping containers per sample shipment; the other coolers in the shipment do not need to include chain-of-custody forms. At this point, sample shipment preparations are complete if using a laboratory courier.

If sending the sample shipment through a commercial shipping vendor, place two signed and dated chain-of-custody seals on alternate sides of the shipping container lid so that it cannot be opened without breaking the seals. Securely fasten the top of the shipping container shut with clear packing tape; carefully tape over the custody seals to prevent damage during shipping. Once the shipping container is sealed, shake test the shipping container to make sure that there are no loose sample containers. If loose sample containers are detected, open the shipping container, repack the sample containers, and reseal the shipping container.

Using clear tape, affix a mailing label with WSP’s return address to the top of the shipping container. Ship environmental samples to the contracted analytical laboratory using an appropriate delivery schedule. If applicable, check the appropriate box on the airbill for Saturday delivery (you need to verify with the laboratory that someone will be at the lab on a Saturday to receive the sample shipment). Declare the value of samples on the shipping form for insurance purposes, if applicable, and be sure to include the project billable number on the shipping form’s internal billing reference section. When shipping samples to a lab, identify a declared value equal to the carrier’s default value ($100); additional fees will be charged based on a higher value declared. Our preferred carrier, FedEx, will only reimburse for the actual value of the cooler and its contents if a sample shipment is lost; they will not reimburse for the cost of having to re-collect the samples. [Please note: if you are shipping something other than samples, such as field equipment, declare the replacement value of the contents.]

Record the tracking numbers from the shipping company forms (i.e., the airbill number) in the field book and on the chain-of-custody form and retain a copy of the shipping airbill. On the expected delivery date, confirm sample receipt by contacting the laboratory or tracking the package using the tracking number; provide this confirmation information to the WSP project manager.

> **NOTE: Most shipping carriers adhere to transit schedules with final pickup times each day; these schedules are subject to change and vary by service location. If shipping containers are dropped off at a service location after the final pickup time, transit to the laboratory will not be initiated until the following day, and samples may not be properly preserved. Therefore, confirm transit schedules in advance of each sampling event, and ensure samples are dropped off before the final pickup time of the day.**

3.4.2 Hazardous Materials Samples

WSP personnel rarely ship hazardous materials due to DOT shipping requirements. If you find that your samples could be considered a DOT hazardous material, first coordinate with the assigned WSP compliance professional and project manager to make a hazardous material classification and, if necessary, establish the necessary protocols and to receive the appropriate training/certification. **Do not ship hazardous materials samples without first consulting a WSP compliance professional.**

FIELD STANDARD OPERATING PROCEDURE #9

Soil Sampling Procedure

The soil sampling procedures outlined in this standard operating procedure (SOP) are designed to ensure that collected soil samples are representative of current site conditions. Soil samples can be collected for onsite screening or for offsite laboratory analysis. The user is advised to read the entire SOP and review the site health and safety plan (HASP) before beginning any onsite activities. In accordance with the HASP, proper personal protective equipment (PPE) must be selected and used appropriately.

9.1 Acronyms and Abbreviations

bgs	below ground surface
F	Fahrenheit
HASP	Health and Safety Plan
IDW	investigation derived waste
PID	photoionization detector
PPE	personal protective equipment
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
SOP	standard operating procedure
VOC	volatile organic compound

9.2 Materials

- Field book
- PPE
- Air quality monitoring equipment
- Utility knife
- Mixing tray or bowl
- Heavy-duty zipper-style plastic bags (quart or snack size)
- Plastic sheeting
- Expanding ruler or tape measure
- Munsell color chart
- Sampling containers and labelling/shipping supplies
- Field test kits, as needed
- Soil sampling method specific materials:
- Stainless steel trowels, shovels, or spoons
- Bucket augers, auger extension rods, auger handle, pipe wrenches

- Split-spoon samplers, pipe wrenches
- Direct push acetate liners
- Shelby tube samplers
- Decontamination supplies

9.3 Preconditions and Background

This SOP has been prepared as part of the WSP USA Corp. Environmental Quality Management Plan and is designed to provide detailed procedures for common field practices. Compliance with the methods presented in this document is mandatory for all field personnel and will ensure that the tasks are performed in a safe and consistent manner, are in accordance with federal and state guidance, and are technically defensible.

This SOP is written for the sole use of WSP employees and will be revised periodically to reflect updates to WSP policies, work practices, and the applicable state and/or federal guidance. WSP employees must verify that this document is the most recent version of the WSP SOPs. WSP employees are also strongly advised to review relevant state and/or federal guidance, which may stipulate program-specific procedures, in advance of task implementation.

This SOP is designed to provide the user with a general outline for conducting soil sampling and assumes the user is familiar with basic field procedures, such as recording field notes (SOP 1), utility location (SOP 2), sample shipment procedures (SOP 3), sample collection and quality assurance procedures (SOP 4), investigation derived waste (IDW) management procedures (SOP 5), equipment decontamination (SOP 6), and use and calibration of all sampling and monitoring equipment (SOPs 7 and 8). This SOP does not cover investigation planning, nor does it cover the analysis of the analytical results. These topics are more appropriately addressed in a project-specific work plan. Before soil sampling, be sure to review the project-specific work plan or Quality Assurance Project Plan (QAPP) and any applicable state and federal guidelines or sampling procedures. All sampling and monitoring references must be available for consultation in the field, including:

- WSP's SOPs
- Applicable state and federal guidelines or sampling procedures
- Manufacturer's manuals
- Project-specific work plan and HASP
- QAPP

9.4 General Procedures

Soil samples are collected using a variety of techniques and equipment, depending on the type (e.g., surface, subsurface) and purpose (e.g., lithological logging, headspace evaluation, laboratory analysis) of the sampling, and most sampling events employ more than one equipment type or methodology. Subsurface soil sampling, for example, often includes sample collection from split-spoon, macro-core, or other dedicated sampling devices advanced into the subsurface by a drill rig. Recovered cores are often logged (using a Munsell color chart and other logging aids), screened for volatile organic compounds (VOCs) using a photoionization detector (PID), and sampled for laboratory analysis using disposable stainless steel spoons or other discrete sampling devices.

