APPENDIX A

PREVIOUS INVESTIGATIONS AND NYSDEC CORRESPONDENCE

DRAFT

Site-Specific Brownfields
Site Investigation Report

Brownfields Assessment Demonstration Pilot Project
South Troy Brownfields
Troy, New York

Prepared for:

City of Troy
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Site-Specific Brownfields
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Funded by U.S. EPA Region 2

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1.0 INTRODUCTION TO SITE INVESTIGATION

Sterling Environmental Engineering, P.C. (STERLING) in conjunction with Chazen Co./Engineers & Enviro. Professionals (Chazen), River Street Planning and Development, and Gary Bowitch, Esq., collectively referred to as "the Project Team", were hired by the City of Troy (the City) to implement the South Troy Brownfields Assessment Demonstration Pilot Project (the Project).

The Project is organized into the following tasks:

- Task 0: Interagency Coordination and Project Management.
- Task 1: Community Involvement/Brownfields Task Force/Communication.
- Task 2: Site Inventory/Identification and Ranking, Site Assessments and Remediation Plans, including:

    - Phase II Site Assessments and Remedial Designs.

- Task 3: Legal Issues and Redevelopment Planning.
- Task 4: Planning and Marketing Tools and Public Notification.

To initiate Task 2, STERLING conducted a Historical Data Review and prepared the Site Reconnaissance Reports. These reports are expansions of the Phase I Brownfields Site Assessment Report entitled the "Environmental Planning and Research Report" dated July 26, 2000, supplemented with information obtained in subsequent site visits by STERLING.

The Phase I Brownfields Site Assessment was completed for approximately 54 parcels in an area from Congress Street at the north to the Troy City Line at the south and from the Hudson River on the west to approximately 1st Street on the east.

After public input, recommendations from a special task force formed as part of the Project, and careful ranking for a range of criteria by the Project Team and the City, three Area of Concerns (AOCs) were selected for Phase II investigations. These were:

1. The former Rensselaer Iron Works (also known as the former Scolite Property) currently owned by City of Troy;

2. A 6 acre area within land owned by the Rensselaer County Industrial Development Authority located just north of the Rensselaer County Jail; and,

3. The northernmost King Fuels property (also known as the Alamo Property), which was thought to be owned by King Fuels, Inc., at the time of its selection.

However, after the selection of these three AOCs, the Rensselaer County Industrial Development Authority obtained Environmental Restoration Funding from the New York State Department of Environmental Conservation (NYSDEC) to conduct its own investigation of all its lands in the South Troy Waterfront area, including the 6 acre parcel that the City of Troy selected for investigation.

Therefore the AOC owned by Rensselaer County was dropped from consideration under the City's Brownfield Program. The final sites for Phase II Site Investigation are summarized as follows:

1. The former Rensselaer Iron Works AOC (also known as the former Scolite Property) currently owned by the City of Troy; and,

2. AOC consisting of a property known as the Alamo, which was designated Site 43 in the Phase I Brownfields Site Assessment Report and is currently owned by the City of Troy.

1.1 Project Objectives

The Phase I Environmental Site Assessments for the Rensselaer Iron Works AOC and the Alamo AOC identified the potential presence of residual metals and hydrocarbon compounds. Additional site investigations were deemed necessary to determine the nature and extent of residual source areas and to evaluate if exposure to those impacts results in significant risk to human health or the environment, and what, if any, remedial action is needed. Thus, the Phase II Site Investigation Process goals were to obtain data to define site physical characteristics, contaminated source areas, and the extent of migration through potential pathways.

The specific objectives of the Phase II Site Investigation were:

- Locating and identifying potential sources of hazardous waste or petroleum contamination (sampling data are used when formulating remediation strategies, and estimating remediation costs).

- Delineating horizontal and vertical contaminant concentrations, identifying clean areas, and estimating volume of contaminated soil (within budgetary constraints).

- Determining if there is an impact threat to public health or the environment from hazardous waste or petroleum releases.

- Provide data to assist in determining treatment and disposal options and characterizing soil for on-site or off-site treatment.

- Identify appropriate remediation goals.

1.2 Sites

1.2.1 Site Locations and Areas

1.2.1.1 Rensselaer Iron Works AOC Site Location and Area (a.k.a. Scolite)

The Rensselaer Iron Works AOC is located along the east shores of the Hudson River and the south shore of the Poesten Kill. The AOC is approximately 5.7 acres bounded on the south by Madison Street, on the east by CSX Corp. railroad tracks.

1.2.1.2 Alamo AOC Site Location and Area

The Alamo AOC is located along the north side of Main Street and the east side of the Industrial Road. The AOC is approximately 1.5 acres bounded on the north by lands now or formerly owned by the Industrial Gateway, on the east by the CSX Corp. railroad tracks.

1.2.2 Site Histories

1.2.2.1 Rensselaer Iron Works Site History (a.k.a. Scolite)

1.2.2.1.1 City Map and Sanborn Fire Insurance Maps

The Rensselaer Iron Works AOC was originally a foundry. The July 26, 2000 Environmental Planning and Research (EPR) Report prepared by STERLING includes a review of the Sanborn Fire Insurance Maps containing the following excerpts:

Map of City of Troy dated 1869:

In the block just south of the Poesten Kill along the shore of the Hudson River is the area occupied by the Rensselaer Iron Works.

Sanborn Fire Insurance Co. Maps dated 1888:

In the area from the Poesten Kill Canal extending south to Madison Street is a facility labeled “Albany Rensselaer Iron Works”.

Sanborn Fire Insurance Maps dated 1904 and updated to 1930:

Between the Poesten Kill and Madison Street, just east of the Hudson River and west of the railroad tracks, is a building labeled “Ludlow Valve Manufacturing Co.”

Sanborn Fire Insurance Maps dated 1955 and updated to 1961:

Between the Poesten Kill and Madison Street, just east of the Hudson River and west of the railroad tracks, is a building labeled “Ludlow Rensselaer Valve Foundry”.

1.2.2.1.2 Aerial Photographs

The July 26, 2000 EPR Report included reviews of aerial photographs of the study area for the years 1952, 1968, 1970, 1971, 1974, 1978, 1982, 1986, 1990, 1991 and 1999 that included the former Scolite Property.

In the aerial photograph dated 1952, in the first block south of the Poesten Kill, the foundry of the Ludlow Rensselaer Valve Company was visible as depicted in the Sanborn Fire Insurance Co. map of 1955.

In the aerial photographs for subsequent years, the site did not observably change until the barges for loading of scrap metal became visible in 1999.

1.2.2.1.3 Interviews

The EPR Report included an interview concerning Hudson Deepwater Development (also known as R. Freedman & Son, Inc.), a tenant of the former Scolite International Property.

Mr. Carmine Casale, South Troy Site Manager of Hudson Deepwater Development, also known as R. Freedman & Son, Inc. (Freedman & Son), was interviewed at the facility on Tuesday, March 14, 2000.

Mr. Casale stated that Freedman & Son rents approximately one acre from Scolite International, and that Freedman & Son uses this facility as a transfer facility. Mr. Casale said that shredded and sorted scrap metal are brought from the Freedman & Son facility in Green Island to the South Troy location for loading onto barges.

Mr. Casale stated that the facility went through efforts to satisfy the City of Troy Planning Department. He stated that Freedman & Son installed a solid fence around the solid waste dumpster, paved portions of the property to keep the truck tires cleaner, installed and painted a structural concrete block wall, and installed a chain link fence and lockable gate at the southwestern corner of the facility to control access. Mr. Casale pointed out that when trucks are entering the facility, the scale operator is tasked to check the road for metal debris that may have fallen off a truck.

Mr. Casale also stated out that the fuel oil tank for the facility is an aboveground and located on the upper level in the yard, set back from the shore-wall and the Hudson River. He stated that State and City regulators reported this was important so that, in the unlikely event of a spill, there is no slope leading the spill into the Hudson River, therefore there would be room for containment activities and devices.

1.2.2.1.4 Site Inspection

During the January 24, 2003 site inspection, STERLING ascertained that one of the past tenants was a roofing company. Another past tenant cut and chipped wood. A past tenant conducted vehicle maintenance. A past and present tenant, Hudson Deepwater Development, off-loads scrap metal from trucks, manages it, and loads it onto barges for shipment. Hudson Deepwater Development has managed scrap metal on the site since approximately 1995.

1.2.2.2 Alamo AOC Site History

1.2.2.2.1 City Map and Sanborn Fire Maps

The following excerpts are a combination of extracts from Section 5.3 "Historical and Sanborn Fire Insurance Maps" in the EPR Report and from information obtained from a subsequent re-inspection of said maps:

<u>Map of City of Troy dated 1869 (Produced by William Barton)</u>

Main Street is visible extending from Greenbush Road (present day Burden Avenue/4th Street) toward the Hudson River, north of the Wynants Kill. The subject site is in the northwest corner of the intersection of the railroad and Main Street. The site is indicated to be vacant. The closest buildings are residences approximately a half block east of the railroad.

<u>Sanborn Fire Insurance Co. Maps dated 1888</u>

The subject site has a railroad line on both its east and west sides that run approximately north-south. Between the railroad lines is a long rectangular building that is labeled to be part of the Burden Iron Works. The use is not labeled.

The Burden Iron Works rolling mill is shown south and southwest of the subject site.

Sanborn Maps dated 1904 and updated to 1930

There is a building that is part of the Burden Iron Company facilities. The building has a rectangular footprint with a north-south orientation and is situated adjacent to the railroad. The west side of the building is labeled "Iron Wire Headquarters" and the east side is labeled "Pattern Storage 2nd". Two curved rail sidings are apparent on the western portion of the subject site.

On the adjacent property to the west, there is a large building of the Burden Iron Company that has internal rooms or areas labeled as foundries, machine shop, boiler room, test room, core ovens, tool room, eng. and drawings, eng. dft., and, in the northeast corner, brass foundry. The Burden Iron Company headquarters property is toward the north of the subject site. The east side of the subject site is the railroad and the properties to the south are developed as warehouses.

Sanborn Maps dated 1955 and updated until 1966

The map indicates the subject site has a 38 foot high petroleum storage tank identified as "Republic Steel Co. Fuel Oil Tk." Aerial photographs confirm this structure is a cylindrical tank. Surrounding the tank is a rectangular shaped 10 foot high concrete wall with its long axis oriented north-south. In the southwest corner of this wall is a small slab labeled "Oil Pump HO" (House). A 6 foot wire fence has been placed along the railroad, which is now labeled "N.Y.C.R.R". The remainder of the subject site is depicted as vacant.

The main complex of the Republic Steel Corporation is approximately 200 feet directly to the west with its ore shed, cast house, power house, boiler house, and sludge pits. However, this complex is downgradient of the subject site. Rail sidings in a fan shape with 6 spurs extend toward the subject site from northwest of the site but terminate approximately 100 feet from the subject site. The east side of the subject site is the railroad and the properties to the south are developed as warehouses.

1.2.2.2.2 Aerial Photographs

The EPR Report includes a review of aerial photographs of the study area from the years 1952, 1968, 1970, 1971, 1974, 1978, 1982, 1986, 1990, 1991 and 1999 that included the King Fuels North / "The Alamo" (Site 43). The information learned from these photographs is summarized below.

The aerial photograph review confirmed that, although most of the Republic Steel Facility was removed by 1982, the fuel oil storage tank at the King Fuels North / "The Alamo" site remained there in 1982 and 1986. However, by 1990 the fuel oil storage tank had been removed. In the 1991 photograph, an opening in the center of the western containment wall was visible.

1.3 Report Organization

This Phase II Site Investigation Report is organized into eight sections as described below:

- Section 1: Introduction: Includes a brief summary of the Project Background, Project Objectives, and Site Backgrounds including a description of the Site Locations, Areas and Histories.
- Section 2: Study Areas Investigations: Contains a description of the scope and methodologies of the field investigation tasks completed, and presents the Data Quality Objectives for the investigation.
- Section 3: Physical Site Characteristics: Sets forth the Geologic and Hydrogeologic Regional

Settings and Site Settings.

- Section 4: Nature and Extent of Impacts: Contains the field and laboratory results from the Phase II Site Investigation which was conducted in conformance with the Sampling, Analysis and Monitoring Plan (SAMP) which was reviewed and approved by the USEPA Region 2, and also contains a summary of the Data Validation report.
- Section 5: Baseline Risk Assessment: summarizes the human health risks for the sites as dictated by the known impacts and site conditions and potential uses.
- Section 6: Conclusions and Recommendations: provides the conclusions and recommendations that are indicated by the data.
- Section 7: Tables and Figures.
- Section 8: References: Provides a listing of References that were utilized when writing this Phase II Site Investigation Report.

The laboratory results are summarized in tables and figures in Section 7. The full data reports from the laboratory are available from the City of Troy on CD disks.

2.0 STUDY AREA INVESTIGATIONS

The following sections describe the methods and procedures used to collect the field observations and samples. Field activities commenced with a site reconnaissances conducted in 2001 and ended with the collection of Hudson River sediment samples at the Rensselaer Iron Works AOC on September 9, 2005.

2.1 Introduction

Field work was conducted in accordance with the USEPA and NYSDEC approved SAMP dated September 10, 2003 and as amended on June 30, 2005 and the project Health and Safety Plan (HASP). The elements of this report were prepared in accordance with the most recent applicable requirements of the USEPA and the NYSDEC, as well as those contained the National Contingency Plan (NCP).

Laboratory analyses of environmental samples were performed by an accredited NYSDOH Environmental Laboratory Approval Program (ELAP) Contract Laboratory (Mitkem Laboratory, Warwick, Rhode Island) and also is an USEPA CLP approved laboratory in accordance with USEPA and NYSDEC CLP protocols.

The analytical precision and accuracy protocols were in conformance with the appropriate USEPA CLP SOW. The USEPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration OLM0 4.2 or latest revision were used for TCL determinations. The USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis, Multi-Media, Multi-Concentration ILM0 4.0 or latest revision were used for TAL determinations. Also, the SOPs of Mitkem specified the precision and accuracy protocols that were followed within the use of the USEPA documents mentioned above.

2.2 Field Investigation

2.2.1 Field Investigation at Rensselaer Iron Works AOC

From the EPR Report prepared by STERLING and subsequent site visits, the following summarizes the known information about the subject AOC:

Hudson Deepwater Development, receives scrap metal from Freedman & Son, Inc., and since 1994 has rented approximately one acre of property. Hudson Deepwater Development rented this property from Scolite International, a prior owner and operator at the AOC. Beginning in approximately 2003 the property was acquired by the City of Troy. Hudson Deepwater Development rents the portion of the AOC west of the Foundry Building and east of the Hudson River. This area is referred to as the "yard area".

A vehicle scale is located on south central portion of the yard area in line with the entrance located along the central southern boundary of the yard area. Immediately west of the scale is a warehouse building containing an office on the east side and a large open area on the west side. Hudson Deepwater Development utilizes the large open area for maintenance. Accordingly, this building is referred to as the "maintenance building" in this report. The maintenance building has access to water and sewer, however Hudson Deepwater Development exclusively uses a portable toilet on site for sanitary wastes.

North of the maintenance building is an open area that contains two scrap tanker trailers. There is a small (estimated 400 gallon capacity) aboveground tank on the outside northern side of the maintenance building which reportedly contains fuel oil. Minor soil staining is noted near the tank. Approximately, seven (7) drums are also observed in the yard. One contains miscellaneous solid waste and the rest are empty. There are various trucks including a concrete truck and vans on the eastern side of the yard. These do not appear to be in use and are being stored on site. Toward the northern side of the open yard there is a six (6) foot high pile of asphalt material. Immediately east from this pile is an enclosed area which contains a dumpster for municipal solid wastes generated at the site.

The yard has a wall made of large concrete blocks that runs parallel to the Hudson River, which allows the grade to transfer down from the height of the scale and upper yard area, to an area at the level of the top of the bulkhead. This block wall also serves to keep the steel scrap stockpiled behind it to the east from tumbling into the Hudson River, and partially the Poesten Kill. During the inspection, scrap metal was stacked on the lower level as well, however there was a buffer between the stacked metal on the lower level and the shore-wall, along the Hudson River.

The piles along the shore of the Hudson River and the Poesten Kill consist of shredded scrap metal, and disassembled scrap metal components.

The pile toward the north consists of I-beams and other structural steel. This pile was observed at the time of the site reconnaissance to have one scrap reddish color tank that Mr. Casale explained was segregated out to be returned to Freedman & Son's Green Island facility. The end port of one end of this red tank had been removed.

The pile toward the south at the time of the site reconnaissance contained smaller non-structural, non-shredded steel that is stacked between the warehouse and the shore wall. There is a new six-foot high chain link fence from the end of the warehouse to the shore-wall. The fence actually cantilevers several feet beyond the bulkhead. There is also a locked gate that controls access at the southwestern corner of the property.

Between the pile of scrap metal to the north and the pile of scrap metal to the south at the time of the site reconnaissance is a minimal amount of shredded steel being loaded into the two barges tied along the shore-wall.

2.2.2 Field Investigation at Alamo AOC

The EPR Report mentions the City contemplated trading the City owned property known as the Sperry Warehouse for the Alamo.

Site visits subsequent to the preparation of the EPR Report indicate the site has been used since 1998, and is presently used, for brush and yard waste storage, chipping and composting by the City of Troy. A section of the 10 foot high concrete wall on the western side has been removed, creating an entrance for the trucks that deliver and haul away these materials.

The EPR Report states that the Sperry Warehouse property located immediately south of Main Street is relatively close to the Alamo AOC and was investigated by a Phase II Environmental Site Assessment. In Section 3.2.5, "Former Sperry Warehouse", the EPR summarizes the findings of the Phase II Assessment entitled: "Subsurface Investigation Report, City of Troy: Former Sperry Warehouse Site, King Street; May 1999; Prepared for King Fuels, Inc.; Prepared by North American Environmental, Inc."

A subsurface investigation was conducted in March 1999 at the Sperry Warehouse property to assess soil and groundwater quality. The study concluded that fill at this site consists of cinders, iron ores, cobbles, slag, wood fragments, foundry sand, bricks, ashes, and silt. Several petroleum compounds were detected above NYSDEC guidance values in soil. Arsenic was also detected in soils above New York State background levels. Slightly elevated levels of benzene were detected in groundwater from two monitoring wells and petroleum hydrocarbons were detected above standards in one monitoring well.

As the Sperry Warehouse property is a few hundred feet south of the subject site, the soil conditions at the Sperry Warehouse may be indicative of soil conditions at the subject site.

2.3 Surface Soil Sampling

Below is a description of the potential soil contamination sources and conditions, and the resulting surface sampling plans.

2.3.1 Surface Soil Sampling at Rensselaer Iron Works AOC

The identified possible sources of contamination include:

- bronze dust from bronze metal working,
- lead dust and fragments from paint on scrap metal,
- lead fragments from used vehicle batteries in scrap metal,
- lead from radiator solder in scrap metal,
- mercury from switches in spent automotive scrap metal,
- other metals and petroleum fluids and greases in miscellaneous scrap metal,
- lead and other metals from spent foundry sand in bronze casting,
- petroleum releases from an aboveground vehicle fuel tank,
- petroleum releases from vehicle maintenance,
- PCBs from railroad machinery hydraulics,
- PCBs from transformers or hydraulic equipment pieces in scrap metal (although the scrap facility represents that presently and for a period of years they have not managed transformers), and
- fill brought to the AOC to move the bulkhead further west toward the Hudson River.

All these sources could cause surficial soil contamination. In addition, the management of scrap metal may have disturbed the soil depth several feet by machine movement of heavy and odd shapes of scrap, and the fill behind the bulkhead may extend as deep as lower than the surface of the Hudson River.

Also, the likely future use of this municipally owned property is for greenspace as a park and trail intersection, or for the northern satellite location of the Hudson Rivers and Estuaries Institute. These uses are not necessarily likely to disturb soils at depth. The plans for the Hudson Rivers and Estuaries Institute presently propose to renovate the existing maintenance building for use in various research and instructional activities. These future uses will not involve groundwater usage. In order to establish the greenspace usage, approximately one foot of topsoil will need to be brought in to support vegetation, as the present soils do not appear to contain much organic matter or nutrients essential for vegetation.

In light of all of the preceding information in this section, borings and surface sampling were proposed and completed to obtain soil samples at the subject AOC.

In the initial round of sampling, 30 surface samples were collected from surface soils and soil-like materials within the former foundry building to detect if contamination of the interior of the building is present. Eight (8) of these 30 samples were collected from the soil-like material at a depth of 0 to as deep as 6 inches or refusal, whichever came first, within the former foundry. The remaining 22 samples were collected at 12 locations in the surface soils outside of the two buildings on the site. At least two of these samples were collected at a depth of 0 to 6 inches in the vicinity of the former aboveground vehicle fuel tank. At least four samples were collected at two locations adjacent to the railroad at depths of 0 to 6 inches and 12 to 18 inches. The final 16 samples were collected at locations in the soils outside these described areas at depths of 0 to 6 inches and 12 to 18 inches. The surface soil sample locations are shown on Figure 2.3.1, Rensselaer Iron Works AOC Initial Soil Sampling Locations, at the locations that are marked with labels that start with S-S-Y, S-S-F, and S-S-R.

All of the samples were tested with a field PID unit and selected samples were sent to Mitkem Laboratory for the following Target Compound List/Target Analyte List (TCL/TAL) parameter categories:

- Semi-volatile compounds (SVOCs)
- Priority pollutant metals
- PCBs

Samples tested with a field PID unit with a reading above background were sent to the Mitkem Laboratory and analyzed for the TCL/TAL parameter:

- Volatile organic compounds (VOCs).

Also, twenty percent of the samples that are tested with a field PID with a reading at or below background were sent to the Mitkem Laboratory and tested for the TCL/TAL parameter:

- Volatile organic compounds (VOCs).

2.3.2 Surface Soil Sampling at the Alamo AOC

The identified possible sources of contamination include:

- Petroleum contamination in soils from petroleum spills associated with the fuel oil tank,
- Slag from steel manufacture, and
- Coal tar from coal gasification.

Three surface soil locations were sampled at the Alamo. The surface soil sample locations are shown on Figure 2.3.2, Alamo AOC Soil Sampling Locations, at the locations that are marked with labels A-S-1, A-S-2, and A-S-3. One sample was obtained at the 0 to 6 inch depth, and one sample was obtained at the 12 inch to 18 inch depth at each location.

All of the samples were sent to the Mitkem Laboratory for the following TCL/TAL parameter categories:

- Semi-volatile organic compounds (SVOCs)
- Priority pollutant metals

Samples tested with a field PID unit that indicate a reading that is above background were sent to the Mitkem Laboratory and tested for the TCL/TAL parameter:

- Volatile organic compounds (VOCs).

Twenty percent of the samples that are tested with a field PID and that indicate a reading at or below background were sent to the Mitkem Laboratory and tested for the TCL/TAL parameter:

- Volatile organic compounds (VOCs).

2.3.3 Background Surface Soil Sampling

Two soil samples locations were designed to be representative of background soil concentrations in the regional area. One sample was collected in the drainage area of the Poesten Kill and the other was obtained in the drainage area of the Wynants Kill. The locations were selected at areas where the soil appeared to be minimally affected by human activity and close enough to the respective streams that the soil appears to have been exposed by slope erosion along the bank of the stream.

These soil samples were sent to Mitkem Laboratory for the following TCL/TAL parameter categories:

- Priority pollutant metals

The results of this analysis are utilized as a basis for comparison to the results from analytical testing of the two AOC sites in this study.

2.4 Soil Boring Installation, Well Installation and Sampling

Below is a description of the boring sampling plans.

2.4.1 Soil Boring Installation, Well Installation and Sampling at Rensselaer Iron Works AOC

Four (4) borings were advanced in the area immediately east of the bulkhead that is essentially a shelf of land above the Hudson River yet lower than land to the east. These four boring locations are shown on Figure 2.3.1 at the locations that are marked with labels that are S-W-1, S-B-2, S-B-3, and S-W-2. East of the area immediately east of the bulkhead there is a wall of concrete blocks. Three borings were advanced east of this concrete block wall. These three boring locations are shown on Figure 2.3.1 at the locations that are marked with labels that are S-B-5, S-B-6, and S-W-3. The purpose of these borings is to characterize the soils or fill material that may have been used to fill in the bulkhead area. Soil samples were collected continuously at 2 foot intervals and the borings were advanced to the groundwater table, which was approximately 18 to 22 feet below ground surface. Three soil samples were obtained for analysis at each boring: one near the surface (0 to 2 inches below ground surface), one at the bottom of the boring, and one at the highest PID reading or soil staining between the other two sample locations.