All types of soil sampling, however, regardless of the equipment used, share common handling and management procedures that are designed to ensure the integrity of the samples collected. These procedures include:

- The use of new, disposable or decontaminated sampling equipment
- The use and rotation of the appropriate PPE

- Selection of a suitable sampling location and staging area

Collect all samples using either new, disposable equipment, such as polyethylene liners or single-use stainless steel spoons; or properly decontaminated sampling equipment, such as hand augers, split-spoons cutting shoes, or trowels. Select the types of equipment and decontamination procedures based on the types of sampling to be performed and decontamination may require multiple steps or differing cleaning methods, depending on the sampling goals (see SOP 6 for decontamination procedures). In no case should disposable, single use materials (e.g., macro-core liners, soil baskets, etc.) be used to collect more than one sample.

Wear a clean pair of new, disposable gloves each time a different sample is collected and don the gloves immediately prior to collection. This limits the possibility of cross-contamination from accidental contact with gloves soiled during collection of the previous sample. The gloves must not come in contact with the medium being sampled and must be changed any time during sample collection when their cleanliness is compromised. In no case should gloved hands be used as a soil sampling device: always use the appropriate spoon, trowel, or sampler to move the soil from the sampling device to the laboratory-supplied containers.

Finding a suitable sampling location involves selecting an area that is away from any sources of cross-contamination that could compromise the integrity of the samples. This includes positioning the sample collection area away from fuel-powered equipment, such as drill rigs or excavators, and upwind of other site activities (e.g., purging, sampling, decontamination) that could influence the sample. This is particularly important when screening samples in the field for VOCs with a PID, but should not be limited to the active sample collection. Store samples already collected from the field for laboratory analysis in clean containers and securely stage, if possible, in uncontaminated portions of the site.

9.5 Soil Collection

Soils can be collected from surface or subsurface depths, depending on the project requirements. Surface soils are generally those within 0.5 to 1 foot of the ground surface and can be collected using trowels, soil probes, or hand augers. Be aware that some states have specific definitions of what constitutes a surface soil sample. Subsurface soils are generally deeper and require specialized equipment to recover the samples. In most cases, subsurface soils will be collected using a drill rig or excavator.

Push or drive the method-specific sampling equipment (e.g., trowel, hand auger, hollow corers, split-spoon, direct push sampler, rotosonic core barrel sampler, excavator bucket) into the soil to the desired sampling depth using cleaned equipment. Record in the field book the depth interval through which the sampler was advanced and, if appropriate, the number of blows needed to drive the sampling device (i.e., when using a cathead-equipped drill rig; record the blows for every 6 inches the split-spoon sampler is advanced). If additional soil is needed to provide sufficient sample volume, repeat this step taking care to ensure that the same depth interval is collected during the resample. Use core catchers on the leading end of the sampler (if available) for soils that lack cohesiveness and are subject to crumbling and falling out of the sampler.

Withdraw the sampling equipment from the borehole or excavation. Do not physically enter excavations to collect a sample; soil samples can be collected from a backhoe bucket. If the soil sample will be analyzed for geotechnical parameters (i.e., using a Shelby tube), the undisturbed sampler is typically capped, maintaining the sample in its relatively undisturbed state, and shipped to the appropriate geotechnical laboratory. Follow sample preparation and shipping procedures in SOPs 3 and 4. If the soil is to be logged in the field, place soil samplers/soils on plastic sheeting noting the orientation of the sample (i.e., which end is “up”) and the depth interval. Measure the length of the material recovered relative to the interval the sampler was advanced (in percent), and record this information in the field book.

If field screening for organic vapors is required, break or cut the soil core every 3 to 4 inches and quickly scan the breaks in the core material with the appropriate air quality monitoring equipment (e.g., PID). Record the readings in the field book.

9.5.1 Volatile Organic Compound Sampling

If part of the sampling plan, immediately collect samples for VOC analysis after screening the soils with the PID to avoid loss of constituents to the atmosphere. Transfer the soil from the portion of the soil core to be sampled (usually the area where the highest PID readings were observed) directly into the sample containers; do not composite or mix soils for VOC analysis. Place the soil in the sampling container such that no headspace is present above the soil when the cover is placed on the jar. If sampling by US Environmental Protection Agency Method 5035 is required, follow manufacturer's specifications to use a closed-system sampler (e.g., Encore samplers). Collect quality assurance/quality control (QA/QC) samples in accordance with SOP 4, the project-specific work plan, and the QAPP.

9.5.2 Soil Headspace Analysis

If required as part of the project-specific work plan, collect samples for field-based headspace analysis after obtaining the sample for VOC analysis. First, examine the contents of the sample and remove coarse gravel, organic material (e.g., roots, grass, and woody material) and any other debris. Collect the sample using decontaminated spoons or trowels and place in a heavy-duty zipper-style plastic bag and seal the bag. Label the sample indicating the sampling location, depth, and date. Shake the sample vigorously for approximately 15 seconds to disaggregate the sample and expose as much surface area of the soil as possible (to release the VOCs to the atmosphere within the bag). If necessary, warm the sample to room temperature (70º Fahrenheit, F) by placing the bag in a heated room or vehicle. This step is very important when the ambient temperature is below 32ºF.