All of the samples were tested with a field PID unit and the samples selected as described above were sent to the Mitkem Laboratory for the following parameter TCL/TAL categories:

- Semi-volatile compounds (SVOCs)
- Priority pollutant metals
- PCBs

All of the samples tested with a field PID unit with a reading above background were sent to the Mitkem Laboratory and tested for the following parameter TCL/TAL parameter:

- Volatile organic compounds (VOCs).

Twenty percent of the samples tested with a field PID with a reading less than or equal to background were sent to the Mitkem Laboratory and tested for the following parameter TCL/TAL parameter:

- Volatile organic compounds (VOCs).

In addition, while the borings were being conducted:

1. Three (3) borings were converted to groundwater monitoring wells as part of the subsurface investigation effort. These borings are labeled S-W-1, S-W-2, and S-W-3 on Figure 2.3.1.

2. The wells are 2 inch inside diameter PVC with slotted PVC screens extending approximately five (5) feet into the groundwater.

3. The wells are finished with a curb box to protect the well from damage and thereby to allow future sampling, if such proves to be necessary.

4. The groundwater samples were sent for analysis to the Mitkem Laboratory for analysis of Semi-Volatile Organic Compounds (SVOCs) and Priority Pollutant metals. These parameters are appropriate given the previous operations at the Rensselaer Iron Works AOC, including the scrap metal transfer facility and operation of a foundry that may have machined brass, which is known to contain significant quantities of lead.

2.4.2 Soil Boring Installation, Well Installation and Sampling at the Alamo AOC

Nine (9) samples were obtained at three soil boring locations. The soil boring locations are shown on Figure 2.3.2 at the locations described and labeled as follows. The first soil boring location is located on the east side of the circular slab on which the former petroleum tank used to rest at a location labeled A-B-1. The second soil boring location is on the southwest side of the circular slab at a location labeled A-

B-2. The third soil boring location is just west of the southwest corner of the 10-foot concrete wall, which is the location that was identified as the Oil Pump HO (House) at a location labeled A-W-1. The soil borings were terminated at refusal, at the encounter of groundwater, or 18 feet in total depth, whichever was achieved first. Three samples were obtained from each soil boring location. At least one sample from each soil boring location was collected at the location of the highest reading on a field PID in the soil boring. Otherwise, one sample was taken at the top of each soil boring location, one sample at the bottom of each soil boring location and one sample between the top and bottom sample. This middle sample was obtained at the most marked transition found within each soil boring location, if such a transition is present, at the highest PID reading if such occurred or at a randomly selected elevation between the top and bottom samples.

All of the samples selected as described above were sent to the Mitkem Laboratory for the following TCL/TAL parameter categories:

- Semi-volatile organic compounds (SVOCs)
- Priority pollutant metals.

Samples tested with a field PID unit with a reading that was above background were sent to the Mitkem Laboratory and tested for the TCL/TAL parameter:

- Volatile organic compounds (VOCs).

Also, twenty percent of the samples tested with a field PID with a reading less than or equal to background were sent to the Mitkem Laboratory and tested for the TCL/TAL parameter:

- Volatile organic compounds (VOCs).

In addition, while the borings were being conducted:

1. The SAMP had specified that the boring location southwest of, and adjacent to, the tank pad would be converted to a well. Evidence at the property across Main Street and south of the Alamo AOC indicated that the boiler house and the associated underground transfer line leading to the boiler house might be implicated with releases of petroleum for which there is evidence that was discovered by the Rensselaer County Industrial Development Agency. Also, the surface sampling field effort disclosed that a patch of No. 6 Fuel Oil exists in the ground on the west side of the concrete wall at the site and south of the entrance through the west side of the concrete wall. Given that the groundwater in the area was expected to move generally in a westerly direction, well A-W-1 was located at the position depicted on Figure 2.3.2. This location was selected to monitor potential releases from the former tank pad while potentially detecting releases from the boiler house area, underground pipeline and the patch of No. 6 Fuel Oil.

2. The well is two (2) inch inside diameter PVC with a slotted PVC screen extending approximately five (5) feet into the groundwater.

3. The well is finished with a curb box to protect the well from damage and thereby to allow future sampling, if such proves to be necessary.

4. The groundwater samples were sent for analysis to Mitkem Laboratory for SVOCs and Priority Pollutant metals.

2.5 Surface Soil Test Pits

The results of the sampling described above indicated further sampling should be conducted to meet the USEPA approved goals and objectives.

Among other results, surface soil samples at the Rensselaer Iron Works AOC indicated that PCBs exceeded the New York State Recommended Cleanup Criteria under TAGM 4046 near the bulkhead at the Hudson River and at a location in the central interior of the site.

At that time, the City was assisting in the development of the Rensselaer Iron Works (former Scolite Property) into the Upper Satellite Facility of the Hudson Rivers and Estuaries Center funded largely by New York State. This is an extremely critical project for the City and New York State. Consequently, obtaining complete soil and groundwater data in an expeditious manner was necessary in order to ensure that the planning and design for this facility remain on schedule.

Therefore, STERLING and the City proposed to sample at additional points at the Rensselaer Iron Works AOC using test pits. The locations of the additional sampling points were designed to define the extent of the PCB contamination, simultaneously collect data on the vertical stratigraphy beyond the known contamination and to sample potentially impacted Hudson River sediments (immediately outside the bulkhead, upstream beyond the effect of the site and the Poesten Kill delta immediately upstream of the site). The test pit locations are shown on Figure 2.5, Rensselaer Iron Works Final Soil Sampling Locations, at the locations that are marked with labels that start with S-U-Y.

The soil samples were obtained by a backhoe excavator provided by the City of Troy Public Works Department. The samples were obtained at the surface and at approximately every one foot to a depth of two feet at most locations. At the locations S-U-Y7, S-U-Y12, and S-U-Y13 were sampled to approximately three (3) feet in depth, with one (1) sample approximately every foot. At the locations S-U-Y6, S-U-Y9, and S-U-Y11 were sampled to approximately four (4) feet in depth, with one (1) sample approximately every foot.

The sediment was sampled in the Hudson River immediately west of the bulkhead at the site, and upstream at two locations beyond the effect of the site and the Poesten Kill delta upstream of the site. These locations were selected to determine if PCBs are derived from waste deposition other than sediments, or alternatively if the site is contaminated by the deposition of river sediments during the annual recovery of scrap metal that has fallen into the Hudson River during transfer operations. The Hudson River sediment sampling locations are shown on Figure 2.5 at the locations that are marked with the labels S-U-Y8, S-U-Y14, and S-U-Y15.

The Troy City Fire Department provided a boat and operator for sampling of the sediment upstream of the site, and the sediment at the bulkhead adjacent to the site.

2.6 Aboveground Storage Tank Investigation at Alamo

During the field sampling effort an aboveground storage tank (AST) was discovered at the Alamo. This AST is immediately north of the boiler building located west of the concrete wall that is a major feature at the site.

The AST has an uncovered opening on the top at the north end of the tank. This opening is approximately 4 to 6 inches in diameter. The steel tank is approximately 5 feet 3 inches in diameter and approximately 19 feet long. Through the open hole STERLING staff observed a dark fluid inside the tank. A metal rod was used to probe the depth of the dark fluid which was determined to be approximately two (2) feet in the center. The liquid on the metal rod had a petroleum odor.

The exterior of the tank appeared to be slightly rusted, with no observed holes caused by damage or corrosion. The tank is elevated on saddles, so the majority of the tank is visible. No stains were noticed on the ground beneath or in the vicinity of the tank. As the tank is surrounded by loose stone and the growing season was over at the time of observation, the vegetation is too sparse to determine if surrounding vegetation is stressed. The total available capacity of this tank is approximately 3,080 gallons.

2.7 Perlite Investigation

On July 13, 2005, STERLING was informed that Hartgen Archeological Associates, Inc. (Hartgen) was conducting an archaeological investigation of the Rensselaer Iron Works AOC (a.k.a. Scolite) for the Upper Hudson Rivers and Estuaries Center site assessment using a backhoe operated by a City of Troy employee. An area of white dust was encountered in an excavation between the Poesten Kill and the Foundry Building. Transfer of the dust by the backhoe created a dust cloud. As the material did not appear to be native soil, Hartgen removed the backhoe operator and its staff from the area and notified STERLING.

STERLING observed the excavated trench, found a white powder was visible within the trench at the western end, and white powder was visible in the soil castings at the north side of the pit. The pit was approximately 10 feet from a wooden doorway in the wall of the foundry building and approximately 30 feet measured in a line parallel with the wall of the foundry east of the northwest corner of the intact portion of the foundry building.

Two (2) samples of the powder from the trench castings were obtained with a decontaminated spoon and placed into 100 milliliter (ml) glass sample bottles with a Teflon seal beneath a metal screw-on lid.

During sampling, the operator of the Hudson Deepwater Development Scrap Yard at the Scolite Property came to observe from a distance of approximately 30 feet and commented that the powder reminded him of the powder that is found in the on-site building that Hudson Deepwater Development utilizes for maintenance and its offices. Therefore, this building was observed and a light gray material similar to the white powder in consistency was evident on the floor and top surface of all interior objects, particularly in the south portion of the building. The gray material falls down through the air whenever pigeons fly among, and land upon, the rafters.

One (1) sample of the powder was obtained from the gray particulate material on the floor with a decontaminated spoon and placed it into a 100 milliliter (ml) glass sample bottle. A representative paper bag measuring approximately 4 feet by 1.5 feet in its original collapsed condition was obtained to obtain information from the label regarding Scolite and the product that was formerly loaded into these types of bags.

Hartgen staff placed plastic sheets over the largest areas of visible powder in the trench and in the castings. Minor amounts of Perlite were left uncovered.

STERLING discovered that Scolite International Corp. is known to have manufactured and distributed insulating concrete ready-mix and that this product contained Perlite.

Suspecting that the sampled material either was Perlite or contained a substantial quantity of Perlite, STERLING delivered one (1) sample jar from the trench and one (1) from the maintenance building floor to Fibers I.D. Inc. on July 14, 2005.

3.0 PHYSICAL CHARACTERISTICS

3.1 Regional Geological Setting

Both the Rensselaer Iron Works AOC and the Alamo AOC are located in a region described as a small delta outwash deposit in the Hudson Champlain Lowland (D. Fisher, "Geologic Map of New York, Hudson Mohawk Street", 1970). These deltaic deposits consist primarily of sand and gravel. The deltaic deposits overlie lacustrine silt and clay deposited in proglacial lakes. The underlying bedrock is thinly bedded, weathered, black shale of Upper Ordovician age (D. Fisher, "Geologic Map of New York, Hudson Mohawk Street", 1970). Regional geology suggests that this inclined, faulted and folded shale is of either the Normanskill or Snake Hill formations. The elevation of shale increases away from the Hudson River. Depth to bedrock has been observed to be nearly 70 feet adjacent to the river, but outcrops a short distance east of the Conrail railroad tracks and few hundred yards south of the Alamo AOC (Final Focused Remedial Investigation and Feasibility Study Work Plan for the Troy (Water Street) Site (Area 2), September 30, 1996, Niagara Mohawk Power Corporation, 300 Erie Boulevard West, Syracuse, New York 13202, by GT Engineering, P.C., 1245 Kings Road, Schenectady, New York 12303).

3.2 Geology of Sites

The sequence of geologic units encountered at the Rensselaer Iron Works AOC is:

- Fill – slag, cinders, ash, concrete, brick, sand, and gravel – approximately 15 to 20 feet thick,
- Intermediate Layer – loose fine or fine to medium sand with lesser amounts of silt and organic silt seams, traces of wood – approximately 0 to10 feet thick,
- Alluvial/Outwash Deposits – loose to firm, fine to coarse sand and gravel, trace to little silt with cobbles and boulders – approximately 15 to 36 feet thick,
- Bedrock – Gray Shale – at 26 to 52 feet below ground surface.

The sequence of geologic units encountered in the vicinity of the Alamo AOC is:

- Fill – slag, silt, sand, and gravel – approximately 5 to 12 feet thick
- Glacial Outwash –sand and gravel, some silt – approximately 0 to 4 feet thick
- Glaciolacustrine – clay and silt– greater than 5 feet thick

3.3 Regional Hydrogeologic Setting

Hydrogeologic information collected by Rensselaer County on its property immediately west of the Alamo AOC indicates that the shallow aquifer groundwater table is primarily found in the granular glacial outwash between 15 to 25 feet below grade. The overburden aquifer is primarily of sand and gravel deposits (Final Focused Remedial Investigation and Feasibility Study Work Plan for the Troy (Water Street) Site (Area 2), September 30, 1996, Niagara Mohawk Power Corporation, 300 Erie Boulevard West, Syracuse, New York 13202, by GT Engineering, P.C., 1245 Kings Road, Schenectady, New York 12303).

The groundwater flow direction in the overburden aquifer is expected to be primarily to the west, toward the Hudson River, and locally toward the Poesten Kill channel at the Rensselaer Iron Works AOC and toward the Wynants Kill channel north of the Alamo AOC. Overburden groundwater elevations at the Rensselaer Iron Works AOC are expected to fluctuate with the Hudson River tides, which vary from 4 to

6 feet in magnitude.

Permeability tests conducted within the overburden soils at four monitoring wells located at the former Burden Iron Works property that is immediately north of the Alamo AOC demonstrated permeability in the range of 4.1 x 10^{-3} to 2.0 x 10^{-3} cm/sec. The corresponding groundwater flow rate is approximately 0.1 feet /day or 40 feet/year. (Final Focused Remedial Investigation and Feasibility Study Work Plan for the Troy (Water Street) Site (Area 2), September 30, 1996, Niagara Mohawk Power Corporation, 300 Erie Boulevard West, Syracuse, New York 13202, by GT Engineering, P.C., 1245 Kings Road, Schenectady, New York 12303).

The bedrock aquifer is primarily in the weathered shale and is expected to be a low yield supply. (O'Brien and Gere Engineers, Work Plan – Preliminary Site Assessment/Interim Remedial Measure Study for the Former Troy (Water Street) MGP Site, May 1994). Groundwater in the shale has been found to be hard, often cloudy, and frequently contains hydrogen sulfide. (R. V. Cushman, The Groundwater Resources of Rensselaer County, USGS, in Cooperation with Water and Power Control Commission, Albany, NY 1950).

3.3.1 Groundwater Usage in Vicinities of Sites

According to the City of Troy, the entire City of Troy is supplied by public water. No known uses of groundwater for potable water occur within at least a half mile of either of the AOCs.

3.4 Site Hydrogeology

At the Rensselaer Iron Works AOC groundwater was encountered at approximately 11 to 22 feet below ground surface.

At the Alamo AOC groundwater was encountered at approximately 14 to 15 feet below ground surface.

4.0 NATURE AND EXTENT OF IMPACTS

The field and analytical results during the investigations of the Rensselaer Iron Works AOC and Alamo AOC follow.

4.1 Data Validation and Metals Background

4.1.1 Data Validation

Third party data validation was conducted on the data packages by Alpha Geoscience, 679 Plank Rd, Clifton Park, NY, and Data Validation Reports were prepared. Data validation was performed in accordance with the most current editions of the USEPA National Functional Guidelines and Region II validation SOPs HW-2 and HW-6. Each Data Usability Summary Report (DUSR) were conducting on each data delivery group (DDG). The following items were reviewed, as applicable to VOCs, SVOCs, PCBs or metals:

- Data Completeness
- Custody Documentation
- Holding Times

- Surrogate and Internal Standard Recoveries
- Matrix Spike Recoveries/Duplicate Correlations
- Preparation/Calibration Blanks
- Control Spike/Laboratory Control Samples
- Instrumental IDLs
- Method Compliance
- Sample Result Validation
- Field Duplications

At the Rensselaer Iron Works, 76 soil samples, 3 sediment samples and 3 groundwater samples were analyzed for the CLP Target Compound List/Target Analyte List (TCL/TAL) SVOCs, PCBs and 13 Priority Pollutant Metals. Also, 16 soil samples were analyzed for the CLP TCL/TAL SVOCs and 13 Priority Pollutant Metals.

At the Alamo, 19 soil samples, and 1 groundwater sample were analyzed for the CLP TCL/TAL SVOCs, and 13 Priority Pollutant Metals.

Appropriate sections of the Data Validation Report, including a narrative listing the results of data validation, and a discussion of those items showing deficiencies, are included in Appendix A. Copies of the laboratory case narratives with the Data Validation Report are on file and will be maintained at the City of Troy Engineers Office for viewing upon request.

In summary, sample processing was primarily conducted with compliance to protocol requirements and with adherence to quality criteria. Items which showed deficiencies are detailed in the narrative portion of the validation report. Certain SVOC determinations were flagged as unusable (R) because one or more surrogate recoveries were outside control limits and one was less than ten percent. Certain metals determinations were flagged as unusable (R) because the percent recoveries for were below control limits (75-125 percent) and were below 10 percent in a spike sample. Certain PCB Arochlor determinations were flagged as unusable (R) because the percent differences for dual column quantitation were greater than 100 percent.

The site investigation laboratory analytical report tables include the validated analytical data with all pertinent laboratory and data validation parameters.

4.1.2 Metals Background Results

The results of the testing of the two background soil samples for metals are depicted in Table 4.1.2, Background Metals Results Versus Eastern USA Background. All of the measured metal concentrations at the two background soil locations are within Eastern USA or New York State ranges for the associated metal.

4.2 Surface Soils

Surface soil samples were obtained by hand excavation, backhoe excavation or soil sampling tube within a soil boring augur. All samples were collected from the larger mass of soil with decontaminated stainless steel spoons and placed in clean glass jars with Teflon screw on tops. All requirements of the approved Site-Specific Brownfields Sampling, Analysis, and Monitoring Plan (SAMP), Brownfields Assessment Demonstration Pilot, South Troy Brownfields, New York.

4.2.1 Semi-volatile Organic Compounds

All samples to which a SVOC analysis was performed were subjected to U.S.EPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration OLM0 4.2 for the parameters known as Acid Extractable Organics Base & Neutral Organics (BNAs).

4.2.1.1 Rensselaer Iron Works AOC

The results of the laboratory analyses for SVOCs are summarized in each of the following sections.

4.2.1.1.1 Rail Siding

The results of the laboratory analyses for SVOCs for the two locations adjacent to the rail sidings are summarized in Table 4.2.1.1.1, Rensselaer Iron Works AOC Rail Siding, Semi-Volatile Organic Compounds (SVOCs) Soil Surface to 2 Feet Depth. At the surface soil location S-S-R1, eight SVOC compounds appear to exceed their recommended soil cleanup objective in the 0 to 6 inch depth, and at the surface soil location S-S-R2, seven SVOC compounds appear to exceed their recommended soil cleanup objective in the 0 to 6 inch depth. At the surface soil location S-S-R1, two SVOC compounds exceed their recommended soil cleanup objective in the 12 to 18 inch depth. This indicates that the SVOC concentrations probably only exceed the recommended soil cleanup objectives in approximately the top foot of soil.

The total SVOCs range from a low of approximately 3 ppm in the 12 to 18 inch depth sample at S-S-R1, to a high of 329 ppm in the 0 to 6 inch sample at S-S-R2. Both of the 0 to 6 inch depth samples exceed the recommended soil cleanup objective of 50 ppm Total SVOCs.

4.2.1.1.2 Foundry

The results of the laboratory analyses for SVOCs for the eight locations within the large foundry building are summarized on pages Table 4.2.1.1.2, Rensselaer Iron Works AOC Foundry Building, Semi-Volatile Organic Compounds (SVOCs) Soil Surface to 2 Feet Depth. At the surface soil location S-S-F-3, five SVOC compounds appear to exceed their recommended soil cleanup objective. At the surface soil locations S-S-F-6, S-S-F-9, and one of the duplicate samples at S-S-F-2, nine SVOC compounds appear to exceed their recommended soil cleanup objective. At the balance of the locations, between six and eight SVOC compounds exceed their recommended soil cleanup objective. These results indicate that the SVOC concentrations exceed the recommended soil cleanup objectives throughout the foundry building.

The total SVOCs range from a low of approximately 25 ppm in the sample at S-S-F-5, to a high of 624 ppm in the S-S-F-2. Seven of the eight locations exceed the recommended soil cleanup objective of 50 ppm Total SVOCs.

4.2.1.1.3 Yard

The results of the laboratory analyses of the surface samples (top 2 feet) for SVOCs for the twenty-eight locations within the yard area west of the large foundry building are summarized in Table 4.2.1.1.3, Rensselaer Iron Works AOC Yard, Semi-Volatile Organic Compounds (SVOCs), Soil Surface to 2 Feet Depth. Between one to ten SVOC compounds appear to exceed their recommended soil cleanup objective in the surface samples. These results indicate that the SVOC concentrations exceed the recommended soil cleanup objectives throughout the top two feet of the yard area.

The total SVOCs range from a low of approximately 1.1 ppm in the sample at S-S-Y10 at 0.0-0.5 feet depth, to a high of 324 ppm in the S-U-Y10 at 2 feet depth. Five of the twenty-eight locations exceed the recommended soil cleanup objective of 50 ppm Total SVOCs at some depth.

4.2.1.2 Alamo

The results of the laboratory analyses of the surface samples (top 2 feet) for SVOCs for the six locations at the Alamo AOC are summarized in Table 4.2.1.2, Alamo AOC Semi-Volatile Organic Compounds (SVOCs) Soil Surface to 2 Feet Depth. Between one to six SVOC compounds appear to exceed their recommended soil cleanup objective in the surface samples. These results indicate that the SVOC concentrations exceed the recommended soil cleanup objectives throughout the top two feet of the yard area.

The total SVOCs range from a low of approximately 1.5 ppm in the sample at A-S-1 at 1.0-1.5 feet depth, to a high of 57 ppm in the A-S-2 at 1.0-1.5 feet depth. One of the six locations exceeds the recommended soil cleanup objective of 50 ppm Total SVOCs at some depth.

4.2.2 PCBs

All samples to which a PCB analysis was performed were subjected to U.S.EPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration OLM0 4.2 for the parameters known as Pesticides/Aroclors (PCBs).

4.2.2.1 Rensselaer Iron Works AOC

The results of the laboratory analyses for PCBs are summarized in Table 4.2.2.1.1 Rensselaer Iron Works AOC Polychlorinated Biphenyls (PCBs) Soil Surface to 2 Feet Depth.

4.2.2.1.1 Rail Siding

The results of the laboratory analyses for PCBs for the two locations adjacent to the rail sidings are summarized on Page 8 in Table 4.2.2.1.1, Rensselaer Iron Works AOC Rail Siding Polychlorinated Biphenyls (PCBs) Soil Surface to 2 Feet Depth. Neither of the two locations near the railroad siding appear to exceed their recommended soil cleanup objectives for PCBs.

4.2.2.1.2 Yard

The results of the laboratory analyses of the surface samples (top 2 feet) for PCBs for the twenty-eight locations within the yard area west of the large foundry building are summarized in Table 4.2.2.1.2, Rensselaer Iron Works AOC Polychlorinated Biphenyls (PCBs) Soil Surface to 2 Feet Depth. These results indicate that the PCB concentrations exceed the recommended soil cleanup objectives in the top two feet of the yard area at the following locations:

Sample Location	Depth	PCB Concentration
S-S-Y4	0 to 0.5 ft.	1.1 ppm
S-S-Y4	0.5 to 1.0 ft	1.0 ppm
S-S-Y6	0 to 0.5 ft	5.4 ppm

S-S-Y6	1.0 to 1.5 ft	1.1 ppm
S-U-Y7	0 to 0.5 ft	1.5 ppm
S-U-Y13	0 to 0.5 ft	2.9 ppm
S-B-2	0 to 0.5 ft	9.8 ppm
S-B-3	0 to 0.5 ft	6.5 ppm
S-B-5	0 to 0.5 ft	1.1 ppm
S-W-1	0 to 0.5 ft	8.4 ppm
S-W-2	0 to 0.5 ft	4.4 ppm

The locations where the PCB concentration exceeds the recommended cleanup objective are mostly in the western and central portion of the yard, and not all locations in these portions of the yard have concentrations that exceed the recommended cleanup objective.

4.2.3 Metals

All samples to which a metals analysis was performed were subjected to USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis, Multi-Media, Multi-Concentration ILM0 4.0.

4.2.3.1 Rensselaer Iron Works AOC

4.2.3.1.1 Rail Siding

The results of the laboratory analyses for metals for the two locations adjacent to the rail sidings are summarized in Table 4.2.3.1.1, Rensselaer Iron Works AOC Rail Siding, Metals, Soil Surface to 2 Feet Depth. At the surface soil location S-S-R1, eight metals appear to exceed their recommended soil cleanup objective, including Antimony, Arsenic, Chromium, Copper, Nickel, Selenium, Silver, and Zinc, in the 0 to 6 inch depth. At the 12 to 18 inch depth, Thallium, in addition to these same metals, appears to exceed its recommended soil cleanup objective. At the surface soil location S-S-R2, two metals (copper and silver) appear to exceed their recommended soil cleanup objective in the 0 to 6 inch depth.

4.2.3.1.2 Foundry

The results of the laboratory analyses for metals for the eight locations within the large foundry building are summarized in Table 4.2.3.1.2, Rensselaer Iron Works Foundry Building, Metals Soil Surface to 2 Feet Depth. Twelve of the thirteen metals exceed the recommended soil cleanup objective at one or more locations within the large foundry building. Only location S-S-4 had no exceedances of the recommended soil cleanup objectives. There do not appear to be any exceedances for Beryllium within the large foundry building. Lead exceeds the recommended soil cleanup objective at six of the eight locations. Copper and Nickel each exceed the recommended soil cleanup objective at seven of the eight locations. Arsenic exceeds the recommended soil cleanup objective at seven of the eight locations, as well.

The Lead concentrations at the sample locations in the Foundry are depicted in Figure 4.2.3.1.2. As stated above, six of the eight locations exceed the recommended cleanup objectives for Lead.

4.2.3.1.3 Yard

The results of the laboratory analyses for metals for the twenty-eight locations within the yard area are summarized in Table 4.2.3.1.3, Metals Soil Surface to 2 Feet Depth. All thirteen metals exceed their recommended soil cleanup objective at one or more locations within the yard area. The location A-S-5 at the zero to six inch depth had the fewest exceedances of the recommended soil cleanup objectives at two. Lead exceeds the recommended soil cleanup objective at sixteen of the twenty-eight locations. Copper exceeds the recommended soil cleanup objective at seven of the twenty-six of the twenty-eight locations. Nickel exceeds the recommended soil cleanup objective at twenty-five of the twenty-eight locations. Arsenic exceeds the recommended soil cleanup objective at fourteen of the twenty-eight locations.

4.2.3.2 Alamo

The results of the laboratory analyses of the surface samples (top 2 feet) for Metals for the six locations at the Alamo AOC are summarized in Table 4.2.3.2 Alamo AOC, Metals, Soil Surface to 2 Feet Depth. Nine metals exceed their recommended soil cleanup objective at one or more locations within the yard area including Antimony, Arsenic, Beryllium, Chromium, Copper, Nickel, Silver, Thallium and Zinc. The location A-S-3 at the zero to six inch depth had the fewest exceedances of the recommended soil cleanup objectives at two. Lead exceeds the recommended soil cleanup objective at none of the six locations. Copper exceeds the recommended soil cleanup objective at five of the six locations. Nickel exceeds the recommended soil cleanup objective at only one of the six locations. Arsenic exceeds the recommended soil cleanup objective at all six of the six locations.

4.2.3.3 Background

The results of the laboratory analyses of the background samples (top 2 feet) for Metals for the are summarized in the beginning of every metals table. The background metals concentrations were utilized to compute the recommended soil cleanup objective for ten of the thirteen metals. With respect to Cadmium, Lead, and Selenium, the background concentrations were lower than the recommended soil cleanup objective.

4.3 Figures Depicting the Exceedances of the Recommended Soil Cleanup Objectives in the Soil Surface

Figure 4.3.1, Rensselaer Iron Works AOC Surface Soil Sampling Results, depicts the locations where the concentration of various parameters in the top two feet of soil exceed the respective recommended soil cleanup objectives at the Rensselaer Iron Works AOC. The upper right quadrant is filled in if the SVOCs exceed the respective recommended soil cleanup objectives. The upper left quadrant is filled in if the Metals exceed the respective recommended soil cleanup objectives. The lower left quadrant is filled in if the PCBs exceed the respective recommended soil cleanup objectives. The lower right quadrant is filled in if the VOCs exceed the respective recommended soil cleanup objectives.

Figure 4.3.2 depicts the locations where the concentration of various parameters in the top two feet of soil exceed the respective recommended soil cleanup objectives at the Alamo. The quadrants of the circle at each sample location have the same representation as the Figure 4.3.1.

4.4 Subsurface Soils

Soil samples below 2 feet in depth were obtained by backhoe excavation or soil sampling tube within a soil boring augur. All samples were collected from the larger mass of soil with decontaminated stainless steel spoons and placed in clean glass jars with Teflon screw on tops. All requirements of the approved Site-Specific Brownfields Sampling, Analysis, and Monitoring Plan (SAMP), Brownfields Assessment Demonstration Pilot, South Troy Brownfields, New York.

4.4.1 Semi-volatile Organic Compounds

As for the surface soils, all samples where a SVOC analysis was performed where subjected to U.S.EPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration OLM0 4.2 for the parameters known as Acid Extractable Organics Base & Neutral Organics (BNAs).

4.4.1.1 Rensselaer Iron Works AOC

The results of the laboratory analyses of the samples at depth (below 2 feet) for SVOCs for fourteen locations within the yard area west of the large foundry building are summarized in Table 4.4.1.1, Rensselaer Iron Works AOC Yard, Semi-Volatile Organic Compounds (SVOCs), Soil Below 2 Feet Depth. Five of the fourteen locations have samples where no SVOCs exceed their recommended soil cleanup objective. At every location where there are samples at multiple depths, the concentrations of each SVOC and the number of SVOCs that exceed their recommended soil cleanup objective generally decrease with increasing depth.

The total SVOCs range to a high of 562 ppm in the S-U-Y9 4 at 4 feet depth. Only two of the fourteen locations exceed the recommended soil cleanup objective of 50 ppm Total SVOCs at some depth.

4.4.1.2 Alamo

The results of the laboratory analyses of the soil samples below 2 feet for SVOCs for three locations at the Alamo AOC are summarized in Table 4.4.1.2. Between two to four SVOC compounds appear to exceed their recommended soil cleanup objective in the all the samples below 2 feet depth, however, some of the exceedances may be caused by the fact that the method detection level exceeds the recommended cleanup objective. These results may indicate that the SVOC concentrations exceed the recommended soil cleanup objectives throughout below the 2 feet depth.

None of the three locations exceed the recommended soil cleanup objective of 50 ppm Total SVOCs at any depth.

4.4.2 PCBs

As for the surface soils, all samples where a PCB analysis was performed where subjected to U.S.EPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration OLM0 4.2 for the parameters known as Pesticides/Aroclors (PCBs).

4.4.2.1 Rensselaer Iron Works AOC

The results of the laboratory analyses of the samples at depth (below 2 feet) for PCBs for the fourteen locations within the yard area west of the large foundry building are summarized in Table 4.4.2.1 Polychlorinated Biphenyls (PCBs) Soil Below 2 Feet Depth. None of the fourteen locations have samples where PCBs exceed the recommended soil cleanup objective.

4.4.3 Metals

As for the surface soils, all samples where a metals analysis was performed where subjected to USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis, Multi-Media, Multi-

Concentration ILM0 4.0.

4.4.3.1 Rensselaer Iron Works AOC

The results of the laboratory analyses for metals for the fourteen locations within the yard area are summarized in Table 4.4.3.1 Metals Soil Below to 2 Feet Depth. All thirteen metals exceed their recommended soil cleanup objective at one or more locations within the yard area. The locations S-U-Y2, S-U-Y6, and S-U-Y11 at the 3 feet depth had the fewest exceedances of the recommended soil cleanup objectives at two each. Lead exceeds the recommended soil cleanup objective at only two of the fourteen locations. Copper exceeds the recommended soil cleanup objective at twelve of the fourteen locations. Nickel exceeds the recommended soil cleanup objective at nine of the fourteen locations. Arsenic exceeds the recommended soil cleanup objective at five of the fourteen locations.

4.4.3.2 Alamo

The results of the laboratory analyses of the soil samples below the 2 feet depth for Metals for the six locations at the Alamo AOC are summarized in Table 4.4.3.2. Nine metals exceed their recommended soil cleanup objective at one or more locations within the Alamo AOC area including Antimony, Beryllium, Cadmium, Chromium, Copper, Nickel, Silver, Thallium, and Zinc. The locations vary between 5 to 8 exceedances of the recommended soil cleanup objectives. Lead does not exceed the recommended soil cleanup objective at any of the three locations. Copper exceeds the recommended soil cleanup objective at one of the three locations. Nickel exceeds the recommended soil cleanup objective at all three of the three locations. Reported Arsenic levels are below the recommended soil cleanup objective at all three locations.

4.4.4 Volatile Organic Compounds

The samples where a VOC analysis was performed where subjected to U.S.EPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration OLM0 4.2 for the parameters known as Volatile Organic Compounds (VOCs).

4.4.4.1 Rensselaer Iron Works AOC

The results of the laboratory analyses for Volatile Organic Compounds (VOCs) for the three selected locations within the yard area at the Rensselaer Iron Works AOC are summarized in Table 4.4.4.1, Volatile Organic Compounds (VOCs) Soil Below to 2 Feet Depth. VOCs did not exceed the recommended soil cleanup objective at the three locations within the yard area.

4.4.4.2 Alamo

The results of the laboratory analyses for Volatile Organic Compounds (VOCs) for the three selected locations within the Alamo AOC are summarized in Table 4.4.4.2, Volatile Organic Compounds (VOCs) Soil Below to 2 Feet Depth. VOCs did not exceed the recommended soil cleanup objective at the three locations within the yard area.

4.4.5 Total Petroleum Hydrocarbons

The extracts prepared from two SVOC analyses was analyzed to identify any petroleum products present. The two samples were selected at the Alamo AOC because they exhibited petroleum odors when recovered from the split spoon sample. This analysis was performed by high resolution gas chromatography using flame ionization detection. The pattern of the resolved and unresolved peaks detected during this analysis was compared to a library of standard petroleum fuels analyzed under identical conditions.

4.4.5.1 Alamo

The results for the analyses of A-W-1-16-18 (Depth 16 – 18 Feet) and A-B-2-12-16 (Depth 12 – 16 Feet) indicate that the closest match of the resolved and unresolved hydrocarbon peaks between this library and the sample extracts is with #6 fuel oil. The sample appears to be more weathered than the laboratory standard #6 fuel due to its lack of resolved compound peaks. Several resolved compound peaks in the sample are due to internal and surrogate standards added for the SVOC analyses.

4.5 Figures Depicting the Parameter Concentrations in the Soil Profile

4.5.1 Figure Depicting the Parameter Concentrations in the Soil Profile Along the Bulkhead

The profile of soil concentrations of various parameters along a section approximately north-south immediately east of the bulkhead along the Hudson River is depicted in Figure 4.5.1 Parameter Concentrations in the Soil Profile Along the Bulkhead. The profile depicts the concentrations of various parameters at five borings or test pits.

Lead was selected as an indicator of metals contamination as this metal potentially derives from the brass that may have been machined at the Rensselaer Iron Works foundry. PCBs and Total SVOCs were chosen as representative of their respective categories.

At the surface, all five of the five locations exceed the recommended cleanup objectives for lead, none of the five locations exceed the recommended cleanup objective for Total SVOCs and three of five locations exceed the recommended cleanup objective for PCBs.

Below approximately two to six feet, the concentrations of lead do not exceed the recommended cleanup objectives for lead. Below approximately one to two feet, the concentrations of PCBs do not exceed the recommended cleanup objectives for PCBs. At every depth, the recommended cleanup objectives for Total SVOCs are not exceeded.

4.5.2 Figure Depicting the Parameter Concentrations in the Soil Profile Perpendicular to the Bulkhead

The profile of soil concentrations of various parameters along a section approximately east-west and perpendicular to the bulkhead along the Hudson River is depicted in Figure 4.5.2 Parameter Concentrations in the Soil Profile Along the Bulkhead. The profile depicts the concentrations of various parameters at five borings or test pits.

Again, Lead was chosen as an indicator of metals contamination as this metal potentially derives from the brass that may have been machined at the Rensselaer Iron Works foundry. PCBs and Total SVOCs were chosen as representative of their respective categories.

At the surface, three of the five locations exceed the recommended cleanup objectives for lead, none of the five locations exceed the recommended cleanup objective for Total SVOCs and one of five locations exceed the recommended cleanup objective for PCBs. The exceedances occur nearest the shore line for each parameter sequence.

Below approximately two to six feet, the concentrations of lead do not exceed the recommended cleanup objectives for lead. Below approximately one to two feet, the concentrations of PCBs do not exceed the recommended cleanup objectives for PCBs. At every depth, the recommended cleanup objectives for Total SVOCs are not exceeded.

4.6 Groundwater

Figure 4.6 shows the locations of the groundwater wells at the yard of the Rensselaer Iron Works AOC. S-W-1 is located in the northwest corner of the property. S-W-2 is located in the southwest corner of the property. S-W-3 is located immediately west of the center of the property.

4.6.1 Semi-volatile Organic Compounds

As for the soil samples, all groundwater samples where a SVOC analysis was performed were subjected to U.S.EPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration OLM0 4.2 for the parameters known as Acid Extractable Organics Base & Neutral Organics (BNAs).

4.6.1.1 Rensselaer Iron Works AOC

The results of the laboratory analyses for Semi-volatile Organic Compounds (Semi-VOCs) for the wells within the yard area at the Rensselaer Iron Works AOC are summarized in Table 4.6.1 Results for Semi-Volatile Organic Compounds Analyses on Groundwater Samples from the Rensselaer Iron Works AOC and the Alamo AOC. Five Semi-VOCs appear to exceed the water quality standards in 6 NYCRR Part 703 at of the three groundwater wells within the yard area. The apparent detection limits are higher than the relevant water quality standards, so it not possible to determine if the compounds were present in the samples at higher than the 6 NYCRR Part 703 water quality standards.

4.6.1.2 Alamo

The results of the laboratory analyses for Semi-volatile Organic Compounds (Semi-VOCs) for the well at the Alamo AOC are summarized in Table 4.6.1 Results for Semi-Volatile Organic Compounds Analyses on Groundwater Samples from the Rensselaer Iron Works AOC and the Alamo AOC. Five Semi-VOCs appear to exceed the water quality standards in 6 NYCRR Part 703 at of the groundwater well at the Alamo. The apparent detection limits are higher than the relevant water quality standards, so it not possible to determine if the compounds were present in the samples at higher than the 6 NYCRR Part 703 water quality standards.

4.6.2 Metals

As for the soil samples, all groundwater samples where a metals analysis was performed where subjected to USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis, Multi-Media, Multi-Concentration ILM0 4.0.

4.6.2.1 Rensselaer Iron Works AOC

The results of the laboratory analyses for Metals for the wells within the yard area at the Rensselaer Iron Works AOC are summarized in Table 4.6.2 Results for Metals Analyses on Groundwater Samples from the Rensselaer Iron Works AOC and the Alamo AOC. Ten Metals, Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Thallium, and Mercury, appear to exceed the water quality standards in 6 NYCRR Part 703 at least one of the three groundwater wells within the yard area. Presumably the groundwater well S-W-3 is upgradient of the groundwater wells S-W-1 and S-W-2. Five of the metals in groundwater from the well S-W-3, which is presumed to be the upgradient well at the AOC, exceeded the water quality standards, whereas, nine of the metals in the downgradient groundwater from the well S-W-1 and ten of the metals in the groundwater from the well S-W-2.

4.6.2.2 Alamo

The results of the laboratory analyses for Metals for the wells within the Alamo AOC are summarized in Table 4.6.2 Results for Metals Analyses on Groundwater Samples from the Rensselaer Iron Works AOC and the Alamo AOC. Twelve Metals appear to exceed the water quality standards in 6 NYCRR Part 703 at the groundwater well at the Alamo. Selenium was the only metal for which the concentration in the groundwater did not exceed the water quality standard.

4.6.3 Volatile Organic Compounds

The samples where a VOC analysis was performed where subjected to U.S.EPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration OLM0 4.2 for the parameters known as Volatile Organic Compounds (VOCs).

4.6.3.1 Alamo

The results of the laboratory analyses for Volatile Organic Compounds for the well at the Alamo AOC are summarized in Table 4.6.3 Results for Volatile Organic Compounds Analyses on Groundwater Samples from the Alamo AOC. None were detected although the Detection Limit for Benzene is higher than the Recommended Cleanup Objective.

4.7 Hudson River Sediments Pertaining to the Rensselaer Iron Works AOC

Three samples of sediment were obtained from the Hudson River Sediment with the assistance of the Troy Fire Department in their boat. Sample S-U-Y8 was obtained west of the barge that was tied up to the bulkhead approximately in the center of the western boundary of the Rensselaer Iron Work AOC. Sample S-U-14 was obtained west of the center of the property that is located north of the Poesten Kill at a point that is approximately 300 feet north of the mouth of the Poesten Kill. Sample S-U-Y15 was obtained west of the northern boundary of the property that is located north of the Poesten Kill at a point that is approximately 600 feet north of the mouth of the Poesten Kill.

4.7.1 Semi-volatile Organic Compounds

The results of the laboratory analyses of the samples of the river sediments for SVOCs for three locations within the Hudson River are summarized in Table 4.7.1 Hudson River Sediments, Semi-Volatile Organic Compounds (SVOCs). All three locations have SVOCs in excess of their corresponding recommended soil cleanup objective. All three locations have the same four SVOCs that exceed their recommended soil cleanup objectives.

None of the three locations have Total SVOCs concentrations that exceed the recommended soil cleanup objective of 50 ppm Total SVOCs.

4.7.2 PCBs

The results of the laboratory analyses of the samples of the river sediments for PCBs for the three locations within the Hudson River are summarized in Table 4.7.2 Hudson River Sediments, Polychlorinated Biphenyls (PCBs). None of the three locations have samples where PCBs exceed the recommended soil cleanup objective.

4.7.3 Metals

The results of the laboratory analyses for metals for the river sediments for Metals for the three locations within the Hudson River are summarized in Table 4.7.3 Hudson River Sediments, Metals. Eight metals (Beryllium, Chromium, Copper, Nickel, Selenium, Thallium, Zinc and Mercury) exceed the recommended soil cleanup objectives at one or more locations within the Hudson River Sediment. However, the exceedances are generally less than a power of ten more than the corresponding recommended cleanup objective or less.

4.8 Subsurface Patch of No. 6 Fuel Oil at the Alamo

During the surface soil sampling field effort at the Alamo AOC on November 16, 2004, a dark material was discovered below grade on a portion of the Alamo Area of Concern (AOC) in South Troy. When an attempt was made to collect the soil sample designated A-S-3 from a location that is on the west side and adjacent to the concrete wall that is a major feature of the AOC site. The location was approximately South of the only entrance to the Alamo AOC at a location where the exterior of the concrete wall is stained with a black material. The first location excavated with a hand shovel was sandy from 0-4 inches deep, at which point a dark solid material (the material) was encountered. The material could be separated in small portions (about 1 inch in diameter) with considerable effort using a "spud", which is a metal bar about five feet in length having a chisel point. However, only the top surface of the material was non-cohesive, similar to gravel. Slightly below the top layer, the material was malleable, behaving cohesively. This material was difficult to penetrate and pry up with the "spud". With significant effort, the spud penetrated approximately 2 inches into the material. The material was screened with the PID and produced a reading of 3.3 ppm when the tip of the PID was extended into the hole created by the chisel point of the "spud".

On November 17, 2004 the extent of the material was investigated. Although the material was thin and appeared to be mixed with the surrounding soil at what appeared to be the boundary, the material appeared to extend approximately 33 feet north and about 29 feet to the south of the stain on the concrete wall, and seemed to extend to the road to the west. The material was encountered at a depth of 1.3 feet at the northern boundary and 1.0 foot at the southern boundary. In most instances, the material was found at increasing depths as the distance from the stain on the wall increased. These limits are estimates because the material was thin and heterogeously mixed with surrounding soil at the boundaries.

4.9 Perlite Investigation at the Rensselaer Iron Works AOC

The analysis report from Fibers I.D. Inc on the gray and white dust stated that the sample from the trench was 95% Perlite and the sample from the maintenance building floor was 85% Perlite. As the latter was 5% Cellulose, this Cellulose content may explain the gray color of the material from this location.

5.0 BASELINE RISK ASSESSMENT

Contaminants in various media at the Rensselaer Iron Works AOC were evaluated in a Baseline Human Health Risk Assessment for potential health threats to the following receptors:

- Current off-site residents

- Current on-site workers
- Current on-site visitors (including trespassers)
- Future off-site residents
- Future on-site workers
- Future on-site visitors (including trespassers)
- Future on-site residents

Groundwater does not pose any exposure pathways of significance because municipal water is supplied to the entire City including the AOC, the groundwater gradient is toward the adjacent Hudson River, and there is no possibility of supply wells on-site. The sediment does not pose any exposure pathways of significance because there is no discernible impact of the AOC on the adjacent sediments. The only credible exposure pathways concern contaminated soil. With regards to the soil, off-site residents are not exposed because no volatile contamination exists, the contaminant levels are low, and the closest residences are at least 500 feet away from the AOC.

Current and future on-site workers and current and future on-site visitors may be exposed to particulates via inhalation such that the Permissible Exposure Limits (PELs) could be exceeded for metals, SVOCs and PCBs. They may ingest harmful amounts if they do not wash their hands before eating or they are young children. Likewise exposure routes via dermal contact are possible. All of these exposure routes would be greatest during excavation activities conducted at the AOC.

Future on-site residents would have all the above exposures and additional potential ingestion exposure via gardens and soil abrasion or contact intensive recreational activity.

The potential exposures through ingestion have been modeled in the process that established the Recommended Cleanup Objectives in the NYSDEC TAGM 4046. Therefore, the potential exposures via ingestion of soil have been factored into these Recommended Cleanup Objectives.

The potential exposures through dermal contact and inhalation will be prevented for on-site workers and visitors, and future on-site workers and visitors by appropriate personal protective equipment and monitoring during on-site excavation activities. The exposure of future on-site residents to the contaminants through the various exposure pathways will be prevented by either preventing residences from being established at the AOC or through engineering and institutional controls that will mitigate the exposure pathways.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The objective of this section is to present the conclusions and recommendations of the remedial investigation study. These conclusions and recommendations are presented in the geologic and hydrogeologic context of the site and based upon the physical and chemical impact information that was determined by previous studies and in the course of the investigation.

6.1 Conclusions for Site Background Samples for Metals

All of the measured metal concentrations at the two background soil locations are within Eastern USA or New York State ranges.

6.2 Conclusions for the Rensselaer Iron Works AOC

6.2.1 Background Regarding the Site

The Rensselaer Iron Works AOC is located along the east shores of the Hudson River and the south shore of the Poesten Kill. The AOC is bounded on the south by Madison Street and on the east by railroad tracks. The site is reportedly approximately 5.7 acres in size and contains two major buildings, the former foundry and the maintenance building, has a small area of railroad siding, and has a large yard area where a scrap metal transfer station operates and loads barges that tie up to the bulkhead along the Hudson River.

6.2.2 Physical Characteristics of Site

The site has an accumulation of materials from the previous historical and present uses of the site. Old structures and items exist on site from the indicated uses:

Foundry:
Foundry building including: furnace area, blowers, processing areas.
Hudson Deepwater Development office and maintenance building.

Roofing Company:
Steel 55-gallon drums containing asphalt, truck tanker containing asphalt.

Scolite: Insulated Concrete:
Bags of Perlite, piles and loose Perlite, mixing conveyors and machinery.

Miscellaneous maintenance:
Used cars, miscellaneous parts, miscellaneous containers and spray cans.

Lumber processing:
Used equipment, timber logs, wood pieces.

Scrap metal transfer station:
Scrap metal pieces, river sediment from recovering pieces of scrap metal dropped in Hudson River, Above-Ground Storage Tank (AST) for fuel oil, equipment in use, maintenance items.

These structures and items provide evidence of possible exceedances of the recommended cleanup objectives and represent a potential cost in the long-term use of the site with regards to the cost of proper physical removal.

6.2.3 Nature and Extent of Impacts

6.2.3.1 Soils

Individual SVOCs exceed the recommended soil cleanup objectives in the surface of the rail siding area, throughout the foundry building surface, and throughout the top two feet of the yard area. As depth increases in the yard area, fewer individual SVOCs exceed the recommended soil cleanup objectives.

Total SVOCs exceed the recommended soil cleanup objectives in the surface of the rail siding area, at seven of eight locations in the foundry building surface, and at five of the twenty-eight locations in the yard area. As depth increases in the yard area, fewer Total SVOCs exceed the recommended soil cleanup objectives, with the exception of S-U-Y9 and S-U-Y13.