After waiting approximately 15 minutes, carefully open the bag slightly and place the tip of the PID into the opening. Do not insert the tip of the probe into the soil and avoid the uptake of water droplets. Record the highest meter response, which typically occurs within the first 2 to 5 seconds. Erratic PID response may result from high organic vapor concentrations or elevated headspace moisture. If these conditions exist, qualify the headspace data in the field book. It is also important to record the ambient temperature, humidity, and whether moisture was present in plastic bag. Duplicate 10% of the headspace samples by collecting two samples from the same location. Generally, duplicate sample values should be consistent to plus or minus 20%. Samples collected for headspace screening cannot be retained for laboratory analysis.

9.5.3 Semi- and Non-Volatile Analytical Sample Collection

Collect remaining organic samples then inorganic samples in the following order of volatilization sensitivity:

- Extractable organics, petroleum hydrocarbons, aggregate organics, and oil and grease
- Total metals
- Dissolved metals (see filtering procedures below)
- Inorganic non-metallic and physical and aggregate properties
- Microbiological samples
- Radionuclides

Collect soil samples for semi- and non-volatile parameters by separating clumps of soil material and mixing the soils (using stainless steel bowls and spoons, or other appropriate equipment) to a homogeneous particle size and texture. Transfer the contents to the sample container using a stainless steel spoon. Collect QA/QC samples in accordance with SOP 4, the project-specific work plan, and the QAPP.

If approved by the appropriate regulatory agency and specified in the project-specific work plan, composite soil samples can be collected to minimize the total number of analytical samples. Composite samples consist of equal aliquots (same sample size) of soil from each location being sampled (e.g., from each borehole or from multiple areas of a soil pile), by mixing the waste to a homogeneous particle size and texture using new or decontaminated stainless steel bowls and a stainless steel spoon or trowel. Transfer the contents to the appropriate laboratory-supplied sample container using a stainless steel spoon. Collect QA/QC samples in accordance with SOP 4 and the project-specific work plan or QAPP, if required.

If necessary, conduct field tests or screening on soils in accordance with the project-specific work plan and manufacturer's specifications for field testing equipment.

9.5.4 Sample Labeling and Preparation for Shipment

Once collected, prepare the soil samples for offsite laboratory analysis:

- Cleaning the outside of the sample container
- Affixing a sample tag or label to each sample container and complete all required information (sample number, date, time, sampler's initials, analysis, preservatives, place of collection)
- Placing clear tape over the tag or label (if non-waterproof labels are used)
- Preserving samples immediately after collection by placing them into an insulated cooler filled with bagged wet ice to maintain a temperature of approximately 4°Celcius
- Recording the sample designation, date, time, and the sampler's initials in the field book and on a sample tracking form, if appropriate
- Completing the chain-of-custody forms with appropriate sampling information
- Securing the sample packing and shipping in accordance with proper procedures

Do not ship hazardous waste samples without first consulting a WSP compliance professional.

9.5.5 Soil Classification

Soil classification should be performed whenever soil samples are being collected to provide context for the analysis. WSP prefers following the Unified Soil Classification System (USCS) logging procedures as described in ATSM D2488[1] . The emphasis of soil classification in the field must be on describing the soils using ALL of the required descriptors; categorization of the USCS group name or symbol alone may not provide details about the soils that could later prove useful. Avoid geologic interpretation or the use of local formation names, which are often difficult to determine in the field without the regional framework. Record ALL of the following information for each soil type:

- Depth interval
- USCS group name
- USCS group symbol
- Color, using Munsell chart (in moist condition)
- Percent of cobbles or boulders, or both (approximate; by volume)
- Percent of gravel, sand, or fines, or all three (approximate; by dry weight)
- Particle-size range:
  - Gravel—fine, medium, coarse
  - Sand—fine, medium, coarse

[1] Note that certain states/regulatory programs may require soil classification under a secondary system (e.g., US Department of Agriculture) or the use of hydrochloric acid to test the reaction with soil (none, weak, strong).

- Particle angularity: angular, subangular, subrounded, rounded
- Particle shape: (if appropriate) flat, elongated, flat and elongated
- Maximum particle size or dimension
- Hardness of coarse sand and larger particles
- Plasticity of fines: non-plastic, low, medium, high
- Dry strength: none, low, medium, high, very high
- Dilatancy: none, slow, rapid
- Toughness: low, medium, high
- Odor (mention only if organic or unusual)
- Moisture: dry, moist, wet

For intact samples also include:

- Consistency (fine-grained [clay] soils only): very soft, soft, firm, hard, very hard
- Structure: stratified, laminated, fissured, slickensided, lensed, homogeneous
- Cementation: weak, moderate, strong
- Additional comments: presence of roots or root holes, presence of mica, gypsum, etc., surface coatings on coarse-grained particles, caving or sloughing of auger hole or trench sides, difficulty in augering or excavating, etc.

Use the following standard descriptors for the textural percentages:

- Trace: 0 to 10%[2]
- Little: 11 to 20%
- Some: 21 to 35%
- And: 36 to 50%

Example descriptions, using the information listed above, would read as follows:

8-10' – 5YR2/6 fine- to medium-grained sand, trace medium sub-angular rounded gravel (up to 0.5" in diameter); medium dense to dense; wet with slow dilatancy; moderate solvent-like odor between 9' and 10'.

10-12' – 5YR2/6 low plasticity clay with some fine to coarse grained angular to subangular gravels (up to 0.25" in diameter) and trace fine to medium grained rounded sands, very stiff, moist with no dilatancy, no odors.