Total PCBs do not exceed the recommended soil cleanup objective of 1.0 ppm in the surface of the rail siding area. Total PCBs do exceed the recommended soil cleanup objective of 1 ppm in the following locations of the yard area:

S-S-Y4	0 to 0.5 ft.	1.1 ppm
S-S-Y4	0.5 to 1.0 ft	1.0 ppm
S-S-Y6	0 to 0.5 ft	5.4 ppm
S-S-Y6	1.0 to 1.5 ft	1.1 ppm
S-U-Y7	0 to 0.5 ft	1.5 ppm
S-U-Y13	0 to 0.5 ft	2.9 ppm
S-B-2	0 to 0.5 ft	9.8 ppm
S-B-3	0 to 0.5 ft	6.5 ppm
S-B-5	0 to 0.5 ft	1.1 ppm
S-W-1	0 to 0.5 ft	8.4 ppm
S-W-2	0 to 0.5 ft	4.4 ppm

As depth increases in the yard area, Total PCBs do not exceed the recommended soil cleanup objective of 10.0 ppm below 2 feet.

Individual metals exceed the recommended cleanup objectives in the surface of the rail siding area, at seven of eight locations in the foundry building surface, and throughout the top two feet of the yard area. As depth increases in the yard area, fewer individual metals exceed the recommended soil cleanup objectives. Lead concentrations generally decrease with depth and do not exceed the recommended cleanup objectives below 6 feet.

6.2.3.2 Groundwater

For five (5) Semi-VOCs the apparent detection limits are higher than the relevant water quality standards, so it not possible to determine if the compounds were present in the samples at higher than the water quality standards.

Ten Metals, Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Thallium, and Mercury, appear to exceed the water quality standards in 6 NYCRR Part 703 at least one of the three groundwater wells within the yard area though the analyses were performed on unfiltered samples. Five of the metals in groundwater from the well S-W-3, which is presumed to be the upgradient well at the AOC, exceeded the water quality standards, whereas, nine of the metals in the groundwater from the well S-W-1 and ten of the metals in the groundwater from the well S-W-2, exceed the 6 NYCRR Part 703.

6.2.3.3 Sediments

All three sediment locations have individual SVOCs exceeding the recommended soil cleanup objective. All three locations have the same four SVOCs that exceed their recommended soil cleanup objectives.

None of the three locations have Total SVOCs concentrations that exceed the recommended soil cleanup objective of 50 ppm Total SVOCs.

None of the three locations have samples where PCBs exceed the recommended soil cleanup objective.

Eight metals (Beryllium, Chromium, Copper, Nickel, Selenium, Thallium, Zinc and Mercury) exceed the recommended soil cleanup objectives at one or more locations within the Hudson River Sediment. However, the exceedances are generally less than a power of ten more than the corresponding recommended cleanup objective or less.

Sediments which adhere to scrap metal pieces that have fallen into the Hudson River adjacent to the bulkhead and are subsequently recovered do not appear to be a likely source of exceedances of the recommended cleanup objectives at the Rensselaer Iron Works AOC.

6.2.3.4 Perlite

Perlite was found in a trench north of the foundry building and on the maintenance building floor. The Perlite is a fine dust and can be an irritant if inhaled. The Perlite should be cleaned up from its locations in a manner that does not expose the workers to the Perlite inhalation.

6.3 Risk Assessment for the Rensselaer Iron Works AOC

The risks at the Rensselaer Iron Works are posed by the contaminated soil, the contaminated groundwater, and the Perlite.

The contaminated soil poses a risk from direct contact, ingestion of soil, and inhalation of fugitive emissions.

Direct contact poses a risk to workers and anyone visiting the site. The fencing and the operation of the scrap metal facility ensures that casual visitors are low in number. However, the risk posed by direct contact limits the site to commercial/industrial uses.

Ingestion of the soil is primarily a risk if residents were to bring children to the site or were to grow food crops at the site. The likelihood appears low of residents bringing young children to the site in the site's present condition and management. Older children, especially teenagers, could conceivably spend time at the facility, but they would be discouraged by the scrap metal facility operators from entering the yard area. The foundry building is vulnerable to unauthorized entry by children or adults.

Inhalation of fugitive emissions primarily poses a risk to on-site workers, although fugitive emissions of enough concentration could reach residential areas.

The contaminated groundwater poses a risk to anyone ingesting groundwater and to the Hudson River. The area is served by municipal water supplied by the City of Troy. The site is on the east shore of the Hudson River so there is no property upon which a groundwater extraction well could be located to intercept the groundwater from the site before it enters the Hudson River. With regards to the impact on the Hudson River, the flows past the site at an annual average rate of 7,750 cubic feet per second based on the years 1947 to 2003. This converts to an annual average rate of 83 million gallons per day. This rate of flow must necessarily greatly dilute the flow of groundwater from the Rensselaer Iron Works AOC.

The Perlite poses a risk of lung irritation to on-site workers from fugitive emissions.

6.4 Recommendations for the Rensselaer Iron Works AOC

The SVOC and metals concentrations, particularly the lead concentrations in the Foundry Building represent a risk of human health exposure via direct ingestion and dust inhalation. The City is planning to raise the floor of this building during the redevelopment of this site. Careful placement of fill while protecting the workers and capping with a poured concrete slab would create a cover that will seal these contaminants below the cap, thereby minimizing human exposure.

The SVOC, PCB and metal concentrations in the yard area represent a risk of human exposure via direct ingestion, dust inhalation and dermal contact. The City is planning to raise the ground elevation during the redevelopment of this site. Careful placement of fill while protecting the workers and capping with vegetated areas, asphalt parking areas and roadways, poured concrete sidewalks, and an amphitheater would create a cover that will seal these contaminants below the cap, thereby preventing human exposure.

The Perlite should be vacuumed from the locations where it is found using HEPA vacuums and appropriate barriers to prevent inhalation of the dust by workers or visitors.

6.5 Conclusions for the Alamo

6.5.1 Site Background

The Alamo AOC is located in the northeast corner of the intersection of Main Street and the Industrial Park Road. The site is reportedly 1.51 acres in size, is ringed by a concrete wall, a tank pad from a former fuel oil tank, and contains a boiler building attached to the wall.

6.5.2 Physical Characteristics of Site

The Alamo AOC was a former area of a steel slag manufacturing facility that may have resulted in the deposition of slag and coal gasification waste. Subsequently, the Alamo AOC contained a fuel oil tank storage area from which the AST has been removed for decades. The site is presently used for composting and special material handling, such as waste propane tanks and waste latex paint.

6.5.3 Nature and Extent of Impacts

6.5.3.1 Surface Soils

One to six SVOCs exceed the recommended soil cleanup objectives in the surface of the Alamo. As depth increases, fewer individual SVOCs exceed the recommended soil cleanup objectives. Between two to four SVOC compounds appear to exceed their recommended soil cleanup objective in the all the samples below 2 feet depth, however, some of the exceedances may be caused by the fact that the method detection level exceeds the recommended cleanup objective. These results may indicate that the SVOC concentrations exceed the recommended soil cleanup objectives throughout the region below the 2 feet depth.

Only one of the six locations, A-S-2 at 1.0-1.5 feet depth, exceeds the recommended soil cleanup objective of 50 ppm Total SVOCs above the 2 feet depth. As depth increases in the Alamo AOC, no locations exceed the Total SVOCs recommended cleanup objectives in the region below 2 feet depth.

Individual metals exceed the recommended cleanup objectives in the top two feet at six of six locations at the Alamo AOC area. As depth increases the Alamo, similar numbers of individual metals exceed the recommended soil cleanup objectives.

The two samples were selected for further analysis at the Alamo AOC because they exhibited petroleum odors when recovered from the split spoon sample. The results for the analyses of A-W-1-16-18 (Depth 16 – 18 Feet) and A-B-2-12-16 (Depth 12 – 16 Feet) indicate that the closest match of the resolved and unresolved hydrocarbon peaks between the laboratory's library and the sample extracts is with #6 fuel oil. The samples appear to be more weathered than the laboratory standard #6 fuel due to the lack of resolved compound peaks.

6.5.3.2 Groundwater

Five Semi-VOCs appear to exceed the water quality standards in 6 NYCRR Part 703 at the groundwater well at the Alamo. The apparent detection limits are higher than the relevant water quality standards, so it not possible to determine if the compounds were present in the samples at higher than the water quality standards.

Twelve Metals appear to exceed the water quality standards in 6 NYCRR Part 703 at the groundwater well at the Alamo. Selenium was the only metal for which the concentration in the groundwater did not exceed the water quality standard.

6.5.3.3 No. 6 Fuel Oil Patch

A dark material that appears to be No. 6 Fuel Oil is located below grade on a portion of the Alamo Area of Concern (AOC) that is located on the west side and adjacent to the concrete wall that is a major feature of the AOC site. The location is approximately South of the only entrance to the Alamo AOC at a location where the exterior of the concrete wall is stained with a black material. The thick hard material produced a PID reading of 3.3 ppm.

Although the material is thin and appears to be mixed with the surrounding soil at what appears to be the boundary, the material appears to extend approximately 33 feet north and about 29 feet to the south of the stain on the concrete wall, and seems to extend to the road to the west. The material was encountered at a depth of 1.3 feet at the northern boundary and 1.0 foot at the southern boundary. In most instances, the material was found at increasing depths as the distance from the stain on the wall increased. These limits are estimates because the material was thin and heterogeneously mixed with surrounding soil at the boundaries.

6.5.3.4 AST

During the field sampling effort an aboveground storage tank (AST) was discovered at the Alamo. This AST is immediately north of the boiler building that is located west of the southwest corner of the concrete wall that is a major feature at the site.

The AST has an uncovered hole on the top at the north end of the tank. This hole is approximately 4 to 6 inches in diameter. The steel tank is approximately 5 feet 3 inches in diameter and approximately 19 feet long and contains a dark fluid approximately two (2) feet deep in the center that has a petroleum odor.

The exterior of the tank appeared to be slightly rusted, with no observed holes caused by damage or corrosion. The tank is elevated on saddles, so the majority of the tank is visible. No stains were noticed on the ground beneath or in the vicinity of the tank. The total available capacity of this tank is approximately 3,080 gallons.

6.6 Recommendations for the Alamo

The SVOC and metals concentrations at the Alamo AOC represent a risk of human health exposure via direct ingestion and dust inhalation.

Serious consideration should be given to excavating and removing for disposal the patch of No. 6 Fuel Oil, as it is a pure product release to the environment.

The presence of the SVOC exceedances, the patch of No. 6 Fuel Oil, and the metal exceedances demonstrate that the Alamo AOC has issues that will affect site redevelopment. The sampling locations appear insufficient to reach a high degree of confidence that all of the issues have been sufficiently characterized.

A supplemental SAMP should be prepared to expand the geographic distribution of sampling to ensure that the entire property has been sufficiently characterized.

The AST should have its contents pumped out and sent for proper disposal and the tank should be cleaned and disposed of properly. Closure information should be submitted to the NYSDEC as part of the closure process.

22026/Sampling reports and communications/TROY_BF_Site_Investigation_Report_Revised051606.doc

TABLES

Table 4.1.2 Background Metals Results Versus Eastern USA Background

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	BACKGROUND-1 C1463-11A 11/17/2004			BACKGROUND-2 C1463-12A 11/17/2004			Eastern USA Background (ppm)		
				Lab	Val		Lab	Val			
Antimony	mg/Kg	0.655	0.42	UN	J	0.89	BN	J		N/A	
Arsenic	mg/Kg	10.7	14.1			7.3				3-12	(NY State)
Beryllium	mg/Kg	0.37	0.47	B		0.27	B			0-1.75	
Cadmium	mg/Kg	1	0.042	UN	J	0.038	UN	J		0.1-1	
Chromium	mg/Kg	11.1	13.9			8.3				1.5-40	(NY State)
Copper	mg/Kg	31.35	37.0	E	J	25.7	E	J		1-50	
Lead *	mg/Kg	400	94.1			12.5			Rural:	4-61	(NY State)
									Urban:	200-500	(NY State)
Nickel	mg/Kg	16.15	17.4			14.9				0.5 -25	
Selenium	mg/Kg	2	0.99	BN	J	0.57	UN	J		0.1-3.9	
Silver	mg/Kg	4.49	8.6			0.38	U			N/A	
Thallium	mg/Kg	2.44	4.2	N	J	0.68	BN	J		N/A	
Zinc	mg/Kg	75.6	100			51.2				9-50	
Mercury	mg/Kg	0.145	0.23			0.060	B			0.001-0.2	

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.1.1.1
Rensselaer Iron Works AOC Rail Siding
Semi-volatile Organic Compounds (SVOCs) Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-S-R1-0-6 C1464-01A 11-15-04			S-S-R1-12-18 C1464-02A 11-15-04			S-S-R2-0-6 C1464-03A 11-15-04		
				Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13,000	2300			370	U		730	J	
Acenaphthene	UG/KG	50,000	2900			370	U		14000		
Fluorene	UG/KG	50,000	3700			370	U		1000	J	
Phenanthrene	UG/KG	50,000	33000	D		200	J		10000		
Anthracene	UG/KG	50,000	10000			47	J		2300		
Fluoranthene	UG/KG	50,000	50000	D		310	J		24000	D	
Pyrene	UG/KG	50,000	**54000**	**D**		310	J		34000	D	
Benzo(a)anthracene	UG/KG	224	**26000**	**D**		210	J		**23000**	**D**	
Chrysene	UG/KG	400	**24000**	**D**		220	J		**25000**	**D**	
Benzo(b)fluoranthene	UG/KG	1,100	**31000**	**D**		320	J		**47000**	**D**	
Benzo(k)fluoranthene	UG/KG	1,100	**16000**			130	J		**18000**	**DJ**	
Benzo(a)pyrene	UG/KG	61	**26000**	**D**		**250**	**J**		**47000**	**D**	
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	**17000**	**DJ**		170	J	J	**38000**	**D**	
Dibenzo(a,h)anthracene	UG/KG	14	**5700**			**59**	**J**	**J**	**13000**		
Benzo(g,h,i)perylene	UG/KG	50,000	19000	**DJ**		950		J	32000	**D**	
Total SVOC	UG/KG	50,000	**320600**			3176			**329030**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.1.1.2
Rensselaer Iron Works AOC Foundry Building
Semi-volatile Organic Compounds (SVOCs) Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-S-F-1 C1463-01A 11-17-04			S-S-F-2 C1463-02A 11-17-04			S-S-F-9 DUP S-S-F-2 C1463-09A 11-17-04			S-S-F-3 C1463-03A 11-17-04			S-S-F-3RE C1463-03ARE 11-17-04		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13,000	430	J		2600			1800	J		540	J		550	J	
Acenaphthene	UG/KG	50,000	520	J		2900			3900	J		820	J		820	J	
Fluorene	UG/KG	50,000	440	J		3000			5300			700	J		870	J	
Phenanthrene	UG/KG	50,000	4800			30000	D		34000	DJ		9900		J	9500		
Anthracene	UG/KG	50,000	1100	J		7700			18000	DJ		2500	J	J	2200	J	
Fluoranthene	UG/KG	50,000	5900			37000	D	J	**200000**	**D**	**J**	12000		J	8900		
Pyrene	UG/KG	50,000	7600			38000	D	J	**260000**	**D**	**J**	12000		J	19000		J
Benzo(a)anthracene	UG/KG	224	**4500**			**18000**	**D**		**120000**	**D**		**5500**		**J**	**5700**		**J**
Chrysene	UG/KG	400	**4500**		**J**	**16000**	**D**		**93000**	**DJ**		**7400**		**J**	**6500**		**J**
Benzo(b)fluoranthene	UG/KG	1,100	**8400**			**30000**	**D**	**J**	**87000**	**DJ**	**J**	**7300**		**J**	**7800**		**J**
Benzo(k)fluoranthene	UG/KG	1,100	**3600**			**11000**		**J**	**29000**	**DJ**		**2500**	**J**	**J**	**2600**		**J**
Benzo(a)pyrene	UG/KG	61	**5300**			**14000**	**D**		**78000**	**DJ**		**5200**		**J**	**4500**		**J**
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	2400			**7300**		**J**	**31000**	**DJ**		2700		J	2100	J	J
Dibenzo(a,h)anthracene	UG/KG	14	**710**	**J**		**2500**		**J**	**24000**			2600	U	J	**870**	**J**	**J**
Benzo(g,h,i)perylene	UG/KG	50,000	2600			8300		**J**	35000	**DJ**		3300		J	2500	J	J
Total SVOC	UG/KG	50,000	**52800**			**228300**			**1020000**			72360			**74410**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.1.1.2
Rensselaer Iron Works AOC Foundry Building
Semi-volatile Organic Compounds (SVOCs) Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-S-F-4 C1463-04A 11-17-04			S-S-F-5 C1463-05A 11-17-04			S-S-F-6 C1463-06A 11-17-04			S-S-F-10 COL S-S-F-6 C1463-10A 11-17-04			S-S-F-7 C1463-07A 11-17-04			S-S-F-8 C1463-08A 11-17-04		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13,000	1100	J		110	J		350	J		440	J		420	J		21000	U	
Acenaphthene	UG/KG	50,000	1100	J		140	J		1400	J		1300	J		1100	J		2500	J	
Fluorene	UG/KG	50,000	550	J		94	J		990	J		1500	J		730	J		3500	J	
Phenanthrene	UG/KG	50,000	12000		J	1300			20000	DJ		30000	D		14000		J	81000		
Anthracene	UG/KG	50,000	1800	J	J	290	J		8400		J	12000			2100		J	17000	J	
Fluoranthene	UG/KG	50,000	12000	DJ	J	1900			**80000**	**D**	**J**	**65000**	**D**		15000	D	J	120000	D	
Pyrene	UG/KG	50,000	13000	DJ	J	3500	D		**88000**	**D**	**J**	**58000**	**D**		17000	D	J	160000		
Benzo(a)anthracene	UG/KG	224	**16000**	**D**		**2100**		**J**	**50000**	**D**		**33000**	**D**		**8900**		**J**	71000		
Chrysene	UG/KG	400	**13000**	**DJ**		**2100**		**J**	**42000**	**D**		**33000**	**D**	**J**	**14000**		**J**	71000		
Benzo(b)fluoranthene	UG/KG	1,100	**31000**	**D**	**J**	**4900**	**D**	**J**	**66000**	**D**	**J**	**44000**	**D**		**19000**	**D**	**J**	94000		
Benzo(k)fluoranthene	UG/KG	1,100	**10000**	**DJ**		**1500**		**J**	**18000**	**DJ**		**20000**	**D**		**7200**		**J**	27000		
Benzo(a)pyrene	UG/KG	61	**20000**	**D**		**2800**		**J**	**36000**	**DJ**		**29000**	**D**		**10000**		**J**	57000		
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	**13000**	**DJ**		1600		J	**18000**	**DJ**		**15000**	**DJ**		**7400**		**J**	36000		
Dibenzo(a,h)anthracene	UG/KG	14	**11000**		**J**	**620**		**J**	**12000**		**J**	**12000**			**2400**		**J**	15000	J	
Benzo(g,h,i)perylene	UG/KG	50,000	13000	DJ		1800		J	18000	DJ		15000	DJ		7000		J	36000		
Total SVOC	UG/KG	50,000	**168550**			24754			**459140**			**369240**			**126250**			791000		

*See Document titled "Data Qualifiers" for information reg:
qualifiers and data interpretation

Table 4.2.1.1.3 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-S-Y1-0-6** **Depth 0-0.5 ft** C1464-04A 11-15-04			**S-S-Y1-12-18** **Depth 1.0-1.5 ft** C1464-05A 11-15-04			**S-S-Y2-0-6** **Depth 0-0.5 ft** C1464-06A 11-15-04			**S-S-Y2-12-18** **Depth 1.0-1.5 ft** C1464-07A 11-15-04			**S-S-Y3-0-6** **Depth 0-0.5 ft** C1464-08A 11-12-04			**S-S-Y10-0-6** **Depth 0-0.5 ft** **DUP S-S-Y3-0-6** C1465-01A 11-12-04		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13,000	410			380	U		240	J		72	J		56	J		380	U	
Acenaphthene	UG/KG	50,000	780			380	U		74	J		97	J		55	J		380	U	
Fluorene	UG/KG	50,000	820			380	U		65	J		78	J		50	J		380	U	
Phenanthrene	UG/KG	50,000	9300	D		390			980			1300			770			100	J	
Anthracene	UG/KG	50,000	2000			67	J		200	J		280	J		140	J		380	U	
Fluoranthene	UG/KG	50,000	12000	DE	J	580			1300			2000			1200			160	J	
Pyrene	UG/KG	50,000	7500	D		460			980			1400			880			180	J	
Benzo(a)anthracene	UG/KG	224	**5000**	D		**320**	J		**610**			**980**			**760**			100	J	
Chrysene	UG/KG	400	**5200**	D		380	J		**810**			**1200**			**910**			120	J	
Benzo(b)fluoranthene	UG/KG	1,100	**7400**	D		480			990			**1600**			**1400**			140	J	
Benzo(k)fluoranthene	UG/KG	1,100	**2900**			200	J		360	J		560			640			58	J	
Benzo(a)pyrene	UG/KG	61	**4600**	D		**300**	J		**650**			**990**			**800**			**93**	J	
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	2600	D		200	J		510			620			650			62	J	
Dibenzo(a,h)anthracene	UG/KG	14	**1300**		J	**85**	J		**180**	J		**220**	J		**230**	J		380	U	
Benzo(g,h,i)perylene	UG/KG	50,000	3800	D		270	J		400			460			520			71	J	
Total SVOC	UG/KG	50,000	**65610**			**4872**			**8349**			**11857**			**9061**			**2984**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.1.1.3 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-S-Y11-0-6 Depth 0-0.5 ft COL S-S-Y3-0-6** C1465-02A 11-19-04			**S-S-Y3-12-18 Depth 1.0-1.5 ft** C1464-09A 11-12-04			**S-S-Y4-0-6 Depth 0-0.5 ft** C1464-10A 11-12-04			**S-S-Y4-0-6RA Depth 0-0.5 ft** C1464-10ARA 11-12-04			**S-S-Y4-6-12 Depth 0.5-1.0 ft** C1464-11A 11-12-04			**S-S-Y4-6-12RA Depth 0.5-1.0 ft** C1464-11ARA 11-12-04		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13,000	52	J		240	J		340	U		340	U		63	J		63	J	
Acenaphthene	UG/KG	50,000	79	J		160	J		350	U		350	U		48	J		47	J	
Fluorene	UG/KG	50,000	69	J		200	J		350	U		350	U		44	J		42	J	
Phenanthrene	UG/KG	50,000	1300			2700			220	J		200	J		620			610		
Anthracene	UG/KG	50,000	210	J		540			45	J		44	J		120	J		110	J	
Fluoranthene	UG/KG	50,000	2300			2900			280	J		240	J		710			630		
Pyrene	UG/KG	50,000	2800			2000	D		870		J	900		J	1900		J	2300		J
Benzo(a)anthracene	UG/KG	224	**1500**			**1500**		J	**240**	J	J	**300**	J	J	**730**		J	**800**		J
Chrysene	UG/KG	400	**1800**			**1700**		J	300	J	J	340	J	J	**800**		J	**820**		J
Benzo(b)fluoranthene	UG/KG	1,100	**2400**			**1700**		J	540		J	530		J	**1500**		J	**1400**		J
Benzo(k)fluoranthene	UG/KG	1,100	790			810		J	170	J	J	150	J	J	460		J	360		J
Benzo(a)pyrene	UG/KG	61	**1500**			**1300**		J	**280**	J	J	**290**	J	J	**630**		J	**760**		J
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	820			870		J	170	J	J	190	J	J	410		J	410		J
Dibenzo(a,h)anthracene	UG/KG	14	**300**	J		**340**	J	J	350	U	J	350	U	J	350	U	J	**230**	J	J
Benzo(g,h,i)perylene	UG/KG	50,000	740			620		J	180	J	J	250	J	J	340	J	J	400		J
Total SVOC	UG/KG	50,000	**16660**			**17580**			**4685**			**4824**			**8725**			**8982**		

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Table 4.2.1.1.3 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-S-Y5-0-6 Depth 0-0.5 ft C1464-12A 11-12-04			S-S-Y5-12-18 Depth 1.0-1.5 ft C1464-13A 11-12-04			S-S-Y6-0-6 Depth 0-0.5 ft C1464-14A 11-15-04			S-S-Y6-6-12 Depth 0.5-1.0 ft C1464-15A 11-15-04			S-S-Y7-0-6 Depth 0-0.5 ft C1464-16A 11-17-04			S-S-Y7-12-18 Depth 1.0-1.5 ft C1464-17A 11-17-04		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13,000	79	J		360	U		98	J		56	J		370	U		390	U	
Acenaphthene	UG/KG	50,000	100	J		360	U		96	J		94	J		56	J		400	U	
Fluorene	UG/KG	50,000	88	J		360	U		80	J		390	U		59	J		400	U	
Phenanthrene	UG/KG	50,000	1500			290	J		1100			630			710			420		
Anthracene	UG/KG	50,000	510	J		53	J		390	J		200	J		190	J		70	J	
Fluoranthene	UG/KG	50,000	4200			630			2700			1500			1200			450		
Pyrene	UG/KG	50,000	2900			430			2100			1700			1200			490		
Benzo(a)anthracene	UG/KG	224	**2100**			**370**			**1700**			**1200**			**600**			**260**	J	
Chrysene	UG/KG	400	**2300**			**580**			**1700**			**1300**			**680**			340	J	
Benzo(b)fluoranthene	UG/KG	1,100	**3500**			730			**3100**			**2800**			900			510		
Benzo(k)fluoranthene	UG/KG	1,100	**1300**			230	J		**1500**			890			360	J		200	J	
Benzo(a)pyrene	UG/KG	61	**2400**			**320**	J		**2200**			**1700**			**610**			**300**	J	
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	1200			260	J		1400			1700		J	470		J	290	J	J
Dibenzo(a,h)anthracene	UG/KG	14	**430**	J		**100**	J		**430**	J		**570**		J	**170**	J	J	**110**	J	J
Benzo(g,h,i)perylene	UG/KG	50,000	920			260	J		910			1400		J	390		J	110	J	J
Total SVOC	UG/KG	50,000	**23527**			**5333**			**19504**			**16130**			**7965**			**4740**		

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Table 4.2.1.1.3 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-S-Y8-0-6 Depth 0-0.5 ft C1464-18A 11-17-04	Lab	Val	S-S-Y9-0-6 Depth 0-0.5 ft DUP S-S-Y8-0-6 C1464-20A 11-17-04	Lab	Val	S-S-Y8-12-18 Depth 1.0-1.5f t C1464-19A 11-17-04	Lab	Val	S-S-Y8-12-18 Depth 1.0-1.5 ft C1464-19A 11-17-04	Lab	Val	S-U-Y1 0 Depth 0-0.5 ft D0977-06A 08-18-05	Lab	Val	S-U-Y1 0DL Depth 0-0.5 ft D0977-06ADL 08-18-05	Lab	Val
Naphthalene	UG/KG	13,000	390	U		380	U		390	U		390	U		120	J	J	1500	U	
Acenaphthene	UG/KG	50,000	390	U		380	U		400	U		400	U		150	J		1500	U	
Fluorene	UG/KG	50,000	390	U		380	U		400	U		400	U		110	J		1500	U	
Phenanthrene	UG/KG	50,000	220	J		1100			270	J		270	J		1500			1400	DJ	
Anthracene	UG/KG	50,000	54	J		1100			47	J		47	J		1200			460	DJ	
Fluoranthene	UG/KG	50,000	430			1900			420			420			4500	E	J	4200	D	
Pyrene	UG/KG	50,000	340	J		1700			340	J		340	J		3200	E	J	4700	D	
Benzo(a)anthracene	UG/KG	224	**240**	J		**390**			**260**	J		**260**	J		**3500**	E	J	**3500**	D	
Chrysene	UG/KG	400	290	J		**860**			330	J		330	J		**3900**	E	J	**3800**	D	
Benzo(b)fluoranthene	UG/KG	1,100	390	J		960			510			510			**5500**	E	J	**5700**	D	J
Benzo(k)fluoranthene	UG/KG	1,100	170	J		360	J		220	J		220	J		**2200**			**2700**	D	J
Benzo(a)pyrene	UG/KG	61	**290**	J		**570**			**360**	J		**360**	J		**4400**	E	J	**4200**	D	J
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	190	J		450			260	J		260	J		**3800**	E	J	1700	D	J
Dibenzo(a,h)anthracene	UG/KG	14	**63**	J		**140**	J		**82**	J		**82**	J		**1300**			**510**	DJ	J
Benzo(g,h,i)perylene	UG/KG	50,000	170	J		500			320	J		320	J		4500	E	J	1800	D	J
Total SVOC	UG/KG	50,000	**4017**			**11170**			**4609**			**4609**			**39880**			**39170**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.1.1.3 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-U-Y1 2** **Depth 2.0 ft** D0977-07A 08-18-05	Lab	Val	**S-U-Y2 1** **Depth 1.0 ft** D0977-02A 08-18-05	Lab	Val	**S-U-Y2 2** **Depth 2.0 ft** D0977-03A 08-18-05	Lab	Val	**S-U-Y3 0** **Depth 0-0.5 ft** D0977-08A 08-18-05	Lab	Val	**S-U-Y3 2** **Depth 2.0 ft** D0977-09A 08-18-05	Lab	Val	**S-U-Y3 2DL** **Depth 2.0 ft** D0977-09ADL 08-18-05	Lab	Val
Naphthalene	UG/KG	13,000	370	U		360	U		360	U		41	J		170	J		190	DJ	
Acenaphthene	UG/KG	50,000	370	U		360	U		40	J		52	J		320	J		340	DJ	
Fluorene	UG/KG	50,000	370	U		360	U		360	U		49	J		280	J		310	DJ	
Phenanthrene	UG/KG	50,000	370			290	J		250	J		1000			5200	E		4200	D	
Anthracene	UG/KG	50,000	76	J		55	J		49	J		350	J		980			990	DJ	
Fluoranthene	UG/KG	50,000	670			680			650			2800			7400	E		5300	D	
Pyrene	UG/KG	50,000	700			640			630			2100			2800			5000	D	
Benzo(a)anthracene	UG/KG	224	**370**			**450**			**460**			**2000**			**2200**			**2400**	D	
Chrysene	UG/KG	400	**420**			530			**620**			**770**			**2200**			**2400**	D	
Benzo(b)fluoranthene	UG/KG	1,100	630			910			1100			1200			**2400**			**2700**	D	
Benzo(k)fluoranthene	UG/KG	1,100	170	J		280	J		410			490			820			**1400**	DJ	
Benzo(a)pyrene	UG/KG	61	**370**			**520**			**610**			**740**			**1700**			**2100**	D	
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	170	J		260	J		320	J		890			860			980	DJ	
Dibenzo(a,h)anthracene	UG/KG	14	**46**	J		**77**	J		**96**	J		**250**	J		**320**	J		**370**	DJ	
Benzo(g,h,i)perylene	UG/KG	50,000	170	J		250	J		330	J		900			950			1100	DJ	
Total SVOC	UG/KG	50,000	**5272**			**6022**			**6285**			**13632**			**28600**			**29780**		

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Table 4.2.1.1.3 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-U-Y5 0 Depth 0-0.5 ft D0977-10A 08-18-05	Lab	Val	S-U-Y5 0DL Depth 0-0.5 ft D0977-10ADL 08-18-05	Lab	Val	S-U-Y5 2 Depth 2.0 ft D0977-11A 08-18-05	Lab	Val	S-U-Y5 2DL Depth 2.0 ft D0977-11ADL 08-18-05	Lab	Val	S-U-Y6 0RE Depth 0-0.5 ft D0978-03ARE 08-25-05	Lab	Val	S-U-Y7 0 Depth 0-0.5 ft D0978-10A 08-25-05	Lab	Val
Naphthalene	UG/KG	13,000	67	J		72	DJ		360	U		720	U		85	J		230	J	
Acenaphthene	UG/KG	50,000	140	J		150	DJ		360	U		720	U		61	J		590		
Fluorene	UG/KG	50,000	140	J		150	DJ		360	U		720	U		110	J		530		
Phenanthrene	UG/KG	50,000	2600			2600	D		1000			1100	D		970			5400	E	
Anthracene	UG/KG	50,000	560			630	DJ		110	J		96	DJ		260	J		930		
Fluoranthene	UG/KG	50,000	4700	E	J	4400	D		2600			3000	D		1300			3100	E	
Pyrene	UG/KG	50,000	2700			3600	D		2100			2900	D		2200			7800	E	
Benzo(a)anthracene	UG/KG	224	**1900**			**2100**	D		**1800**			**1900**	D		**1100**			**2900**		
Chrysene	UG/KG	400	**2000**			**2000**	D		**3000**	E	J	**3100**	D		**1300**			**3600**	E	
Benzo(b)fluoranthene	UG/KG	1,100	**2400**			**2300**	D		**3300**	E	J	**3400**	D		**1700**			**3100**	E	
Benzo(k)fluoranthene	UG/KG	1,100	710			**1200**	D		760			**1200**	D		580			**1400**		
Benzo(a)pyrene	UG/KG	61	**1700**			**1800**	D		**910**			**900**	D		**330**	J		**1000**		
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	840			790	D		600			820	D		300	J		620		
Dibenzo(a,h)anthracene	UG/KG	14	**290**	J		**270**	DJ		**280**	J		**400**	DJ		**200**	J		**310**	J	
Benzo(g,h,i)perylene	UG/KG	50,000	940			840	D		530			840	D		370	U		370	U	
Total SVOC	UG/KG	50,000	**21687**			**22902**			**18070**			**21816**			**10866**			**31880**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.1.1.3 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-U-Y7 0DL Depth 0-0.5 ft D0978-10ADL 08-25-05	Lab	Val	S-U-Y9 0 Depth 0-0.5 ft D0977-12A 08-18-05	Lab	Val	S-U-Y9 0DL Depth 0-0.5 ft D0977-12ADL 08-18-05	Lab	Val	S-U-Y9 1 Depth 1.0 ft D0977-13A 08-18-05	Lab	Val	S-U-Y9 2 Depth 2.0 ft D0977-14A 08-18-05	Lab	Val	S-U-Y9 2DL Depth 2.0 ft D0977-14ADL 08-18-05	Lab	Val
Naphthalene	UG/KG	13,000	230	DJ		2200			2700	DJ		470	U		3900			3800	DJ	
Acenaphthene	UG/KG	50,000	580	DJ		1700			2100	DJ		470	U		4300			4000	DJ	
Fluorene	UG/KG	50,000	600	DJ		1800			2300	DJ		470	U		4900			4600	DJ	
Phenanthrene	UG/KG	50,000	6200	D		19000	E	J	21000	D		160	J		**70000**	E	J	**55000**	D	
Anthracene	UG/KG	50,000	1100	DJ		4900	E	J	5200	D		470	U		13000			12000	DJ	
Fluoranthene	UG/KG	50,000	4700	D		22000	E	J	22000	D		240	J		**65000**	E	J	**54000**	D	
Pyrene	UG/KG	50,000	7700	D		9600	E	J	21000	D		240	J		47000	E	J	41000	D	
Benzo(a)anthracene	UG/KG	224	**3000**	D		**6700**	E	J	**8600**	D		120	J		**23000**	E	J	**20000**	D	
Chrysene	UG/KG	400	**3700**	D		**7100**	E	J	**9200**	D		150	J		**22000**	E	J	**21000**	D	
Benzo(b)fluoranthene	UG/KG	1,100	**3300**	D		**6600**	E	J	**9500**	D		210	J		**21000**	E	J	**20000**	D	
Benzo(k)fluoranthene	UG/KG	1,100	**1500**	DJ		**1900**			**5800**	D		80	J		**11000**			**7000**	DJ	
Benzo(a)pyrene	UG/KG	61	**1200**	DJ		**5300**	E	J	**7600**	D		**140**	J		**18000**	E	J	**16000**	DJ	
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	690	DJ		**3600**	E	J	**3800**	D		75	J		**7200**			**7200**	DJ	
Dibenzo(a,h)anthracene	UG/KG	14	**340**	DJ		**1300**			**1300**	DJ		**470**	U		**2600**			**2700**	DJ	
Benzo(g,h,i)perylene	UG/KG	50,000	1900	U		4200	E	J	4100	D		84	J		7200			7500	DJ	
Total SVOC	UG/KG	50,000	**36740**			**97900**			**126200**			**3849**			**320100**			**275800**		

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Table 4.2.1.1.3 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-U-Y10 0 Depth 0-0.5 ft D0977-17A 08-18-05	Lab	Val	S-U-Y10 2 Depth 2.0 ft D0977-18A 08-18-05	Lab	Val	S-U-Y10 2DL Depth 2.0 ft D0977-18ADL 08-18-05	Lab	Val	S-U-Y11 0 Depth 0-0.5 ft D0978-05A 08-25-05	Lab	Val	S-U-Y11 0DL Depth 0-0.5 ft D0978-05ADL 08-25-05	Lab	Val	S-U-Y11 1 Depth 1.0 ft D0978-06A 08-25-05	Lab	Val
Naphthalene	UG/KG	13,000	120	J		1800	J		**19000**	U		220	J		220	DJ		150	J	
Acenaphthene	UG/KG	50,000	360	U		2600			2300	DJ		450			400	DJ		210	J	
Fluorene	UG/KG	50,000	47	J		3400			3000	DJ		560			580	DJ		240	J	
Phenanthrene	UG/KG	50,000	380			**43000**	E	J	**30000**	D		2900			3400	D		1400	0	
Anthracene	UG/KG	50,000	270	J		12000			9200	DJ		930			1200	D		300	J	
Fluoranthene	UG/KG	50,000	1000			**76000**	E	J	**54000**	D		2100			2600	D		1400	0	
Pyrene	UG/KG	50,000	1100			47000	E	J	40000	D		3800	E		3700	D		1700	0	
Benzo(a)anthracene	UG/KG	224	**560**			**25000**	E	J	**22000**	D		**1600**			**1600**	D		**710**	0	
Chrysene	UG/KG	400	**630**			**23000**	E	J	**21000**	D		**1700**			**1600**	D		**830**	0	
Benzo(b)fluoranthene	UG/KG	1,100	550			**26000**	E	J	**23000**	D		**2100**			**2000**	D		1100	0	
Benzo(k)fluoranthene	UG/KG	1,100	400			**14000**			**7800**	DJ		870			690	DJ		490	0	
Benzo(a)pyrene	UG/KG	61	**560**			**22000**	E	J	**17000**	DJ		**670**			**670**	DJ		**370**	0	
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	370			**12000**			**8400**	DJ		270	J		340	DJ		170	J	
Dibenzo(a,h)anthracene	UG/KG	14	**130**	J		**4700**			**3100**	DJ		**150**	J		**180**	DJ		**67**	J	
Benzo(g,h,i)perylene	UG/KG	50,000	580			12000			8600	DJ		380	U		760	U		360	U	
Total SVOC	UG/KG	50,000	**7057**			**324500**			**268400**			**18700**			**19940**			**9497**		

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Table 4.2.1.1.3 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-U-Y11 1RE Depth 1.0 ft D0978-06ARE 08-25-05			S-U-Y11 2 Depth 2.0 ft D0978-07A 08-25-05			S-U-Y12 0 Depth 0-0.5 ft D0977-19A 08-18-05			S-U-Y12 0DL Depth 0-0.5 ft D0977-19ADL 08-18-05			S-U-Y13 0 Depth 0-0.5 ft D0978-01A 08-18-05			S-U-Y13 0DL Depth 0-0.5 ft D0978-01ADL 08-18-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13,000	150	J		300	J		270	J		340	DJ		380			320	DJ	
Acenaphthene	UG/KG	50,000	180	J		340	J		590			720	DJ		190	J		160	DJ	
Fluorene	UG/KG	50,000	250	J		400			650			760	DJ		220	J		200	DJ	
Phenanthrene	UG/KG	50,000	1500			2600			7300	E	J	8000	D		2100			1900	D	
Anthracene	UG/KG	50,000	310	J		740			1800			1900	D		630			620	DJ	
Fluoranthene	UG/KG	50,000	1500			2800			10000	E	J	11000	D		2100			2000	D	
Pyrene	UG/KG	50,000	1700			2800			5700	E	J	9500	D		5700	E		5700	D	
Benzo(a)anthracene	UG/KG	224	**620**			**1300**			**3700**	E	J	**4600**	D		**1700**			**1600**	D	
Chrysene	UG/KG	400	**750**			**1400**			**4100**	E	J	**5100**	D		**1900**			**1900**	D	
Benzo(b)fluoranthene	UG/KG	1,100	1100			**1800**			**5000**	E	J	**5500**	D		**2100**			**2400**	D	
Benzo(k)fluoranthene	UG/KG	1,100	370			660			**1500**			**3400**	D		710			770	D	
Benzo(a)pyrene	UG/KG	61	**370**			**1300**			**3900**	E	J	**4700**	D		**1500**			**1600**	D	
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	190	J		430			2500			2600	D		910			1000	D	
Dibenzo(a,h)anthracene	UG/KG	14	**77**	J		**130**	J		**960**			**940**	DJ		**260**	J		**300**	DJ	
Benzo(g,h,i)perylene	UG/KG	50,000	360	U		370			3100	E	J	3200	D		1000			1200	D	
Total SVOC	UG/KG	50,000	**9427**			**17370**			**51070**			**62260**			**21400**			**21670**		

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Table 4.2.1.1.3 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-B-2-0-0.5 Depth 0-0.5 ft D0161-17A 02-18-05			S-B-3-0-0.5 Depth 0-0.5 ft D0188-12A 02-17-05			S-B-5-0-0.5 Depth 0-0.5 ft D0161-10A 02-18-05			S-B-6-0-5 Depth 0-0.5 ft D0161-14A 02-18-05			S-B-6-1-2 Depth 1-2 ft DUP S-B-6-0-0.5 D0161-15A 02-18-05			S-W-1-0-0.5 Depth 0-0.5 ft D0161-20A 02-18-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13,000	350	J		530			330	J		370	U		81	J		67	J	
Acenaphthene	UG/KG	50,000	220	J		470			1300			370	U		79	J		65	J	
Fluorene	UG/KG	50,000	390	J		520			1300			370	U		82	J		74	J	
Phenanthrene	UG/KG	50,000	2600			2600			15000	D		6200	D		4100	D		840		J
Anthracene	UG/KG	50,000	650			590			2800	DJ		660			590			200	J	J
Fluoranthene	UG/KG	50,000	3200			2900			16000	D		10000	D		6000	D		1400		J
Pyrene	UG/KG	50,000	4300	D	J	2200		J	27000	D	J	22000	D		12000	D	J	2600		J
Benzo(a)anthracene	UG/KG	224	**1500**		**J**	**1400**		**J**	**8500**	**D**	**J**	**8800**	**D**	**J**	**5600**	**D**	**J**	**870**		**J**
Chrysene	UG/KG	400	**1600**		**J**	**790**		**J**	**7400**	**D**	**J**	**15000**	**D**	**J**	**8000**	**D**	**J**	**1000**		**J**
Benzo(b)fluoranthene	UG/KG	1,100	**2100**		**J**	**1300**		**J**	**11000**	**D**	**J**	**20000**	**D**	**J**	**11000**	**D**	**J**	**1800**		**J**
Benzo(k)fluoranthene	UG/KG	1,100	590		J	580		J	**6600**	**D**	**J**	**8900**	**D**	**J**	**3000**		**J**	530		J
Benzo(a)pyrene	UG/KG	61	**1200**		**J**	**870**		**J**	**7900**	**D**	**J**	**6300**	**D**	**J**	**3900**	**D**	**J**	**1100**		**J**
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	380	J	J	78	J	J	45	J	J	2300		J	1300		J	500		J
Dibenzo(a,h)anthracene	UG/KG	14	**120**	**J**	**J**	430	U	J	**640**		**J**	**970**		**J**	**510**		**J**	**120**	**J**	**J**
Benzo(g,h,i)perylene	UG/KG	50,000	290	J	J	51	J	J	1900		J	1500		J	860		J	410	J	J
Total SVOC	UG/KG	50,000	**19490**			**15309**			**107715**			**103740**			**57102**			**11576**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.1.1.3 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-W-1-0-0.5RA Depth 0-0.5 ft D0161-20ARA 03-04-05			S-W-1-1-2 Depth 1-2 ft DUP S-W-1-0-0.5 D0188-01A 02-18-05			S-W-2-0-0.5 Depth 0-0.5 ft D0161-18A 02-17-05			S-W-3-0-0.5 Depth 0-0.5 ft D0161-19A 02-17-05			S-W-3-0-0.5RA Depth 0-0.5 ft D0161-19ARA 03-04-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13,000	79	J		170	J	J	170	J		370	U		370	U	
Acenaphthene	UG/KG	50,000	61	J		110	J	J	200	J		53	J		57	J	
Fluorene	UG/KG	50,000	67	J		89	J	J	240	J		44	J		45	J	
Phenanthrene	UG/KG	50,000	830			1400		J	3200			750			740		
Anthracene	UG/KG	50,000	220	J		300	J	J	950	DJ		160	J		140	J	
Fluoranthene	UG/KG	50,000	1100			2700		J	4700	D		1300			1100		
Pyrene	UG/KG	50,000	3100		J	5000	D	J	8700	D	J	2300		J	2300		
Benzo(a)anthracene	UG/KG	224	**990**		**J**	**1600**		**J**	**3400**		**J**	**900**		**J**	**840**		
Chrysene	UG/KG	400	**940**		**J**	**1500**		**J**	**3800**	**D**	**J**	**1100**		**J**	**980**		
Benzo(b)fluoranthene	UG/KG	1,100	**1300**		**J**	**2300**		**J**	**6200**	**D**	**J**	**1700**		**J**	**1600**		**J**
Benzo(k)fluoranthene	UG/KG	1,100	620		J	870		J	**2200**		**J**	600		J	750		J
Benzo(a)pyrene	UG/KG	61	**860**		**J**	**1700**		**J**	**4600**	**D**	**J**	**980**		**J**	**990**		**J**
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	230	J	J	400	J	J	340	J	J	330	J	J	180	J	J
Dibenzo(a,h)anthracene	UG/KG	14	**76**	**J**	**J**	**130**	**J**	**J**	**390**	**J**	**J**	**120**	**J**	**J**	**63**	**J**	**J**
Benzo(g,h,i)perylene	UG/KG	50,000	180	J	J	290	J	J	94	J	J	240	J	J	120	J	J
Total SVOC	UG/KG	50,000	**10653**			**18559**			**39184**			**10947**			**10275**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.1.2 Alamo AOC
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	A-S-1-0-6 Depth 0-0.5 ft C1463-13A 11-15-04			A-S-4-0-6 Depth 0-0.5 ft DUP A-S-1-0-6 C1463-19A 11-15-04			A-S-1-12-18 Depth 1.0-1.5 ft C1463-14A 11-15-04			A-S-2-0-6 Depth 0-0.5 ft C1463-15A 11-17-04			A-S-2-0-6RE Depth 0-0.5 ft C1463-15ARE 11-17-04			A-S-2-12-18 Depth 1.0-1.5 ft C1463-16A 11-17-04		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13000	380	U		380	U		390	U		100	J		100	J		270	J	
Acenaphthene	UG/KG	50000	380	U		380	U		390	U		370	U		370	U		1900	U	
Fluorene	UG/KG	50000	160	J		78	J		390	U		210	J		170	J		490	J	
Phenanthrene	UG/KG	50000	1400			640			130	J		860			840			4800		
Anthracene	UG/KG	50000	250	J		120	J		390	U		200	J		200	J		1200	J	
Fluoranthene	UG/KG	50000	1700			730			200	J		710			700			11000		
Pyrene	UG/KG	50000	1900			910			280	J		1400		J	1500		J	11000		
Benzo(a)anthracene	UG/KG	224	**1100**			**530**			210	J		**600**		**J**	**620**		**J**	**6000**		
Chrysene	UG/KG	400	**1100**			**510**			190	J		**480**		**J**	**440**		**J**	**5000**		
Benzo(b)fluoranthene	UG/KG	1100	1100			530			200	J		830		J	690		J	**6300**		**J**
Benzo(k)fluoranthene	UG/KG	1100	410			210	J		49	J		270	J	J	390		J	**2000**		**J**
Benzo(a)pyrene	UG/KG	61	**750**			**360**	**J**		**110**	**J**		**530**		**J**	**420**		**J**	**4200**		**J**
Indeno(1,2,3-cd)pyrene	UG/KG	3200	360	J		180	J		70	J		220	J	J	190	J	J	2100		J
Dibenzo(a,h)anthracene	UG/KG	14	**150**	**J**		380	U		390	U		**110**	**J**	**J**	**120**	**J**	**J**	**1000**	**J**	**J**
Benzo(g,h,i)perylene	UG/KG	50000	490			170	J		77	J		270	J	J	240	J	J	1900	J	J
Total SVOC	UG/KG	50000	10870			4968			1516			6790			6620			**57260**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.1.2 Alamo AOC
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	A-S-2-12-18RE Depth 1.0-1.5 ft C1463-16ARE 11-17-04	Lab	Val	A-S-3-0-6 Depth 0-0.5 ft C1463-17A 11-17-04	Lab	Val	A-S-3-0-6RE Depth 0-0.5 ft C1463-17ARE 11-17-04	Lab	Val	A-S-5-0-6 Depth 0-0.5 ft COL A-S-3-0-6 C1463-20A 11-17-04	Lab	Val	A-S-3-12-18 Depth 1.0-1.5 ft C1463-18A 11-17-04	Lab	Val	A-B-1-0-0.5 Depth 0-0.5 ft D0188-05A 02-15-05	Lab	Val
Naphthalene	UG/KG	13000	270	J		1900	U		1900	U		380	U		75	J		69	J	
Acenaphthene	UG/KG	50000	1900	U		1900	U		1900	U		380	U		390	U		390	U	
Fluorene	UG/KG	50000	600	J		1900	U		1900	U		380	U		390	U		140	J	
Phenanthrene	UG/KG	50000	4600			440	J	J	540	J		120	J		140	J		2100		
Anthracene	UG/KG	50000	1100	J		380	J	J	420	J		380	U		130	J		410		
Fluoranthene	UG/KG	50000	7800			1100	J	J	1300	J		150	J		610			3600	D	
Pyrene	UG/KG	50000	12000			4600		J	5200			370	J		2900			6300	D	
Benzo(a)anthracene	UG/KG	224	**5900**			**2400**		**J**	**2500**			220	J		**1100**			**2000**		
Chrysene	UG/KG	400	**4200**		**J**	**3300**		**J**	**2900**		**J**	330	J		**1400**			**1500**		
Benzo(b)fluoranthene	UG/KG	1100	**7000**		**J**	**4600**		**J**	**5600**		**J**	290	J		**1700**			**2900**		
Benzo(k)fluoranthene	UG/KG	1100	**2400**		**J**	1000	J	J	**1500**	**J**	**J**	130	J		510			900		
Benzo(a)pyrene	UG/KG	61	**4300**		**J**	**5800**		**J**	**5700**		**J**	**290**	**J**		**2100**			**1900**		
Indeno(1,2,3-cd)pyrene	UG/KG	3200	1400	J	J	3200		J	2100		J	130	J		890			750		
Dibenzo(a,h)anthracene	UG/KG	14	**720**	**J**	**J**	**1400**	**J**	**J**	**910**	**J**	**J**	380	U		**370**	**J**		**230**	**J**	
Benzo(g,h,i)perylene	UG/KG	50000	1400	J	J	4600		J	3000		J	170	J		1300			570		
Total SVOC	UG/KG	50000	**53690**			32820			31670			2200			13225			23369		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.1.2 Alamo AOC
Semi-Volatile Organic Compounds (SVOCs)
Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	A-B-1-0-0.5RE Depth 0-0.5 ft D0188-05ARE 02-15-05			A-B-2-0-0.5 Depth 0-0.5 ft D0188-06A 02-15-05			A-B-2-0-0.5RE Depth 0-0.5 ft D0188-06ARE 02-15-05			A-W-1-0-0.5 Depth 0-0.5 ft D0188-08A 02-15-05			A-W-1-0-0.5RE Depth 0-0.5 ft D0188-08ARE 02-15-05			A-W-1-0-0.5RA Depth 0-0.5 ft D0188-08ARA 02-15-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13000	42	J		380	U		380	U		420	U		420	U		420	U	
Acenaphthene	UG/KG	50000	390	U		46	J		35	J		420	U		420	U		420	U	
Fluorene	UG/KG	50000	90	J		45	J		35	J		420	U		420	U		420	U	
Phenanthrene	UG/KG	50000	1100			1200			970			420	U		420	U		420	U	
Anthracene	UG/KG	50000	230	J		160	J		170	J		420	U		420	U		420	U	
Fluoranthene	UG/KG	50000	3000			2100	D		7200	E		420	U		420	U		420	U	
Pyrene	UG/KG	50000	1700			4300	D		2700			420	U		420	U		420	U	
Benzo(a)anthracene	UG/KG	224	**1200**			**1300**			**1400**			**420**	U		**420**	U		**420**	U	
Chrysene	UG/KG	400	**840**			**1300**			**1500**			**420**	U		**420**	U		**420**	U	
Benzo(b)fluoranthene	UG/KG	1100	**1400**			**2800**			**3300**	**E**		420	U		420	U		420	U	
Benzo(k)fluoranthene	UG/KG	1100	660			960			1100			420	U		420	U		420	U	
Benzo(a)pyrene	UG/KG	61	**1000**			**1600**			**1800**			**420**	U		**420**	U		**420**	U	
Indeno(1,2,3-cd)pyrene	UG/KG	3200	300	J		520			590			420	U		420	U		420	U	
Dibenzo(a,h)anthracene	UG/KG	14	**120**	**J**		**200**	**J**		**160**	**J**		**420**	U		**420**	U		**420**	U	
Benzo(g,h,i)perylene	UG/KG	50000	130	J		330	J		430			420	U		420	U		420	U	
Total SVOC	UG/KG	50000	11812			16861			21390			6300			6300			6300		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.2.1.1
Rensselaer Iron Works AOC Rail Siding
Polychlorinated Biphenyls (PCBs) Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-S-R1-0-6 Depth 0-0.5 ft C1464-01A 11-15-04			S-S-R1-12-18 Depth 1.0-1.5 C1464-02A 11-15-04			S-S-R2-0-6 Depth 0-0.5 ft C1464-03A 11-15-04		
				Lab	Val		Lab	Val		Lab	Val
Aroclor-1016	UG/KG		41	U	J	37	U	J	37	U	J
Aroclor-1221	UG/KG		84	U	J	74	U	J	75	U	J
Aroclor-1232	UG/KG		41	U	J	37	U	J	37	U	J
Aroclor-1242	UG/KG		41	U	J	37	U	J	37	U	J
Aroclor-1248	UG/KG		41	U	J	37	U	J	37	U	J
Aroclor-1254	UG/KG		41	U	J	37	U	J	37	U	J
Aroclor-1260	UG/KG		41	U	J	37	U	J	37	U	J
Total PCBs	UG/KG	1,000	330			296			297		