9.6 Closing Notes

Once sampling is completed, secure the boreholes/locations in accordance with the project-specific project work plan. Decontaminate all equipment prior to departure and properly manage all PPE and IDW in conformance with applicable regulations.

[2] The use of "Trace" for describing the fraction of clay soils is inappropriate for field-based logs as clay contents of less than 20-perent in fine-grained soils cannot be reliably determined in the field.

FIELD STANDARD OPERATING PROCEDURE #11
Groundwater Sampling Procedure

Groundwater sampling procedures outlined in this Standard Operating Procedure (SOP) are designed to ensure that collected groundwater samples are representative of the water-bearing zone from which they were collected and that they have not been altered or contaminated by the sampling and handling methods. These procedures can be applied to permanently or temporarily-installed monitoring wells, direct-push sample points, water supply wells with installed plumbing, extraction wells for remedial groundwater treatment systems, and excavations where groundwater is present. The user is advised to read the entire SOP and review the site health and safety plan (HASP) before beginning any onsite activities. In accordance with the HASP, proper personal protective equipment (PPE) must be selected and used appropriately.

11.1 Acronyms and Abbreviations

CID	casing inside diameter
DI	deionized
DNAPL	dense non-aqueous phase liquid
DO	dissolved oxygen
DTW	depth to water
HASP	health and safety plan
L/min	liters per minute
LNAPL	light non-aqueous phase liquid
mg/l	milligrams per liter
mV	millivolts
NAPL	non-aqueous phase liquid
NTU	nephelometric turbidity unit
ORP	oxygen reduction potential
PID	photoionization detector
PPE	personal protective equipment
QAPP	quality assurance project plan
SOP	standard operating procedure
SU	standard units
TD	total depth
TOC	top of casing
VOCs	volatile organic compounds

11.2 Materials

- Field book

- PPE
- Groundwater monitoring data log forms
- Well key(s), as needed
- Adjustable wrench or manhole wrench
- Plastic sheeting
- Air quality monitoring equipment (e.g., photoionization detector [PID]), as needed
- Flashlight or mirror
- Electronic water level indicator or interface probe
- Pump or bailers, tubing, and associated lanyard materials
- Water quality meter(s) with calibration reagents and standards
- Field test kits, as needed
- Pocket knife or scissors
- Distilled (DI) water
- Power supply, as needed
- Buckets or drum(s) for water storage
- Sample bottles, labels, indelible markers, and clear tape

11.3 Preconditions and Background

This SOP has been prepared as part of the WSP USA Corp. Environmental Quality Management Plan and is designed to provide detailed procedures for common field practices. Compliance with the methods presented in this document is mandatory for all field personnel and will ensure that the tasks are performed in a safe and consistent manner, are in accordance with federal and state guidance, and are technically defensible.

This SOP is written for the sole use of WSP employees and will be revised periodically to reflect updates to WSP policies, work practices, and the applicable state and/or federal guidance. WSP employees must verify that this document is the most recent version of the WSP SOPs. WSP employees are also strongly advised to review relevant state and/or federal guidance, which may stipulate program-specific procedures, in advance of task implementation.

This SOP is designed to provide the user with a general outline for conducting groundwater sampling and assumes the user is familiar with basic field procedures, such as recording field notes (SOP 1), utility location (SOP 2), sample shipment procedures (SOP 3), sample collection and quality assurance procedures (SOP 4), investigation derived waste (IDW) management procedures (SOP 5), equipment decontamination (SOP 6), and use and calibration of all sampling and monitoring equipment (SOPs 7 and 8). This SOP does not cover investigation planning, nor does it cover the analysis of the analytical results. These topics are more appropriately addressed in a project-specific work plan. Before groundwater sampling, be sure to review the project-specific work plan or Quality Assurance Project Plan (QAPP) and any applicable state and federal guidelines or sampling procedures. All sampling and monitoring references must be available for consultation in the field, including:

- WSP's SOPs
- Applicable state and federal guidelines or sampling procedures
- Manufacturer's manuals
- Project-specific work plan and HASP

- QAPP

11.4 General Procedures

Although the techniques used to sample groundwater are varied, most sampling events can be broken down into a three-step sequence:

- Gauging: provides an indication of the height of the water column within the well under ambient (pre-sampling) conditions; these data are used to calculate the purge volume using traditional sampling techniques
- Purging: removal of stagnant water from the well bore to ensure that samples collected are representative of groundwater conditions in the water-bearing zone surrounding the well
- Sample Collection: collection of aliquots of groundwater that are representative of the conditions in the water-bearing zone surrounding the well

The procedures and equipment that are used to accomplish these steps are project-specific and should be discussed by the project team before arriving onsite. All types of groundwater sampling, however, regardless of the equipment used, share common handling and management procedures that are designed to ensure the integrity of the samples collected. These procedures include:

- The use of new, disposable, decontaminated, or dedicated sampling equipment
- The use, changing, and disposal of the appropriate PPE
- Selection of a suitable sampling location and staging area

Collect all samples using either new, disposable equipment, or properly decontaminated sampling equipment. Groundwater purging and sampling equipment should be selected based on the analytical requirements of the project and the project specific conditions (e.g., well diameter, depth to water, dissolved constituents, etc.) likely to be encountered. The equipment should be constructed of non-reactive, non-leachable materials (e.g., stainless steel, Teflon®, Teflon®-coated steel, polyethylene, polypropylene, etc.) which are compatible with the chemical constituents at the site. When choosing groundwater purging and sampling equipment, give consideration to:

- the depth of the well
- the depth to groundwater
- the volume of water to be withdrawn
- the sampling and purging technique and equipment
- the analytes of interest

Select the decontamination procedures based on the types of sampling to be performed and decontamination may require multiple steps or differing cleaning methods, depending on the sampling goals (see SOP 6 for decontamination procedures). In no case should disposable, single use materials be used to collect more than one sample.

Wear a clean pair of new, disposable gloves each time a different sample is collected and don the gloves immediately prior to collection. This limits the possibility of cross-contamination from accidental contact. The gloves must not come in contact with the medium being sampled and must be changed any time during sample collection when their cleanliness is compromised.

As possible, find a suitable purging and sampling location by selecting an area that is away from any sources of cross-contamination that could compromise the integrity of the samples. This includes positioning the sample collection area away from fuel-powered equipment, such as drill rigs or excavators, and upwind of other site activities (e.g., purging, sampling, decontamination) that could influence the sample. This is particularly important when screening for volatile organic compounds (VOCs) with a PID, but should not be limited to the active sample collection. Store samples already collected from the field for laboratory analysis in clean containers and securely stage, if possible, in uncontaminated portions of the site.

11.5 Gauging Procedures

Once you have arrived onsite and are prepared to conduct the groundwater sampling, note the following observations and measurements in the field book (and on the project-specific groundwater monitoring log, if appropriate):

- Perform a quick reconnaissance of the site to identify sampling locations
- Record the approximate ambient air temperature, precipitation, wind (direction and speed), tidal, and other field conditions that could potentially alter the groundwater samples or water level measurements in the field book
- Inspect existing wells for soundness of protective casing and surface ground seal
- Remove the well covers and all standing water around the top of the well casing, as necessary, before opening the well cap
- Place new plastic sheeting (e.g., contractor grade 55-gallon plastic trash bags) on the ground surface around existing well locations to prevent contamination (via contact with the ground surface) of the pumps, hoses, lanyards, and other equipment; keep the plastic as clean as possible and replace as necessary
- Unlock and carefully remove well cap; allow the groundwater level to equilibrate with the atmospheric pressure a minimum of 15 minutes before conducting any down-hole testing or measurements

If required by the HASP, survey the open well casing and the breathing zone around the wellhead with a PID to ensure that the level of PPE is appropriate.

11.5.1 Groundwater Level and Total Depth Measurement Procedures

Depth to water (DTW) and total depth (TD) measurements are typically collected prior to sampling and are used to determine the volume water to be purged from the well (if using techniques other than low flow sampling). The depth to groundwater measurements are also used after the sampling event is completed to establish the groundwater elevation, flow direction, and gradient. Unless otherwise directed, do not place any objects inside the casing of private water wells; accordingly, depth to water and total depth measurements should not be collected at private water wells.

Water level measurements must be collected within the shortest interval possible from all selected existing wells to be gauged during the event before beginning any purge and sampling procedures at the site. This will ensure a nearly instantaneous snapshot of the water levels before the formations are disturbed by pumping or acted upon by other outside influences, such as tides, precipitation, barometric pressure, river stage, or intermittent pumping of production, irrigation, or supply wells.

If possible, do not measure TD until after completing the sampling to avoid disturbing the bottom of the well and suspending sediment or colloidal material in the water column (i.e., increasing the turbidity and potentially biasing the water quality samples). The TD of existing wells recorded in the field book from an earlier event can be used to calculate the purge volume for the well. In instances where the TD is required to calculate the standing water height and purge volume, take care to limit the amount of bottom disturbance by the probe. TD measurement is not required for low flow applications and should not be measured before sampling the well.

Record the following observations and measurements in the field book:

- Measure the casing inside diameter (CID) and record in inches

- Measure the DTW with an electronic water level indicator (or an interface meter, if non-aqueous phase liquid [NAPL] is potentially present – see procedures below) from the top of the casing (TOC) at the surveyor's mark, if present and record the depth (to the nearest 0.01 foot) in feet below TOC
- If no mark is present, measure from the north side of the casing and mark the measuring point with a knife, metal file (if the inner casing is metal) or indelible marker for future reference
- Measure the TD from TOC at the surveyor's mark or north side of the casing, as appropriate.

Because of tape buoyancy and weight effects encountered in deep wells with long water columns, it may be difficult to determine the TD of the well with an electronic water level indicator; sediment in the bottom of the well can also make it difficult to determine total depth. Care must be taken and proper equipment selection must be used in these situations to ensure accurate measurements.

11.5.2 Gauging Wells with Non-Aqueous Phase Liquid

If NAPL is potentially present at the site, the depth to water and NAPL thickness measurements are collected using an interface meter capable of distinguishing between the NAPL and the groundwater, or a weighted tape coated with the appropriate reactive indicator paste for the suspected NAPL. Measuring the thicknesses of NAPL can be difficult and must be done with care to avoid agitating the liquids and generating an emulsion. This is particularly the case for light non-aqueous phase liquids (LNAPL; those having a density less than water), which are typically viscous oils that cling to the probe. Oil coating the probe can result in thickness measurements that are biased high (i.e., overestimate the thickness of the NAPL).

Conduct the following procedures to ensure an accurate measurement of the NAPL thickness:

- For LNAPL, slowly lower the electronic interface probe in the well casing until the electronic tone indicates the probe is at the top of the LNAPL layer; measure the depth below the TOC to the nearest 0.01 foot.
- To gauge the thickness of the LNAPL, advance the probe slowly through the layer until the electronic tone indicates you are in the water below the layer and then slowly bring the probe back up to the bottom of the LNAPL. Repeat this process several times to ensure an accurate measurement of the bottom of the LNAPL layer (which can include bubbles and an emulsion layer).
- For dense non-aqueous phase liquid (DNAPL), advance the probe through the water column until the tone indicates the top of the DNAPL layer; record the depth below TOC.
- To gauge the thickness of the DNAPL, advance the probe through the layer to the bottom of the well.
- Decontaminate all non-disposable equipment in accordance with SOP 6.