*See Document titled "Data Qualifiers" for information regarding

Table 4.2.2.1.2 Rensellaer Iron Works Yard
Polychlorinated Biphenyls (PCBs)
Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-S-Y1-0-6 Depth 0-0.5 ft** C1464-04A 11-15-04			**S-S-Y1-12-18 Depth 1.0-1.5 ft** C1464-05A 11-15-04			**S-S-Y2-0-6 Depth 0-0.5 ft** C1464-06A 11-15-04			**S-S-Y2-12-18 Depth 1.0-1.5 ft** C1464-07A 11-15-04		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val
Aroclor-1016	UG/KG		37	U	J	38	U	J	38	U	J	38	U	J
Aroclor-1221	UG/KG		76	U	J	77	U	J	77	U	J	77	U	J
Aroclor-1232	UG/KG		37	U	J	38	U	J	38	U	J	38	U	J
Aroclor-1242	UG/KG		37	U	J	38	U	J	38	U	J	38	U	J
Aroclor-1248	UG/KG		37	U	J	38	U	J	38	U	J	38	U	J
Aroclor-1254	UG/KG		37	U	J	38	U	J	38	U	J	38	U	J
Aroclor-1260	UG/KG		37	U	J	38	U	J	38	U	J	38	U	J
Total PCBs	UG/KG	1,000[a]/10,000[b]	298			305			305			305		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

[a] Applies to surface soil.

[b] Applies to soil below surface.

Table 4.2.2.1.2 Rensellaer Iron Works Yard
Polychlorinated Biphenyls (PCBs)
Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-S-Y3-0-6** **Depth 0-0.5 ft** C1464-08A 11-12-04			**S-S-Y10-0-6** **Depth 0-0.5 ft** **DUP S-S-Y3-0-6** C1465-01A 11-12-04			**S-S-Y11-0-6** **Depth 0-0.5 ft** **COL S-S-Y3-0-6** C1465-02A 11-19-04			**S-S-Y3-12-18** **Depth 1.0-1.5 ft** C1464-09A 11-12-04			**S-S-Y4-0-6** **Depth 0-0.5 ft** C1464-10A 11-12-04			**S-S-Y4-6-12** **Depth 0-0.5-1.0 ft** C1464-11A 11-12-04		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Aroclor-1016	UG/KG		38	U	J	38	U	J	38	U	J	37	U	J	34	U	J	35	U	J
Aroclor-1221	UG/KG		77	U	J	76	U	J	77	U	J	76	U	J	70	U	J	71	U	J
Aroclor-1232	UG/KG		38	U	J	38	U	J	38	U	J	37	U	J	34	U	J	35	U	J
Aroclor-1242	UG/KG		38	U	J	38	U	J	38	U	J	37	U	J	550	P	J	400		J
Aroclor-1248	UG/KG		38	U	J	38	U	J	38	U	J	37	U	J	34	U	J	35	U	J
Aroclor-1254	UG/KG		38	U	J	12	JP	J	85		J	37	U	J	320	P	JN	420	P	R
Aroclor-1260	UG/KG		38	U	J	38	U	J	38	U	J	37	U	J	34	U	J	35	U	J
Total PCBs	UG/KG	1,000[a]/10,000[b]	305			278			352			298			**1076**			**1031**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

[a] Applies to surface soil.

[b] Applies to soil below surface.

Table 4.2.2.1.2 Rensellaer Iron Works Yard
Polychlorinated Biphenyls (PCBs)
Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-S-Y5-0-6 Depth 0-0.5 ft** C1464-12A 11-12-04	Lab	Val	**S-S-Y5-12-18 Depth 1.0-1.5 ft** C1464-13A 11-12-04	Lab	Val	**S-S-Y6-0-6 Depth 0-0.5 ft** C1464-14A 11-15-04	Lab	Val	**S-S-Y6-6-12 Depth 1.0-1.5 ft** C1464-15A 11-15-04	Lab	Val	**S-S-Y7-0-6 Depth 0-0.5 ft** C1464-16A 11-17-04	Lab	Val	**S-S-Y7-12-18 Depth 1.0-1.5 ft** C1464-17A 11-17-04	Lab	Val
Aroclor-1016	UG/KG		39	U	J	36	U	J	39	U	J	39	U	J	37	U	J	39	U	J
Aroclor-1221	UG/KG		79	U	J	74	U	J	80	U	J	79	U	J	74	U	J	79	U	J
Aroclor-1232	UG/KG		39	U	J	36	U	J	39	U	J	39	U	J	37	U	J	39	U	J
Aroclor-1242	UG/KG		39	U	J	36	U	J	39	U	J	39	U	J	37	U	J	39	U	J
Aroclor-1248	UG/KG		39	U	J	36	U	J	39	U	J	39	U	J	37	U	J	39	U	J
Aroclor-1254	UG/KG		300	P	R	36	U	J	5100	D	J	870	P	J	120	P	R	150	P	R
Aroclor-1260	UG/KG		39	U	J	36	U	J	39	U	J	39	U	J	37	U	J	39	U	J
Total PCBs	UG/KG	1,000[a]/10,000[b]	574			290			**5375**			**1144**			379			424		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

[a] Applies to surface soil.

[b] Applies to soil below surface.

Table 4.2.2.1.2 Rensellaer Iron Works Yard
Polychlorinated Biphenyls (PCBs)
Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-S-Y8-0-6** **Depth 0-0.5 ft** C1464-18A 11-17-04	Lab	Val	**S-S-Y9-0-6** **Depth 0-0.5 ft** **DUP S-S-Y8-0-6** C1464-20A 11-17-04	Lab	Val	**S-S-Y8-12-18** **Depth 1.0-1.5 ft** C1464-19A 11-17-04	Lab	Val	**S-U-Y1 0** **Depth 0-0.5 ft** D0977-06A 08-18-05	Lab	Val	**S-U-Y1 2** **Depth 2.0 ft** D0977-07A 08-18-05	Lab	Val	**S-U-Y2 0** **Depth 0-0.5 ft** D0977-01A 08-18-05	Lab	Val
Aroclor-1016	UG/KG		39	U	J	38	U	J	40	U	J	38	U		36	U		38	U	
Aroclor-1221	UG/KG		79	U	J	77	U	J	81	U	J	77	U		74	U		76	U	
Aroclor-1232	UG/KG		39	U	J	38	U	J	40	U	J	38	U		36	U		38	U	
Aroclor-1242	UG/KG		39	U	J	38	U	J	40	U	J	38	U		36	U		38	U	
Aroclor-1248	UG/KG		39	U	J	38	U	J	40	U	J	38	U		36	U		38	U	
Aroclor-1254	UG/KG		39	U	J	38	U	J	40	U	J	38	U		36	U		38	U	
Aroclor-1260	UG/KG		39	U	J	38	U	J	40	U	J	38	P	R	34	JP	R	38	P	R
Total PCBs	UG/KG	1,000[a]/10,000[b]	313			305			321			305			288			304		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

[a] Applies to surface soil.

[b] Applies to soil below surface.

Table 4.2.2.1.2 Rensellaer Iron Works Yard
Polychlorinated Biphenyls (PCBs)
Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-U-Y2 1 Depth 1 ft** D0977-02A 08-18-05	Lab	Val	**S-U-Y2 2 Depth 2.0 ft** D0977-03A 08-18-05	Lab	Val	**S-U-Y3 0 Depth 0-0.5 ft** D0977-08A 08-18-05	Lab	Val	**S-U-Y3 2 Depth 2.0 ft** D0977-09A 08-18-05	Lab	Val	**S-U-Y5 0 Depth 0-0.5 ft** D0977-10A 08-18-05	Lab	Val	**S-U-Y5 2 Depth 2.0 ft** D0977-11A 08-18-05	Lab	Val
Aroclor-1016	UG/KG		36	U		36	U		36	U		37	U		35	U		36	U	
Aroclor-1221	UG/KG		73	U		73	U		74	U		74	U		71	U		73	U	
Aroclor-1232	UG/KG		36	U		36	U		36	U		37	U		35	U		36	U	
Aroclor-1242	UG/KG		36	U		36	U		36	U		37	U		35	P	J	36	U	
Aroclor-1248	UG/KG		36	U		36	U		36	U		37	U		35	U		36	U	
Aroclor-1254	UG/KG		36	U		36	U		36	U		37	U		35	U		36	U	
Aroclor-1260	UG/KG		31	JP	R	36	P	R	25	JP	R	36	JP	R	22	JP	R	36	U	
Total PCBs	UG/KG	1,000[a]/10,000[b]	284			289			279			295			268			289		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

[a] Applies to surface soil.

[b] Applies to soil below surface.

Table 4.2.2.1.2 Rensellaer Iron Works Yard
Polychlorinated Biphenyls (PCBs)
Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-U-Y6 0 Depth 0-0.5 ft** D0978-03A 08-25-05			**S-U-Y7 0 Depth 0-0.5 ft** D0978-10A 08-25-05			**S-U-Y7 0DL Depth 0-0.5 ft** D0978-10ADL 08-25-05			**S-U-Y9 0 Depth 0-0.5 ft** D0977-12A 08-18-05			**S-U-Y9 1 Depth 1.0 ft** D0977-13A 08-18-05			**S-U-Y9 2 Depth 2.0 ft** D0977-14A 08-18-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Aroclor-1016	UG/KG		36	U		37	U		180	U		37	U		46	U		38	U	
Aroclor-1221	UG/KG		74	U		74	U		370	U		75	U		94	U		78	U	
Aroclor-1232	UG/KG		36	U		37	U		180	U		37	U		46	U		38	U	
Aroclor-1242	UG/KG		36			37	E		180	D		37	P	JN	46 (80)			38	P	J
Aroclor-1248	UG/KG		36	U		37	U		180	U		37	U		46	U		38	U	
Aroclor-1254	UG/KG		36	U		37	P		180	DP		37	U		46	U		38	U	
Aroclor-1260	UG/KG		36	P		37	U		180	U		37	P	R	46	U		38	U	
Total PCBs	UG/KG	1,000[a]/10,000[b]	290			296			**1450**			297			404			306		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

[a] Applies to surface soil.

[b] Applies to soil below surface.

Table 4.2.2.1.2 Rensellaer Iron Works Yard
Polychlorinated Biphenyls (PCBs)
Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-U-Y10 0 Depth 0-0.5 ft** D0977-17A 08-18-05			**S-U-Y10 2 Depth 2.0 ft** D0977-18A 08-18-05			**S-U-Y11 0 Depth 0-0.5 ft** D0978-05A 08-25-05			**S-U-Y11 1 Depth 1.0 ft** D0978-06A 08-25-05			**S-U-Y11 2 Depth 2.0 ft** D0978-07A 08-25-05			**S-U-Y12 0 Depth 0-0.5 ft** D0977-19A 08-18-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Aroclor-1016	UG/KG		36	U		39	U		38	U		35	U		37	U		38	U	
Aroclor-1221	UG/KG		73	U		79	U		77	U		72	U		74	U		76	U	
Aroclor-1232	UG/KG		36	U		39	U		38	U		35	U		37	U		38	U	
Aroclor-1242	UG/KG		36 (1400)			39	P	J	38	P		35			37	U		38	P	J
Aroclor-1248	UG/KG		36	U		39	U		38	U		35	U		37	U		38	U	
Aroclor-1254	UG/KG		36	U		39	U		38	P		35	P		37	U		38	U	
Aroclor-1260	UG/KG		36	P	JN	39	P	J	38	U		35	U		37	U		38	P	R
Total PCBs	UG/KG	1,000[a]/10,000[b]	1653			313			305			282			296			304		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

[a] Applies to surface soil.

[b] Applies to soil below surface.

Table 4.2.2.1.2 Rensellaer Iron Works Yard
Polychlorinated Biphenyls (PCBs)
Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-U-Y13 0** **Depth 0-0.5 ft** D0978-01A 08-18-05	Lab	Val	**S-U-Y13 0DL** **Depth 0-0.5 ft** D0978-01ADL 08-18-05	Lab	Val	**S-B-2-0-0.5** **Depth 0-0.5 ft** D0161-17A 02-18-05	Lab	Val	**S-B-3-0-0.5** **Depth 0-0.5 ft** D0188-12A 02-17-05	Lab	Val	**S-B-5-0-0.5** **Depth 0-0.5 ft** D0161-10A 02-18-05	Lab	Val	**S-B-6-0-5** **Depth 0-0.5 ft** D0161-14A 02-18-05	Lab	Val
Aroclor-1016	UG/KG		72	U		360	U		39	U		43	U		39	U		37	U	
Aroclor-1221	UG/KG		150	U		730	U		80	U		86	U		79	U		74	U	
Aroclor-1232	UG/KG		72	U		360	U		39	U		43	U		39	U		37	U	
Aroclor-1242	UG/KG		72	P		360	DP		8600	DP		2100	P	J	510	P	J	37	U	
Aroclor-1248	UG/KG		72	U		360	U		39	U		43	U		39	U		37	U	
Aroclor-1254	UG/KG		72	U		360	U		1000	P	J	4100	DP	J	330	P	J	37	U	
Aroclor-1260	UG/KG		72	P		360	DP		39	U		43	U		39	U		37	U	
Total PCBs	UG/KG	1,000[a]/10,000[b]	582			**2890**			**9836**			**6458**			**1075**			296		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

[a] Applies to surface soil.

[b] Applies to soil below surface.

Table 4.2.2.1.2 Rensellaer Iron Works Yard
Polychlorinated Biphenyls (PCBs)
Soil Surface to 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-B-6-1-2 Depth 1.0-2.0 ft DUP S-B-6-0-0.5** D0161-15A 02-18-05			**S-W-1-0-0.5 Depth 0-0.5 ft** D0161-20A 02-18-05			**S-W-1-1-2 Depth 1.0-2.0 ft DUP S-W-1-0-0.5** D0188-01A 02-18-05			**S-W-2-0-0.5 Depth 0-0.5 ft** D0161-18A 02-17-05			**S-W-3-0-0.5 Depth 0-0.5 ft** D0161-19A 02-17-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Aroclor-1016	UG/KG		42	U		41	U		41	U		42	U		37	U	
Aroclor-1221	UG/KG		86	U		83	U		82	U		86	U		75	U	
Aroclor-1232	UG/KG		42	U		41	U		41	U		42	U		37	U	
Aroclor-1242	UG/KG		42	U		41	U		6400	DP	J	3000	D		37	U	
Aroclor-1248	UG/KG		42	U		41	U		41	U		42	U		37	U	
Aroclor-1254	UG/KG		86			590			1800	P	J	1100	P	J	37	U	
Aroclor-1260	UG/KG		42	U		41	U		41	U		42	U		37	U	
Total PCBs	UG/KG	1,000[a]/10,000[b]	382			878			8446			4354			297		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

[a] Applies to surface soil.

[b] Applies to soil below surface.

Table 4.2.3.1.1
Rensselaer Iron Works AOC Rail Siding
Metals Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	BACKGROUND-1 C1463-11A 11/17/2004			BACKGROUND-2 C1463-12A 11/17/2004			S-S-R1-0-6 C1464-01A 11/15/2004			S-S-R1-12-18 C1464-02A 11/15/2004			S-S-R2-0-6 C1464-03A 11/15/2004		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	0.42	UN	J	0.89	BN	J	**1.8**	**BN**	**J**	**13.8**	**N**	**J**	0.46	BN	J
Arsenic	mg/Kg	10.7	14.1			7.3			**17.1**	*		**72.6**	*		8.1	*	
Beryllium	mg/Kg	0.37	0.47	B		0.27	B		0.18	B		0.15	B		0.11	B	
Cadmium	mg/Kg	1	0.042	UN	J	0.038	UN	J	0.049	UN	R	0.043	UN	R	0.039	UN	R
Chromium	mg/Kg	11.1	13.9			8.3			**23.8**	*		**13.1**	*		6.4	*	
Copper	mg/Kg	31.35	37.0	E	J	25.7	E	J	**231**	**N***	**J**	**589**	**N***	**J**	**34.3**	**N***	**J**
Lead *	mg/Kg	400	94.1			12.5			202			172			35.8		
Nickel	mg/Kg	16.15	17.4			14.9			**29.2**		**J**	**57.2**			9.4		J
Selenium	mg/Kg	2	0.99	BN	J	0.57	UN	J	**2.7**	**N**	**J**	**6.3**	**N**	**J**	1.3	N	J
Silver	mg/Kg	4.49	8.6			0.38	U		**7.3**		**J**	**24.7**			**4.5**		**J**
Thallium	mg/Kg	2.44	4.2	N	J	0.68	BN	J	2.3	B		**7.7**			1.2	B	
Zinc	mg/Kg	75.6	100			51.2			**301**			**563**			31.9		
Mercury	mg/Kg	0.145	0.23			0.060	B		0.11			0.13			0.049	U	

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.3.1.2
Rensselaer Iron Works AOC Foundry Building
Metals Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	BACKGROUND-1 C1463-11A 11/17/2004			BACKGROUND-2 C1463-12A 11/17/2004			S-S-F-1 C1463-01A 11/17/2004			S-S-F-2 C1463-02A 11/17/2004		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	0.42	UN	J	0.89	BN	J	**8.6**	**BN**	**J**	**4.0**	**BN**	**J**
Arsenic	mg/Kg	10.7	14.1			7.3			**43.6**			**24.0**		
Beryllium	mg/Kg	0.37	0.47	B		0.27	B		0.085	B		0.11	B	
Cadmium	mg/Kg	1	0.042	UN	J	0.038	UN	J	0.049	UN	J	**6.8**	**N**	**J**
Chromium	mg/Kg	11.1	13.9			8.3			**65.2**			**63.4**		
Copper	mg/Kg	31.35	37.0	E	J	25.7	E	J	**1110**	**E**	**J**	**2910**	**E**	**J**
Lead *	mg/Kg	400	94.1			12.5			**445**			**1530**		
Nickel	mg/Kg	16.15	17.4			14.9			**64.6**			**86.4**		
Selenium	mg/Kg	2	0.99	BN	J	0.57	UN	J	**3.6**	**N**	**J**	1.3	N	J
Silver	mg/Kg	4.49	8.6			0.38	U		**27.8**			**15.1**		
Thallium	mg/Kg	2.44	4.2	N	J	0.68	BN	J	**7.0**	**N**	**J**	**4.1**	**N**	**J**
Zinc	mg/Kg	75.6	100			51.2			**880**			**1820**		
Mercury	mg/Kg	0.145	0.23			0.060	B		**0.67**			**0.43**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.3.1.2
Rensselaer Iron Works AOC Foundry Building
Metals Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-S-F-9 DUP S-S-F-2 C1463-09A 11/17/2004			S-S-F-3 C1463-03A 11/17/2004			S-S-F-4 C1463-04A 11/17/2004			S-S-F-5 C1463-05A 11/17/2004			S-S-F-6 C1463-06A 11/17/2004		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	**4.0**	**BN**	**J**	**3.5**	**BN**	**J**	0.38	UN	J	**9.7**	**BN**	**J**	**1.7**	**BN**	**J**
Arsenic	mg/Kg	10.7	**34.3**			**25.9**			4.1			**62.8**			**13.8**		
Beryllium	mg/Kg	0.37	0.059	B		0.11	B		0.12	B		0.088	B		0.18	B	
Cadmium	mg/Kg	1	**2.0**	**N**	**J**	0.056	UN	J	0.038	UN	J	0.056	UN	J	**3.1**	**N**	**J**
Chromium	mg/Kg	11.1	**72.7**			**42.3**			3.9			**131**			**39.1**		
Copper	mg/Kg	31.35	**1310**	**E**	**J**	**251**	**E**	**J**	27.6	E	J	**495**	**E**	**J**	**101**	**E**	**J**
Lead *	mg/Kg	400	**2090**			**660**			21.6			**662**			171		
Nickel	mg/Kg	16.15	**74.7**			**45.8**			8.1			**267**			**26.2**		
Selenium	mg/Kg	2	**2.8**	**N**	**J**	**2.5**	**N**	**J**	0.66	BN	J	0.85	UN	J	0.62	UN	J
Silver	mg/Kg	4.49	**22.4**			**16.2**			1.9		J	**47.7**			**8.4**		
Thallium	mg/Kg	2.44	**4.2**	**N**	**J**	**3.0**	**N**	**J**	0.51	BN	J	**9.7**	**N**	**J**	**2.6**	**N**	**J**
Zinc	mg/Kg	75.6	**1790**			**1470**			28.9			**1340**			**1650**		
Mercury	mg/Kg	0.145	**0.47**			**0.21**			0.046	U		**0.59**			**0.16**		

*See Document titled "Data Qualifiers" for inforn qualifiers and data interpretation

Table 4.2.3.1.2
Rensselaer Iron Works AOC Foundry Building
Metals Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-S-F-10 COL S-S-F-6 C1463-10A 11/17/2004			S-S-F-7 C1463-07A 11/17/2004			S-S-F-8 C1463-08A 11/17/2004		
				Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	0.57	BN	J	**6.0**	**BN**	**J**	**4.3**	**BN**	**J**
Arsenic	mg/Kg	10.7	**11.3**			**35.9**			**43.9**		
Beryllium	mg/Kg	0.37	0.16	B		0.28	B		0.093	B	
Cadmium	mg/Kg	1	0.41	BN	J	**1.1**	**N**	**J**	0.048	UN	J
Chromium	mg/Kg	11.1	**27.2**			**41.1**			**52.7**		
Copper	mg/Kg	31.35	**72.4**	**E**	**J**	**1930**	**E**	**J**	**1110**	**E**	**J**
Lead *	mg/Kg	400	127			**1250**			**1570**		
Nickel	mg/Kg	16.15	**20.0**			**49.3**			**77.0**		
Selenium	mg/Kg	2	0.62	UN	J	**7.4**	**N**	**J**	**5.0**	**N**	**J**
Silver	mg/Kg	4.49	**6.7**		**J**	**11.4**			**17.2**		
Thallium	mg/Kg	2.44	2.0	BN	J	**2.6**	**N**	**J**	**3.3**	**N**	**J**
Zinc	mg/Kg	75.6	**528**			**1500**			**1250**		
Mercury	mg/Kg	0.145	0.11			**0.76**			**0.46**		

*See Document titled "Data Qualifiers" for inforn
qualifiers and data interpretation

Table 4.2.3.1.3 Rensellaer Iron Works Yard
Metals
Soil Surface to 2 feet depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	BACKGROUND-1 Depth 0 - 0.5 ft C1463-11A 11/17/2004			BACKGROUND-2 Depth 0 - 0.5 ft. C1463-12A 11/17/2004			S-S-Y1-0-6 Depth 0 - 0.5 ft. C1464-04A 11/15/2004			S-S-Y1-12-18 Depth 1.0 - 1.5 ft. C1464-05A 11/15/2004			S-S-Y2-0-6 Depth 0 - 0.5 ft. C1464-06A 11/15/2004			S-S-Y2-12-18 Depth 1.0 - 1.5 ft. C1464-07A 11/15/2004		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	0.42	UN	J	0.89	BN	J	**2.9**	**BN**	**J**	**0.88**	**BN**	**J**	**5.5**	**BN**	**J**	**1.6**	**BN**	**J**
Arsenic	mg/Kg	10.7	14.1			7.3			**34.4**	*		10.5	*		**22.7**	*		**15.5**	*	
Beryllium	mg/Kg	0.37	0.47	B		0.27	B		**0.39**	**B**		**0.47**	**B**		0.32	B		0.32	B	
Cadmium	mg/Kg	1	0.042	UN	J	0.038	UN	J	0.040	UN	R	0.046	UN	R	0.040	UN	R	0.042	UN	R
Chromium	mg/Kg	11.1	13.9			8.3			**16.6**	*		5.3	*		**22.0**	*		**12.0**	*	
Copper	mg/Kg	31.35	37.0	E	J	25.7	E	J	**341**	**N***	**J**	**60.1**	**N***	**J**	**432**	**N***	**J**	**298**	**N***	**J**
Lead *	mg/Kg	400	94.1			12.5			194			46.4			212			168		
Nickel	mg/Kg	16.15	17.4			14.9			**40.1**			13.0		J	**39.4**			**25.3**		**J**
Selenium	mg/Kg	2	0.99	BN	J	0.57	UN	J	**3.3**	**N**	**J**	0.69	UN	J	**2.8**	**N**	**J**	1.3	N	J
Silver	mg/Kg	4.49	8.6			0.38	U		**11.9**			3.4		J	**11.9**			**6.5**		**J**
Thallium	mg/Kg	2.44	4.2	N	J	0.68	BN	J	**4.0**			0.82	B		**3.2**			**2.6**		
Zinc	mg/Kg	75.6	100			51.2			**230**			58.4			**357**			**280**		
Mercury	mg/Kg	0.145	0.23			0.060	B		**0.31**			0.070	B		0.091	B		0.10		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.3.1.3 Rensellaer Iron Works Yard
Metals
Soil Surface to 2 feet depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-S-Y3-0-6 Depth 0 - 0.5 ft. C1464-08A 11/12/2004			S-S-Y10-0-6 Depth 0 - 0.5 ft. DUP S-S-Y3-0-6 C1465-01A 11/12/2004			S-S-Y11-0-6 Depth 0 - 0.5 ft. COL S-S-Y3-0-6 C1465-02A 11/19/2004			S-S-Y3-12-18 Depth 1.0 - 1.5 ft. C1464-09A 11/12/2004			S-S-Y4-0-6 Depth 0 - 0.5 ft. C1464-10A 11/12/2004			S-S-Y4-6-12 Depth 0.5 - 1.0 ft C1464-11A 11/12/2004		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	**2.7**	**BN**	**J**	**4.2**	**B**	**J**	**9.0**	**B**	**J**	**8.6**	**BN**	**J**	**2.9**	**BN**	**J**	**9.9**	**BN**	**J**
Arsenic	mg/Kg	10.7	**33.4**	*		0.38	U		0.39	U		**69.1**	*		**14.7**	*		**18.7**	*	
Beryllium	mg/Kg	0.37	0.13	B		**0.68**	**B**	**J**	**0.65**	**B**	**J**	0.038	U		0.33	B		0.34	B	
Cadmium	mg/Kg	1	0.040	UN	R	**5.1**		**J**	**16.6**		**J**	0.038	UN	R	0.035	UN	R	0.038	UN	R
Chromium	mg/Kg	11.1	**83.2**	*		**18.2**		**J**	**26.7**		**J**	**113**	*		**65.4**	*		**50.3**	*	
Copper	mg/Kg	31.35	**465**	**N***	**J**	**68.9**		**J**	**295**		**J**	**169**	**N***	**J**	**303**	**N***	**J**	**379**	**N***	**J**
Lead *	mg/Kg	400	124			81.4		J	373		J	100			273			**605**		
Nickel	mg/Kg	16.15	**89.1**			**26.2**		**J**	**31.9**		**J**	**86.6**			**89.1**			**73.3**		
Selenium	mg/Kg	2	**5.6**	**N**	**J**	0.38	U		0.39	U		1.3	N	J	1.3	N	J	1.8	N	J
Silver	mg/Kg	4.49	**15.7**			**8.3**		**J**	**15.3**		**J**	**31.0**			**7.4**			**9.6**		
Thallium	mg/Kg	2.44	**5.2**			0.38	U		0.39	U		**21.9**			**4.1**			**3.7**		
Zinc	mg/Kg	75.6	**124**			**161**		**J**	**234**		**J**	**129**			**577**			**1000**		
Mercury	mg/Kg	0.145	**0.23**			0.059	B	J	**0.47**		**J**	0.13			**0.97**			**0.99**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.3.1.3 Rensellaer Iron Works Yard
Metals
Soil Surface to 2 feet depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-S-Y5-0-6 Depth 0 - 0.5 ft. C1464-12A 11/12/2004			S-S-Y5-12-18 Depth 1.0 - 1.5 ft. C1464-13A 11/12/2004			S-S-Y6-0-6 Depth 0 - 0.5 ft. C1464-14A 11/15/2004			S-S-Y6-6-12 Depth 0.5 - 1.0 ft C1464-15A 11/15/2004			S-S-Y7-0-6 Depth 0 - 0.5 ft. C1464-16A 11/17/2004			S-S-Y7-12-18 Depth 1.0 - 1.5 ft. C1464-17A 11/17/2004		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	**11.9**	**BN**	**J**	**0.98**	**BN**	**J**	**11.5**	**BN**	**J**	**16.9**	**N**	**J**	**0.98**	**BN**	**J**	**5.8**	**BN**	**J**
Arsenic	mg/Kg	10.7	**28.6**	*		10.7	*		**60.5**	*		**48.3**	*		**12.0**	*		**13.4**	*	
Beryllium	mg/Kg	0.37	0.20	B		0.19	B		0.19	B		0.29	B		**0.47**	**B**		**0.73**	**B**	
Cadmium	mg/Kg	1	0.039	UN	R	0.041	UN	R	**3.2**	**N**	**J**	0.044	UN	R	0.043	UN	R	**35.1**	**N**	**J**
Chromium	mg/Kg	11.1	**41.5**	*		11.0	*		**106**	*		**52.0**	*		**28.3**	*		**22.8**	*	
Copper	mg/Kg	31.35	**650**	**N***	**J**	**71.6**	**N***	**J**	**1590**	**N***	**J**	**783**	**N***	**J**	**112**	**N***	**J**	**508**	**N***	**J**
Lead *	mg/Kg	400	**1040**			65.4			**2610**			**1400**			126			179		
Nickel	mg/Kg	16.15	**62.0**			**16.9**			**171**			**107**			**30.1**			**29.7**		
Selenium	mg/Kg	2	**19.0**	**N**	**J**	1.7	N	J	**22.6**	**N**	**J**	**11.6**	**N**	**J**	**2.2**	**N**	**J**	1.9	N	J
Silver	mg/Kg	4.49	**15.3**			**7.5**		**J**	**26.0**			**20.8**			**7.9**		**J**	**8.4**		**J**
Thallium	mg/Kg	2.44	**7.8**			2.2			**8.4**			**5.5**			2.0	B		**2.7**		
Zinc	mg/Kg	75.6	**760**			**93.5**			**2070**			**1110**			**250**			**291**		
Mercury	mg/Kg	0.145	**0.78**			0.11			**16.9**			**8.7**			**0.43**			**0.55**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.3.1.3 Rensellaer Iron Works Yard
Metals
Soil Surface to 2 feet depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-S-Y8-0-6 Depth 0 - 0.5 ft. C1464-18A 11/17/2004			S-S-Y9-0-6 Depth 0 - 0.5 ft. DUP S-S-Y8-0-6 C1464-20A 11/17/2004			S-S-Y8-12-18 Depth 1.0 - 1.5 ft. C1464-19A 11/17/2004			S-U-Y1 0 Depth 0 - 0.5 ft. D0977-06B 08-18-05			S-U-Y1 2 Depth 2 ft D0977-07B 08-18-05			S-U-Y2 1 Depth 1 ft. D0977-02B 08-18-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	**2.3**	**BN**	**J**	**0.99**	**BN**	**J**	**13.0**	**BN**	**J**	**6.0**	BN	J	0.32	UN	J	0.33	UN	J
Arsenic	mg/Kg	10.7	**13.7**	*		**12.1**	*		**67.5**	*		**32.7**			3.8			5.1		
Beryllium	mg/Kg	0.37	**0.54**	**B**		**0.49**	**B**		0.18	B		0.37	B		0.26	B		0.28	B	
Cadmium	mg/Kg	1	0.046	UN	R	0.041	UN	R	0.046	UN	R	**20.1**			**1.2**			0.77	B	
Chromium	mg/Kg	11.1	**18.3**	*		**16.1**	*		**74.4**	*		**73.8**	E	J	10.7	E	J	10.9	E	J
Copper	mg/Kg	31.35	**107**	**N***	**J**	**76.9**	**N***	**J**	**163**	**N***	**J**	**747**	E	J	**61.9**	E	J	**76.8**	E	J
Lead *	mg/Kg	400	174			102			198			**1660**	E	J	66.7	E	J	75.4	E	J
Nickel	mg/Kg	16.15	**31.6**			**27.9**			**75.5**			**154**	E	J	14.4	E	J	11.5	E	J
Selenium	mg/Kg	2	1.6	N	J	1.2	N	J	**6.6**	**N**	**J**	1.5	N	J	0.48	UN		0.50	UN	
Silver	mg/Kg	4.49	**8.1**		**J**	**7.7**		**J**	**29.5**			**3.4**			0.85	B		0.95	B	
Thallium	mg/Kg	2.44	**3.4**			**3.5**			**9.6**			0.40	U		0.32	U		0.33	U	
Zinc	mg/Kg	75.6	**256**			**174**			**128**			**1550**	*E	J	**92.9**	*E	J	**141**	*E	J
Mercury	mg/Kg	0.145	0.14			0.095			**0.17**			**10.3**			0.21		J	0.46		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.3.1.3 Rensellaer Iron Works Yard
Metals
Soil Surface to 2 feet depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-U-Y2 2 Depth 2 ft. D0977-03B 08-18-05			S-U-Y3 0 Depth 0 - 0.5 ft. D0977-08B 08-18-05			S-U-Y3 2 Depth 2 ft. D0977-09B 08-18-05			S-U-Y5 0 Depth 0 - 0.5 ft. D0977-10B 08-18-05			S-U-Y5 2 Depth 2 ft. D0977-11B 08-18-05			S-U-Y6 0 Depth 0 - 0.5 ft. D0978-03B 08-25-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	0.31	UN	J	0.41	UN	J	0.61	BN	J	0.29	UN	J	0.35	UN	J	**6.4**	B	
Arsenic	mg/Kg	10.7	7.9			10.6			**28.3**			6.5			2.5			9.7		
Beryllium	mg/Kg	0.37	0.25	B		**0.51**	B		**0.42**	B		**0.47**	B		0.26	B		**0.4**	B	
Cadmium	mg/Kg	1	**3.2**			**44.4**			**2.6**			**1.2**			0.38	B		**4.4**		
Chromium	mg/Kg	11.1	**13.6**	E	J	**32.0**	E	J	**18.3**	E	J	**19.3**	E	J	7.8	E	J	**117**		
Copper	mg/Kg	31.35	**129**	E	J	**256**	E	J	**328**	E	J	**158**	E	J	13.9	E	J	**705**		
Lead *	mg/Kg	400	141	E	J	162	E	J	127	E	J	69.4	E	J	6.5	E	J	**480**		
Nickel	mg/Kg	16.15	**16.3**	E	J	**36.8**	E	J	**26.1**	E	J	**27.6**	E	J	9.3	E	J	**423**		
Selenium	mg/Kg	2	0.46	UN		0.62	UN		0.60	UN		0.44	UN		0.52	UN		0.57	U	
Silver	mg/Kg	4.49	1.0	B		1.5	B		1.6	B		0.58	B		0.72	B		0.13	U	
Thallium	mg/Kg	2.44	0.31	U		0.41	U		0.40	U		0.29	U		0.35	U		0.38	U	
Zinc	mg/Kg	75.6	**186**	*E	J	**349**	*E	J	**156**	*E	J	**193**	*E	J	**26.0**	*E	J	**736**		
Mercury	mg/Kg	0.145	0.36			0.38			0.24		J	0.15		J	0.049	U		0.61		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.3.1.3 Rensellaer Iron Works Yard
Metals
Soil Surface to 2 feet depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-U-Y7 0 Depth 0 - 0.5 ft. D0978-10B 08-25-05			S-U-Y9 0 Depth 0 - 0.5 ft. D0977-12B 08-18-05			S-U-Y9 1 Depth 1 ft. D0977-13B 08-18-05			S-U-Y9 2 Depth 2 ft. D0977-14B 08-18-05			S-U-Y10 0 Depth 0 - 0.5 ft. D0977-17B 08-18-05			S-U-Y10 2 Depth 2 ft. D0977-18B 08-18-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	**11.2**			**3.2**	BN	J	**1.1**	BN	J	**5.4**	BN	J	**2.8**	BN	J	**5.7**	BN	J
Arsenic	mg/Kg	10.7	10.7			**78.0**			**265**			**46.1**			8.4			10.4		
Beryllium	mg/Kg	0.37	**0.38**	B		**0.55**	B		**1.4**			**0.78**	B		**0.51**	B		0.25	B	
Cadmium	mg/Kg	1	**11.1**			**8.3**			**3.5**			**2.2**			**5.6**			**3.5**		
Chromium	mg/Kg	11.1	**110**			**156**	E	J	**92.9**	E	J	9.4	E	J	**77.7**	E	J	**38.9**	E	J
Copper	mg/Kg	31.35	**8350**			**1950**	E	J	**339**	E	J	**3010**	E	J	**4020**	E	J	**3030**	E	J
Lead *	mg/Kg	400	**1510**			**1170**	E	J	**408**	E	J	284	E	J	**607**	E	J	**2130**	E	J
Nickel	mg/Kg	16.15	**113**			**215**	E	J	**116**	E	J	**25.6**	E	J	**102**	E	J	**149**	E	J
Selenium	mg/Kg	2	0.55	U		0.51	UN		12.0	N	J	1.5	N	J	0.47	UN		0.64	UN	
Silver	mg/Kg	4.49	0.13	U		0.85	B		0.80	B		1.3	B		0.11	U		**2.9**		
Thallium	mg/Kg	2.44	0.36	U		0.34	U		2.7			0.43	U		0.31	U		0.42	U	
Zinc	mg/Kg	75.6	**2380**			**1530**	*E	J	**500**	*E	J	**606**	*E	J	**1360**	*E	J	**1840**	*E	J
Mercury	mg/Kg	0.145	**2.3**			1.7			0.070	U		0.17		J	1.2			1.0		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.3.1.3 Rensellaer Iron Works Yard
Metals
Soil Surface to 2 feet depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-U-Y11 0 Depth 0 - 0.5 ft. D0978-05B 08-25-05			S-U-Y11 1 Depth 1 ft. D0978-06B 08-25-05			S-U-Y11 2 Depth 2 ft. D0978-07B 08-25-05			S-U-Y12 0 Depth 0 - 0.5 ft. D0977-19B 08-18-05			S-U-Y13 0 Depth 0 - 0.5 ft. D0978-01B 08-18-05			S-B-2-0-0.5 Depth 0 - 0.5 ft. D0161-17B 02/18/2005		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	**27**			**3.4**	B		**1.7**	B		**4.2**	BN	J	**18.1**			**11.7**	E	J
Arsenic	mg/Kg	10.7	9.8			9.3			7.9			**141**			**13.7**			0.58	B	J
Beryllium	mg/Kg	0.37	**0.56**	B		**0.48**	B		**0.42**	B		**0.39**	B		**0.5**	B		**0.47**	B	J
Cadmium	mg/Kg	1	**11**			**4.2**			**0.68**	B		**12.4**			**9.1**			**13.9**	E	J
Chromium	mg/Kg	11.1	**120**			**112**			**17.2**			**156**	E	J	**145**			**171**	E	J
Copper	mg/Kg	31.35	**621**			**2240**			**133**			**2610**	E	J	**28900**			**426**		J
Lead *	mg/Kg	400	**854**			**445**			65.8			**956**	E	J	**2090**			**1100**	E	J
Nickel	mg/Kg	16.15	**173**			**143**			**13.5**			**151**	E	J	**391**			**151**	E	J
Selenium	mg/Kg	2	0.64	U		0.46	U		0.60	U		**8.7**	N	J	0.59	U		0.53	U	
Silver	mg/Kg	4.49	0.15	U		0.11	U		0.37	B		0.16	B		1.4	B		**26.6**	E	J
Thallium	mg/Kg	2.44	0.43	U		0.31	U		0.40	U		0.36	U		0.40	U		0.36	U	
Zinc	mg/Kg	75.6	**2370**			**1050**			**133**			**1770**	*E	J	**3010**			**778**	E	J
Mercury	mg/Kg	0.145	0.63			1.1			0.11			2.9			4.4			**0.63**		J

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.3.1.3 Rensellaer Iron Works Yard
Metals
Soil Surface to 2 feet depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-B-3-0-0.5 Depth 0 - 0.5 ft. D0188-12B 02/17/2005			S-B-5-0-0.5 Depth 0 - 0.5 ft. D0161-10B 02/18/2005			S-B-5-1-2 Depth 1 - 2 ft. DUP S-B-5-0-0.5 D0161-11B 02/18/2005			S-B-6-0-0.5 Depth 0 - 0.5 ft. D0161-14B 02/18/2005			S-B-6-1-2 Depth 1.0 - 2.0 ft. DUP S-B-6-0-0.5 D0161-15B 02/18/2005			S-W-1-0-0.5 Depth 0 - 0.5 ft. D0161-20B 02/18/2005		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	**45.2**	**N**	**J**	**30.5**	**E**	**J**	**18.0**	**E**	**J**	**8.0**	**BE**	**J**	**8.0**	**BE**	**J**	**17.6**	**E**	**J**
Arsenic	mg/Kg	10.7	0.44	U		3.7		J	0.36	U		**111**		**J**	**93.2**		**J**	1.7	B	J
Beryllium	mg/Kg	0.37	**0.48**	**B**		**0.49**	**B**	**J**	**0.48**	**B**	**J**	0.30	B	J	**0.82**	**B**	**J**	**0.70**	**B**	**J**
Cadmium	mg/Kg	1	**38.5**	***E**	**J**	**21.1**	**E**	**J**	**23.5**	**E**	**J**	**9.2**	**E**	**J**	**8.6**	**E**	**J**	**22.0**	**E**	**J**
Chromium	mg/Kg	11.1	**233**	***E**	**J**	**231**	**E**	**J**	**487**	**E**	**J**	10	E	J	**18.2**	**E**	**J**	**182**	**E**	**J**
Copper	mg/Kg	31.35	**988**	**NE**	**J**	**5240**		**J**	**2120**		**J**	**47.4**		**J**	**95.2**		**J**	**1230**		**J**
Lead *	mg/Kg	400	**1020**	**E**	**J**	**2080**	**E**	**J**	**1100**	**E**	**J**	52.1	E	J	115	E	J	**1320**	**E**	**J**
Nickel	mg/Kg	16.15	**268**	***E**	**J**	**261**	**E**	**J**	**264**	**E**	**J**	6.7	BE	J	11.0	E	J	**385**	**E**	**J**
Selenium	mg/Kg	2	0.66	UN		0.58	U		0.53	U		0.55	U		0.55	U		0.53	U	
Silver	mg/Kg	4.49	**74.2**	**N*E**	**J**	**37.5**	**E**	**J**	**46.9**	**E**	**J**	**22.8**	**E**	**J**	**20.7**	**E**	**J**	**28.3**	**E**	**J**
Thallium	mg/Kg	2.44	0.44	U		0.39	U		1.5	B	J	0.36	U		0.70	B	J	0.44	B	J
Zinc	mg/Kg	75.6	**1960**	**N*E**	**J**	**1630**	**E**	**J**	**1200**	**E**	**J**	75.5	E	J	**199**	**E**	**J**	**3240**	**E**	**J**
Mercury	mg/Kg	0.145	**4.1**			**1.5**		**J**	**1.5**		**J**	0.12		J	**0.51**		**J**	**4.8**		**J**