11.6 Groundwater Purging Procedures

Purging is a process whereby potentially stagnant water is removed allowing the collection of samples that are representative of groundwater conditions in the water-bearing zone. The water in a well bore that has not been purged may be different that the surrounding formation due to a number of factors, such as exposure to ambient air. There are a number of purging methods (and several no-purge methods) that may be used, depending on specific conditions encountered (e.g., depth to water, hydraulic conductivity of the formation, etc.) and the sampling requirements. Several purge/no purge options are described below.

- **Multiple Volume Purge**: traditional well purging technique that relies on the withdrawal of the volume of the well bore and the surrounding filter pack (if present); typically three to five well volumes are removed using pumps or bailers. This methodology uses equipment that is easy to obtain and use and is generally accepted in most states as an appropriate purging method.
- **Temporary Well Purge**: a variation of the multiple volume purge technique that typically uses inertia lift pumps, peristaltic pumps, or bailers to remove water from a temporary well casing or from drilling rods that are

being used to screen water quality. This is a less stringent technique that is typically done to minimize the turbidity of the samples, which can be high due to the lack of a well filter pack.

- **Private Water Well or In-Place Plumbing Purge**: another variation on the multiple volume purge technique whereby a tap or faucet is opened on a fixed water supply pipe and is allowed to remain open until the potentially stagnant water within the well casing and other components of the system (e.g., fixed piping, pressure tanks, etc.) has been removed and groundwater representative of the water-bearing zone is being discharged at the tap.
- **Low-Flow (Minimal Drawdown/Low Stress) Purge (and Sampling)**: a modified purging technique that establishes an isolated, discrete, horizontal flow zone directly adjacent to the pump intake; this method requires the pump to be placed within a screened-interval or open borehole. Pumping rates are typically 0.1 to 0.5 liters per minute (L/min) or less to minimize the stress on the surrounding formation and reduce the geochemical alteration of the groundwater caused by pumping.
- **No-Purge/Passive Sampling Techniques**: These techniques use specialized equipment, such as permeable diffusion bags or trap samplers, to sample the undisturbed water column within a screened interval or open borehole. This methodology assumes that the water in the well is representative of the surrounding formation. The approach is well suited for some VOCs and, depending on the sample device used, metals and hydrophobic compounds.

As appropriate, install the pump, tubing, or passive sampler to the depth prescribed in the project-specific work plan or QAPP. Contain and/or manage purge water in accordance with the project-specific work plan.

11.6.1 Calculating One Purge Volume

For multiple volume purging techniques, a minimum of three well volumes of water must be removed before sample collection. The actual amount of water removed may be greater than the three volumes, depending on geochemical parameter stabilization (the field measurement of these parameters is discussed below).

Calculate the volume of water in a well or boring using the following equation:

$$\text{Volume (gallons)} = (TD - DTW)*CID^2*0.041$$

Alternately, the volume of water in a well or boring may also be calculated by multiplying the water column height by the gallons per foot of water for the appropriate well or boring diameter:

CID	**Gallons per foot of water**	**Gallons per foot; three water columns**
1-inch	0.04	0.12
2-inch	0.16	0.48
3-inch	0.37	1.11
4-inch	0.65	1.98

Calculate the total volume of the pump, associated tubing and container for *in situ* measurements (flow-through cell), using the following equation:

$$\text{Volume (in gallons)} = P + ((0.0041)*D^2*L) + fc$$

where:

P = volume of pump (gallons)

D = tubing diameter (inches)

L = length of tubing (feet)

fc = volume of flow-through cell (gallons)

11.6.2 Multiple Volume Purge Procedures

Begin purging at a rate that will not cause excessive turbulence and drawdown in the well; commonly less than 1 gallon per minute for a typical 2-inch diameter monitoring well. The objective is to remove the stagnant water in the casing and surrounding filter pack or open borehole allowing water from the surrounding water-bearing zone to enter the well for sampling with as little disturbance as possible. Excessive pump rates or well dewatering can result in higher turbidity, potential volatilization, and/or geochemical alteration of dissolved parameters. If drawdown is observed on initiation of pumping, reduce the pump speed and attempt to match the drawdown of the well. Once drawdown is stabilized, measure the flow rate with a calibrated container and stopwatch.

Collect stabilization parameters at a minimum of every half well volume during the purge process. Record the stabilization measurements in the field book along with any other pertinent details, such as the visual quality of the water (e.g., color, odor, and presence of suspended particulates) and the measured withdrawal rate, as possible. After the minimum purge volume has been removed, review the geochemical measurements to ensure that readings have stabilized. Stabilization occurs when at least three consecutive measurements are within the following tolerances:

Traditional Purge Stabilization Parameters	
pH	± 0.1 standard units (SU)
Specific Conductance	± 3%
Temperature	± 3%
Dissolved Oxygen (DO)	± 0.2 milligrams per liter (mg/l) or 10% (flow-through cell only)
Turbidity	± 10% for values greater than 10 nephelometric turbidity unit (NTU)
Oxygen Reduction Potential (ORP)	± 10 millivolts (mV; flow-through cell only)

If the parameters have not stabilized within five well volumes, the project team must decide whether or not to collect a sample or to continue purging.

For wells with extremely slow recharge, purging may ultimately dewater the well before the minimum purge can be completed. If the well or borehole is purged dry before removing three well volumes, allow well or boring to recharge to a level of approximately 90% of the static pre-purge water elevation and proceed immediately to sample collection. If recovery exceeds 2 hours, sample as soon as sufficient sample volume is available.

11.6.3 Temporary Well Purge Procedures

Procedures used to purge temporary groundwater monitoring wells differ from permanent wells because temporary wells are installed for immediate sample acquisition. Wells of this type may include open bedrock boreholes, standard polyvinyl chloride well screen and riser placed in boreholes created by rotary or direct-push drilling methods, or drilling rod-based sampling devices, such as Wellpoint®, Geoprobe® Screen Point 15/16, or Hydropunch® samplers. Purging temporary wells of this type may not be necessary because stagnant water is typically not present.

Purging can minimize the turbidity in the sample, which can be significant due to the disturbance caused by the sampler installation. The exception is for groundwater profiling applications (e.g., using a Waterloo Profiler®) where a more rigorous purge is used (using the multiple volume purge techniques described above) to limit the potential for cross contamination between sample intervals.

11.6.4 Private Water Well or In-Place Plumbing Purge Procedures

The configuration and construction of private water wells varies widely, and access points for obtaining groundwater samples may be limited. WSP personnel should coordinate with the property owner/representative to access functioning ports and valves to avoid causing any inadvertent damage.

Collect the groundwater sample as close to the well as possible (e.g., port at the well head) to ensure the sample is representative, ideally upstream of the water conveyance piping and any treatment equipment (e.g., particulate filter, water softener, carbon filters, ultra-violet lights), heating unit, or storage system (e.g., holding or pressure tanks). The following potential sampling locations are presented in order of preference:

- Sampling port or spigot near the well head or piping system prior to entry into the pressure tank or holding tank
- Sampling port or spigot at pressure tank or holding tank
- Sampling port or spigot downstream of the pressure tank or holding tank but upstream of any water treatment equipment
- Tap or faucet

If purging from a tap or faucet, try to remove any aerators, filters, or other devices from the tap before purging and work with the property owner/representative to bypass any water treatment systems. Document where the sample was collected and any steps that were taken to minimize the potential alteration of the water sample in the field book.

Start to purge the system by running water from the tap or spigot. Observe and record the purge rate for the system. The minimum purge volume must be more than the combined volume of the pump, holding tanks, conveyance piping, etc., and the flow through cell (if used). After the minimum purge volume has been removed, review the geochemical measurements to ensure that readings have stabilized using the same procedures as those used for the multiple volume purge detailed above. If the minimum volume is unknown, purge the system for a minimum of 15 minutes, until the parameter readings have stabilized, and no suspended particles (e.g., iron or rust) are visible. Record the final purge volume in the field book and any water quality observations.

11.6.5 Low-Flow Purge Procedures

Low flow purging and sampling is used to obtain representative groundwater samples without removing all of the water within the well casing or the surrounding filter pack. The protocol uses low pumping rates (i.e., less than 1 L/min) to establish an isolated zone around the inlet of the pump where flow is horizontal (i.e., from the water-bearing zone) rather than from the stagnant water in the well casing above and below the pump. Selection of an appropriate pump is critical to establishing the flow zone. A pump must be selected that is suited for low pumping rates and is appropriate for the analytical samples; bailers are not appropriate.

Position the pump so that the inlet is at the specified sampling depth. Wells with longer screens may require additional samples to be collected. Slowly lower the pump into the water column to avoid agitating the water column above the screen. Avoid contacting the bottom of the well by using pre-cut tubing at the appropriate length or by lowering the pump simultaneously with an electronic water level indicator. Once the pump has been inserted, allow the water levels to return to static conditions.

The discharge tubing must be fitted with an in-line flow-through cell equipped with water quality meters that provide continuous readout displays. The flow-through cell must be used to minimize the exposure of the groundwater to ambient air which has a substantial effect on dissolved oxygen and ORP measurements.

Start the pump and maintain a steady flow rate that results in a stabilized water level (less than 0.3 feet of drawdown). If needed, reduce the pumping rate to the minimum capabilities of the pump to ensure stabilization of the water level. Record each adjustment made to the pumping rate and the water level measured immediately after each adjustment. Purging should not exceed 0.1 to 0.5 L/min.

During purging, monitor and record geochemical parameters at 30 seconds to 5 minutes intervals (depending on the hydraulic conductivity of the aquifer, diameter of the well, and pumping rate). Stabilization occurs once the following criteria have been met over three successive measurements made at least three minutes apart:

Low-Flow Purge Stabilization Parameters	
Water Level Drawdown	<0.3 feet
pH	± 0.1 SU
Specific Conductance	± 3%
Temperature	± 3%
Low-Flow Purge Stabilization Parameters	
DO	± 0.2 mg/l or 10% (flow-through cell only)
Turbidity	± 10% for values greater than 10 NTU
ORP	± 10 mV (flow-through cell only)

11.6.6 No-Purge Passive Sampling Techniques

A number of alternate sampling devices are available, including equilibrated grab samplers, passive diffusion samplers, and other *in situ* sampling devices. These devices may be particularly useful for sampling low permeability geologic materials, assuming the device is made of materials compatible with the analytical parameters, meets data quality objectives, and has been properly evaluated.

No-flow grab or trap samplers are placed in the well before sampling and typically remain closed (i.e., no water is allowed into the sampler during insertion) until the sampler is activated. This allows the sampler device to equilibrate with the surrounding groundwater (to prevent adsorption to the sampler materials) and for the groundwater to recover and re-establish the natural flow after the disturbance caused by the sampler insertion into the well. Typical equilibration times are on the order of 24 to 48 hours, depending on the well recovery rates and the type of sampler used. Samples are either transferred to containers at the well head or the sampler itself is shipped to the laboratory for analysis. Examples of equilibrated grab samplers include Hydrosleeve®, Snap Sampler™, and Kemmerer Sampler.

Equilibration time for diffusion samplers are generally dictated by the diffusion rate through the permeable membrane and, thus, are less sensitive to changes induced within the well during deployment. Most diffusion bag samplers have a minimum equilibration time of 14 days prior to sample collection. The samplers may be deployed for an extended period (e.g., three months or longer), although the continuous exchange between the sampler and the well water means that the sampler will likely reflect only the conditions in the few days preceding the sample collection.

11.7 Groundwater Sample Collection Procedures

Collect groundwater samples as soon as possible after the geochemical parameters indicate representative groundwater is present. As practically possible, reduce the pump flow rate, but maintain a flow rate high enough to deliver a smooth stream of water without splashing or undue agitation. Collect samples directly from the tubing as it exits the well bore; do not sample on the downstream side of flow through cells or any other instrumentation. If using a bailer for sample collection, lower and raise the bailer slowly and smoothly to minimize the disturbance to the water within the well.

Collect groundwater samples in order of volatilization sensitivity with organic compounds sampled first followed by inorganic compounds:

- VOCs
- Extractable organics, petroleum hydrocarbons, aggregate organics, and oil and grease
- Total metals
- Dissolved metals (see filtering procedures below)
- Inorganic non-metallic and physical and aggregate properties
- Microbiological samples
- Radionuclides

Collect quality assurance/quality control samples in accordance with SOP 4 and the project-specific work plan or QAPP.

As necessary, conduct field tests or screening in accordance with the project-specific work plan and manufacturer's specifications for field testing equipment. Field samples must be directly transferred from the sampling equipment to the container that has been specifically prepared for that given parameter; intermediate containers should be avoided.

11.7.1 Groundwater Filtration Procedures

Filtered groundwater samples are sometimes used for field kit analyses and should only be collected for laboratory analysis after approval from the appropriate regulatory agency and/or project manager. If groundwater sample filtration is necessary, the following procedures should be followed:

- Use a variable speed peristaltic, bladder, or submersible pump with the in-line filter fitted on the outlet end; pressurized bailers can also be used
- At the pump discharge end, attach a clean appropriate sized filter to the tubing
- Turn on the pump and reduce the flow rate, but maintain a flow rate high enough to deliver a smooth stream of water without splashing or undue agitation, hold the filter upright with the inlet and outlet in the vertical position and pump groundwater through the filter until all atmospheric oxygen has been removed and the minimum volume of water has been flushed through the filter, in accordance with the manufacturer's specifications
- Collect the filtered samples directly into the sample container from the pump-filter assembly
- If sediment is visible in the sample container after filtration, filter break-through has occurred and the sampling and filtering process should be repeated
- Disassemble the pump head and discard the tubing and filter appropriately

11.7.2 Non-Aqueous Phase Liquid Sampling Procedures

Non-aqueous phase liquid is typically sampled to identify the compound, usually through an analytical "fingerprint" analysis. The usefulness of this type of sampling is limited as many NAPLs weather in the subsurface making definitive identification problematic. If samples are to be collected, ensure that the NAPL is not considered to be a hazardous material for the purpose of shipping to the laboratory (SOP 3). Sampling options should be discussed with the assigned WSP compliance professional and project manager.

Samples for LNAPL are best collected using a bailer. Disposable plastic (acrylic, clear polyvinyl chloride) bailers are ideal for sampling as they provide a clear view as to what has been captured by the bailer. Disposable polyethylene and polypropylene bailers are also acceptable, but more difficult to use because of the translucent materials. Some bailer manufacturers offer a special sampling tip that can be fitted to the bailer to aid in the sample collection. Dense non-aqueous phase liquid is typically collected using a peristaltic pump, inertial pump, double check valve bailer, or polyethylene tubing equipped with a bottom check valve. Care should be used to avoid agitating the samples and creating an emulsion.

Samples of NAPL should be placed in the appropriate laboratory-supplied containers, packed on ice, and shipped to the analytical laboratory using procedures outlined in SOP 3.

11.7.3 Sample Labeling and Preparation for Shipment

Once collected, prepare the groundwater samples for offsite laboratory analysis:

- Cleaning the outside of the sample container
- Affixing a sample tag or label to each sample container and complete all required information (sample number, date, time, sampler's initials, analysis, preservatives, place of collection)
- Placing clear tape over the tag or label (if non-waterproof labels are used)
- Preserving samples immediately after collection by placing them into an insulated cooler filled with bagged wet ice to maintain a temperature of approximately 4° Celsius
- Recording the sample designation, date, time, and the sampler's initials in the field book and on a sample tracking form, if appropriate
- Completing the chain-of-custody forms with appropriate sampling information
- Securing the sample packing and shipping in accordance with proper procedures

Do not ship hazardous waste samples without first consulting a WSP compliance professional.

11.8 Closing Notes

Once sampling is completed, secure the boreholes/wells/locations in accordance with the project-specific project work plan. Decontaminate all equipment prior to departure and properly manage all PPE and IDW in conformance with applicable regulations.

WSP | Parsons Brinckerhoff
13530 Dulles Technology Drive
Suite 300
Herndon, VA 20171
Tel: +1 703 709 6500
Fax: +1 703 709 8505
www.wspgroup.com/usa