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.3.1.3 Rensellaer Iron Works Yard
Metals
Soil Surface to 2 feet depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-W-1-1-2 Depth 1 - 2 ft DUP S-W-1-0-0.5** D0188-01B 02/18/2005			**S-W-2-0-0.5 Depth 0 - 0.5 ft.** D0161-18B 02/17/2005			**S-W-3-0-0.5 Depth 0 - 0.5 ft.** D0161-19B 02/17/2005		
				Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	**21.6**	**N**	**J**	**27.1**	**E**	**J**	**5.4**	**BE**	**J**
Arsenic	mg/Kg	10.7	0.43	U		0.36	U	J	3.9		J
Beryllium	mg/Kg	0.37	**0.60**	**B**		**0.40**	**B**	**J**	**0.47**	**B**	**J**
Cadmium	mg/Kg	1	**27.2**	***E**	**J**	**38.3**	**E**	**J**	**5.3**	**E**	**J**
Chromium	mg/Kg	11.1	**244**	***E**	**J**	**2860**	**E**	**J**	**22.7**	**E**	**J**
Copper	mg/Kg	31.35	**987**	**NE**	**J**	**2480**		**J**	**166**		**J**
Lead *	mg/Kg	400	**1140**	**E**	**J**	**1550**	**E**	**J**	163	E	J
Nickel	mg/Kg	16.15	**377**	***E**	**J**	**911**	**E**	**J**	**47.1**	**E**	**J**
Selenium	mg/Kg	2	0.64	UN	R	0.54	U		0.47	U	
Silver	mg/Kg	4.49	**41.5**	**N*E**	**J**	**60.3**	**E**	**J**	**11.5**	**E**	**J**
Thallium	mg/Kg	2.44	0.43	U		0.36	U		1.4	B	J
Zinc	mg/Kg	75.6	**3110**	**N*E**	**J**	**3560**	**E**	**J**	**248**	**E**	**J**
Mercury	mg/Kg	0.145	**4.3**			4.0		J	0.8	B	J

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.3.2 Alamo AOC
Metals
Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	BACKGROUND-1 Depth 0-0.5 ft C1463-11A 11/17/2004			BACKGROUND-2 Depth 0-0.5 ft C1463-12A 11/17/2004			A-S-1-0-6 Depth 0-0.5 ft C1463-13A 11/15/2004			A-S-4-0-6 Depth 0-0.5 ft DUP A-S-1-0-6 C1463-19A 11/15/2004		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	0.42	UN	J	0.89	BN	J	**0.78**	**BN**	**J**	0.44	UN	J
Arsenic	mg/Kg	10.7	14.1			7.3			**29.7**			**32.0**		
Beryllium	mg/Kg	0.37	0.47	B		0.27	B		**1.3**			**2.1**		
Cadmium	mg/Kg	1	0.042	UN	J	0.038	UN	J	0.038	UN	J	0.044	UN	J
Chromium	mg/Kg	11.1	13.9			8.3			6.3			6.2		
Copper	mg/Kg	31.35	37.0	E	J	25.7	E	J	**39.0**	**E**	**J**	**47.6**	**E**	**J**
Lead *	mg/Kg	400	94.1			12.5			38.8			54.7		
Nickel	mg/Kg	16.15	17.4			14.9			11.4			13.4		
Selenium	mg/Kg	2	0.99	BN	J	0.57	UN	J	0.57	UN	J	1.4	N	J
Silver	mg/Kg	4.49	8.6			0.38	U		**12.1**			**10.1**		
Thallium	mg/Kg	2.44	4.2	N	J	0.68	BN	J	**5.3**	**N**	**J**	**6.6**	**N**	**J**
Zinc	mg/Kg	75.6	100			51.2			**238**			**345**		
Mercury	mg/Kg	0.145	0.23			0.060	B		0.13			0.096	B	

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.2.3.2 Alamo AOC
Metals
Soil Surface to 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	A-S-1-12-18 Depth 1.0-1.5 ft. C1463-14A 11/15/2004	Lab	Val	A-S-2-0-6 Depth 0-0.5 ft C1463-15A 11/17/2004	Lab	Val	A-S-2-12-18 Depth 1.0-1.5 ft. C1463-16A 11/17/2004	Lab	Val	A-S-3-0-6 Depth 0-0.5 ft C1463-17A 11/17/2004	Lab	Val	A-S-5-0-6 Depth 0-0.5 ft COL A-S-3-0-6 C1463-20A 11/17/2004	Lab	Val	A-S-3-12-18 Depth 1.0-1.5 ft. C1463-18A 11/17/2004	Lab	Val
Antimony	mg/Kg	0.655	0.45	UN	J	0.56	BN	J	**0.86**	**BN**	**J**	0.41	UN	J	0.45	UN	J	0.51	BN	J
Arsenic	mg/Kg	10.7	**26.5**			**14.0**			**24.3**			3.7			3.8			**13.3**		
Beryllium	mg/Kg	0.37	**1.7**			**0.48**	**B**		**0.81**	**B**		0.14	B		0.12	B		**1.3**		
Cadmium	mg/Kg	1	0.045	UN	J	0.043	UN	J	0.041	UN	J	0.041	UN	J	0.045	UN	J	0.043	UN	J
Chromium	mg/Kg	11.1	4.4			**12.1**			**15.5**			4.1			4.3			**15.0**		
Copper	mg/Kg	31.35	**37.4**	**E**	**J**	**33.8**	**E**	**J**	**54.4**	**E**	**J**	12.8	E	J	11.4	E	J	29.8	E	J
Lead *	mg/Kg	400	36.6			38.3			96.7			7.8			6.3			50.1		
Nickel	mg/Kg	16.15	10.6			16.0			14.4			10.4			8.4	B		**108**		
Selenium	mg/Kg	2	0.68	UN	J	0.65	UN	J	0.62	UN	J	0.62	UN	J	0.68	UN	J	0.64	UN	J
Silver	mg/Kg	4.49	**8.7**		**J**	**7.7**		**J**	**10.9**			**2.8**		J	2.9		J	**8.9**		
Thallium	mg/Kg	2.44	**5.0**	**N**	**J**	**5.2**	**N**	**J**	**6.7**	**N**	**J**	1.0	BN	J	0.98	BN	J	**8.6**	**N**	**J**
Zinc	mg/Kg	75.6	127			94.3			246			36.1			30.4			138		
Mercury	mg/Kg	0.145	0.13			0.090	B		0.42			0.048	B		0.087	B		0.058	U	

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.1.1 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-B-2-2-4 Depth 2 -4 ft. D0188-19A 02-18-05	Lab	Val	S-B-2-2-4RE Depth 2 -4 ft. D0188-19ARE 02-18-05	Lab	Val	S-B-2-2-4RA Depth 2 -4 ft. D0188-19ARA 02-18-05	Lab	Val	S-B-2-8-12 Depth 8 -12 ft. D0161-03A 02-18-05	Lab	Val
Naphthalene	UG/KG	13,000	65	J	J	53	J	J	71	J	J	350	U	
Acenaphthene	UG/KG	50,000	69	J	J	23	J	J	75	J	J	350	U	
Fluorene	UG/KG	50,000	83	J	J	21	J	J	89	J	J	350	U	
Phenanthrene	UG/KG	50,000	710		J	220	J	J	690		J	40	J	
Anthracene	UG/KG	50,000	120	J	J	38	J	J	160	J	J	350	U	
Fluoranthene	UG/KG	50,000	700		J	510		J	580		J	57	J	
Pyrene	UG/KG	50,000	940		J	160	J	J	1300		J	59	J	
Benzo(a)anthracene	UG/KG	224	**420**		**J**	220	J	J	**430**		**J**	42	J	
Chrysene	UG/KG	400	400	J	J	220	J	J	**420**		**J**	38	J	
Benzo(b)fluoranthene	UG/KG	1,100	540		J	340	J	J	490		J	44	J	
Benzo(k)fluoranthene	UG/KG	1,100	210	J	J	100	J	J	210	J	J	350	U	
Benzo(a)pyrene	UG/KG	61	**370**	**J**	**J**	**180**	**J**	**J**	**330**	**J**	**J**	350	U	
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	100	J	J	79	J	J	170	J	J	350	U	
Dibenzo(a,h)anthracene	UG/KG	14	400	U	R	400	U	J	**63**	**J**	**J**	350	U	
Benzo(g,h,i)perylene	UG/KG	50,000	81	J	J	400	U	J	140	J	J	350	U	
Total SVOC	UG/KG	50,000	5208			2964			5218			3430		

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-B-3-4-8 Depth 4 -8 ft. D0188-17A 02-17-05	Lab	Val	S-B-3-4-8RE Depth 4 -8 ft. D0188-17ARE 02-17-05	Lab	Val	S-B-3-8-12 Depth 8 -12 ft. D0188-18A 02-17-05	Lab	Val	S-B-3-8-12RE Depth 8 -12 ft. D0188-18ARE 02-17-05	Lab	Val
Naphthalene	UG/KG	13,000	160	J	J	110	J	J	39	J	J	47	J	J
Acenaphthene	UG/KG	50,000	150	J	J	62	J	J	370	U	R	35	J	J
Fluorene	UG/KG	50,000	150	J	J	73	J	J	370	U	R	35	J	J
Phenanthrene	UG/KG	50,000	1300		J	590		J	180	J	J	270	J	J
Anthracene	UG/KG	50,000	200	J	J	150	J	J	39	J	J	73	J	J
Fluoranthene	UG/KG	50,000	1000		J	1300		J	120	J	J	380		J
Pyrene	UG/KG	50,000	980		J	220	J	J	290	J	J	130	J	J
Benzo(a)anthracene	UG/KG	224	**540**		**J**	**360**	**J**	**J**	130	J	J	150	J	J
Chrysene	UG/KG	400	**440**		**J**	330	J	J	140	J	J	130	J	J
Benzo(b)fluoranthene	UG/KG	1,100	690		J	550		J	170	J	J	180	J	J
Benzo(k)fluoranthene	UG/KG	1,100	230	J	J	200	J	J	53	J	J	68	J	J
Benzo(a)pyrene	UG/KG	61	**470**		**J**	**320**	**J**	**J**	**120**	**J**	**J**	**140**	**J**	**J**
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	150	J	J	120	J	J	51	J	J	48	J	J
Dibenzo(a,h)anthracene	UG/KG	14	**49**	**J**	**J**	**52**	**J**	**J**	370	U	R	370	U	J
Benzo(g,h,i)perylene	UG/KG	50,000	120	J	J	48	J	J	46	J	J	370	U	J
Total SVOC	UG/KG	50,000	6629			4485			2488			2426		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.1.1 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-B-3-8-12RA Depth 8 -12 ft. D0188-18ARA 02-17-05	Lab	Val	S-B-5-4-6 Depth 4 - 6 ft. D0161-04A 02-18-05	Lab	Val	S-B-5-4-6RA Depth 4 - 6 ft. D0161-04ARA 03-04-05	Lab	Val	S-B-5-20-22 Depth 20 - 22 ft. D0161-12A 02-18-05	Lab	Val	S-B-5-22-24 Depth 22 - 24 ft. DUP S-B-5-20-22 D0161-13A 02-18-05	Lab	Val	S-B-6-6-8 Depth 6 - 8 ft. D0188-03A 02-18-05	Lab	Val	S-B-6-6-8RE Depth 6 - 8 ft. D0188-03ARE 02-18-05	Lab	Val
Naphthalene	UG/KG	13,000	48	J	J	55	J		61	J		370	U		380	U		360	U	R	360	U	J
Acenaphthene	UG/KG	50,000	370	U	R	120	J		120	J		370	U		380	U		360	U	R	360	U	J
Fluorene	UG/KG	50,000	370	U	R	120	J		120	J		370	U		380	U		360	U	R	360	U	J
Phenanthrene	UG/KG	50,000	220	J	J	1700			1800			39	J		72	J		610		J	920		J
Anthracene	UG/KG	50,000	45	J	J	370			340	J		370	U		380	U		84	J	J	110	J	J
Fluoranthene	UG/KG	50,000	200	J	J	2300			2100			49	J		110	J		1500		J	2600		J
Pyrene	UG/KG	50,000	360	J	J	2800			2400			54	J		130	J		820		J	2000		J
Benzo(a)anthracene	UG/KG	224	130	J	J	**1300**			**1300**			370	U		100	J		**860**		**J**	**1200**		**J**
Chrysene	UG/KG	400	170	J	J	**1500**			**1400**			370	U		130	J		**1300**		**J**	**1800**		**J**
Benzo(b)fluoranthene	UG/KG	1,100	220	J	J	**1900**		**J**	**1800**		**J**	370	U		150	J		**1400**		**J**	**1800**		**J**
Benzo(k)fluoranthene	UG/KG	1,100	99	J	J	570		J	680		J	370	U		63	J		580		J	550		J
Benzo(a)pyrene	UG/KG	61	**120**	**J**	**J**	**1100**		**J**	**1100**		**J**	370	U		**110**	**J**		**570**		**J**	**640**		**J**
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	69	J	J	360	J	J	220	J	J	370	U		55	J		170	J	J	490		J
Dibenzo(a,h)anthracene	UG/KG	14	370	U	R	**130**	**J**	**J**	**76**	**J**	**J**	370	U		380	U		**80**	**J**	**J**	**220**	**J**	**J**
Benzo(g,h,i)perylene	UG/KG	50,000	56	J	J	90	J	J	49	J	J	60	J		41	J		120	J	J	310	J	J
Total SVOC	UG/KG	50,000	2847			14415			13566			4272			2861			9174			13720		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.1.1 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-B-6-20-22 Depth 20 - 22 ft. D0161-16A 02-18-05			S-W-1-2-6 D0161-05A 02-18-05			S-W-1-10-12RE Depth 10 - 12 ft. D0188-02ARE 02-18-05 U J			S-W-2-2-6 Depth 2 - 6 ft. D0188-13A 02-17-05			S-W-2-2-6RE Depth 2 - 6 ft. D0188-13ARE 02-17-05			S-W-2-2-6RA Depth 2 - 6 ft. D0188-13ARA 02-17-05			S-W-2-8-12 Depth 8 - 12 ft. D0188-14A 02-17-05			S-W-2-8-12RE Depth 8 - 12 ft. D0188-14ARE 02-17-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13,000	390	U		370	U		390	U	J	69	J	J	82	J	J	80	J	J	52	J	J	390	U	J
Acenaphthene	UG/KG	50,000	390	U		370	U		390	U	J	76	J	J	170	J	J	74	J	J	89	J	J	390	U	J
Fluorene	UG/KG	50,000	390	U		370	U		390		J	71	J	J	210	J	J	80	J	J	130	J	J	390	U	J
Phenanthrene	UG/KG	50,000	390	U		330	J		540	J	J	780		J	1800		J	770		J	1300		J	280	J	J
Anthracene	UG/KG	50,000	390	U		130	J		120		J	180	J	J	590		J	190	J	J	290	J	J	89	J	J
Fluoranthene	UG/KG	50,000	390	U		1100			1100		J	960		J	2800		J	780		J	1400		J	540		J
Pyrene	UG/KG	50,000	390	U		1700			800		J	1400		J	2900		J	1800		J	2000		J	540		J
Benzo(a)anthracene	UG/KG	224	390	U		**650**			**540**		J	**590**		J	**1300**		J	**610**		J	**760**		J	**330**	J	J
Chrysene	UG/KG	400	390	U		**760**			**440**		J	**640**		J	**1300**		J	**600**		J	**670**		J	260	J	J
Benzo(b)fluoranthene	UG/KG	1,100	390	U		840			540	J	J	840		J	**1600**		J	810		J	930		J	350	J	J
Benzo(k)fluoranthene	UG/KG	1,100	390	U		300	J		230		J	260	J	J	760		J	220	J	J	320	J	J	150	J	J
Benzo(a)pyrene	UG/KG	61	390	U		**710**			**390**	J	J	**630**		J	**1200**		J	**500**		J	**700**		J	**260**	J	J
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	390	U		220	J		170	J	J	200	J	J	540		J	290	J	J	230	J	J	120	J	J
Dibenzo(a,h)anthracene	UG/KG	14	390	U		**70**	J		**62**	J	J	**57**	J	J	**200**	J	J	**78**	J	J	**78**	J	J	390	U	J
Benzo(g,h,i)perylene	UG/KG	50,000	390	U		83	J		93			180	J	J	230	J	J	280	J	J	170	J	J	390	U	J
Total SVOC	UG/KG	50,000	5850			8003			6195			6933			15682			7162			9119			4869		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.1.1 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-W-2-8-12RA Depth 8 - 12 ft. D0188-14ARA 02-17-05	Lab	Val	S-W-3-18-22 Depth 18 - 22 ft. D0188-15A 02-17-05	Lab	Val	S-W-3-18-22RE Depth 18 - 22 ft. D0188-15ARE 02-17-05	Lab	Val	S-W-3-22-24 Depth 22 -24 ft. D0188-16A 02-17-05	Lab	Val	S-W-3-22-24RE Depth 22 -24 ft. D0188-16ARE 02-17-05	Lab	Val	S-W-3-22-24RA Depth 22 -24 ft. D0188-16ARA 02-17-05	Lab	Val	S-U-Y2 3 Depth 3 ft. D0977-04A 08-18-05	Lab	Val	S-U-Y2 4 Depth 4 ft. D0977-05A 08-18-05	Lab	Val
Naphthalene	UG/KG	13,000	60	J	J	370	U	R	370	U	J	430	U	R	430	U	J	430	U	R	360	U		51	J	
Acenaphthene	UG/KG	50,000	98	J	J	370	U	R	370	U	J	430	U	R	430	U	J	430	U	R	360	U		61	J	
Fluorene	UG/KG	50,000	140	J	J	370	U	R	370	U	J	430	U	R	430	U	J	430	U	R	360	U		44	J	
Phenanthrene	UG/KG	50,000	1100		J	370	U	R	370	U	J	430	U	R	22	J	J	430	U	R	74	J		750		
Anthracene	UG/KG	50,000	330	J	J	370	U	R	370	U	J	430	U	R	430	U	J	430	U	R	360	U		160	J	
Fluoranthene	UG/KG	50,000	1100		J	370	U	R	370	U	J	430	U	R	430	U	J	430	U	R	160	J		1100		
Pyrene	UG/KG	50,000	2400		J	370	U	R	370	U	J	430	U	R	430	U	J	430	U	R	130	J		1200		
Benzo(a)anthracene	UG/KG	224	**690**		**J**	370	U	R	370	U	J	430	U	R	430	U	J	430	U	R	98	J		**690**		
Chrysene	UG/KG	400	**760**		**J**	370	U	R	370	U	J	430	U	R	430	U	J	430	U	R	160	J		**830**		
Benzo(b)fluoranthene	UG/KG	1,100	880		J	370	U	R	370	U	J	430	U	R	430	U	J	430	U	R	240	J		1100		
Benzo(k)fluoranthene	UG/KG	1,100	360	J	J	370	U	R	370	U	J	430	U	R	430	U	J	430	U	R	73	J		460		
Benzo(a)pyrene	UG/KG	61	**590**		**J**	370	U	R	370	U	J	210	J	J	430	U	J	430	U	R	**120**	J		**710**		
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	320	J	J	370	U	R	370	U	J	430	U	R	430	U	J	430	U	R	84	J		470		
Dibenzo(a,h)anthracene	UG/KG	14	**100**	**J**	**J**	370	U	R	370	U	J	430	U	R	430	U	J	430	U	R	**360**	U		**170**	J	
Benzo(g,h,i)perylene	UG/KG	50,000	250	J	J	370	U	R	370	U	J	430	U	R	430	U	J	430	U	R	94	J		530		
Total SVOC	UG/KG	50,000	9178			5550			5550			6230			6042			6450			3033			8326		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.1.1 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-U-Y6 3 Depth 3 ft. D0978-04A 08-25-05			S-U-Y6 3DL Depth 3 ft. D0978-04ADL 08-25-05			S-U-Y7 3 Depth 3 ft. D0978-11A 08-25-05			S-U-Y9 3 Depth 3 ft. D0977-15A 08-18-05			S-U-Y9 3DL Depth 3 ft. D0977-15ADL 08-18-05			S-U-Y9 4 Depth 4 ft. D0977-16A 08-18-05			S-U-Y9 4DL Depth 4 ft. D0977-16ADL 08-18-05			S-U-Y11 3 Depth 3 ft. D0978-08A 08-25-05		
				Lab	Val		Lab	Val					Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13,000	57	J		800	U		370	U		4900			4400	DJ		4500			4400	DJ		360	U	
Acenaphthene	UG/KG	50,000	400	U		800	U		370	U		4300			3800	DJ		7300			6800	DJ		360	U	
Fluorene	UG/KG	50,000	44	J		800	U		370	U		5100			4500	DJ		8100			7400	DJ		360	U	
Phenanthrene	UG/KG	50,000	1600			2100	D		93	J		67000	E	J	54000	D		89000	E	J	96000	D		71	J	
Anthracene	UG/KG	50,000	230	J		260	DJ		370	U		15000			11000	D		27000	E	J	23000	D		360	U	
Fluoranthene	UG/KG	50,000	3300	E		3600	D		200	J		61000	E	J	54000	D		97000	E	J	110000	D		86	J	
Pyrene	UG/KG	50,000	2200			3300	D		180	J		58000	E	J	42000	D		77000	E	J	90000	D		81	J	
Benzo(a)anthracene	UG/KG	224	2600			2800	D		150	J		22000	E	J	20000	D		47000	E	J	45000	D		48	J	
Chrysene	UG/KG	400	3600	E		3700	D		210	J		23000	E	J	20000	D		44000	E	J	43000	D		69	J	
Benzo(b)fluoranthene	UG/KG	1,100	5000	E		5800	D		350	J		29000	E	J	22000	D		50000	E	J	39000	D		69	J	
Benzo(k)fluoranthene	UG/KG	1,100	1800			1600	D		140	J		9900			7600	DJ		20000	E	J	25000	D		21	J	
Benzo(a)pyrene	UG/KG	61	780			810	D		200	J		21000	E	J	17000	D		41000	E	J	36000	D		40	J	
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	540			820	D		120	J		9600			7900	DJ		17000	E	J	15000	DJ		360	U	
Dibenzo(a,h)anthracene	UG/KG	14	460			670	DJ		42	J		3600			2800	DJ		6900			6000	DJ		360	U	
Benzo(g,h,i)perylene	UG/KG	50,000	400	U		800	U		120	J		10000			8400	D		16000	E	J	16000	DJ		360	U	
Total SVOC	UG/KG	50,000	23011			28660			3285			343400			279400			551800			562600			3005		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.1.1 Rensselaer Iron Works Yard
Semi-Volatile Organic Compounds (SVOCs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-U-Y11 4 Depth 4 ft. D0978-09A 08-25-05			S-U-Y12 3 Depth 3 ft. D0977-20A 08-18-05			S-U-Y13 3 Depth 3 ft. D0978-02A 08-18-05			S-U-Y13 3DL Depth 3 ft. D0978-02ADL 08-18-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13,000	400	U		53	J		260	J		6900	U	
Acenaphthene	UG/KG	50,000	400	U		350	U		440			6900	U	
Fluorene	UG/KG	50,000	400	U		350	U		180	J		6900	U	
Phenanthrene	UG/KG	50,000	300	J		630			3900	E		4200	DJ	
Anthracene	UG/KG	50,000	69	J		100	J		680			830	DJ	
Fluoranthene	UG/KG	50,000	450			950			5900	E		7900	D	
Pyrene	UG/KG	50,000	390	J		1000			15000	E		13000	D	
Benzo(a)anthracene	UG/KG	224	200	J		**550**			**10000**	E		**9900**	D	
Chrysene	UG/KG	400	250	J		**730**			**11000**	E		**10000**	D	
Benzo(b)fluoranthene	UG/KG	1,100	280	J		980			**31000**	E		**24000**	D	
Benzo(k)fluoranthene	UG/KG	1,100	110	J		420			**7400**	E		**9600**	D	
Benzo(a)pyrene	UG/KG	61	**180**	J		**540**			**15000**	E		**16000**	D	
Indeno(1,2,3-cd)pyrene	UG/KG	3,200	80	J		380			**9500**	E		**11000**	D	
Dibenzo(a,h)anthracene	UG/KG	14	**400**	U		**160**	J		**2700**			**4100**	DJ	
Benzo(g,h,i)perylene	UG/KG	50,000	76	J		420			9300	E		13000	D	
Total SVOC	UG/KG	50,000	3985			7613			**122260**			**144230**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

By: AK Date: 5/16/2005
Chk by: RLA Date: 2-7-06

Table 4.4.1.2 Alamo
Semi-Volatile Organic Compounds (SVOCs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	A-B-1-6-10 Depth 6 - 10 ft. D0161-06A 02-15-05			A-B-1-14-16 Depth 14 - 16 D0188-07A 02-15-05			A-B-1-14-16RE Depth 14 - 16 D0188-07ARE 02-15-05			A-B-2-4-6 Depth 4 - 6 ft. D0188-04A 02-15-05			A-B-2-4-6RE Depth 4 - 6 ft. D0188-04ARE 02-15-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/KG	13000	390	U		460	U		460	U		65	J		54	J	
Acenaphthene	UG/KG	50000	390	U		460	U		460	U		420	U		420	U	
Fluorene	UG/KG	50000	390	U		460	U		460	U		56	J		420	U	
Phenanthrene	UG/KG	50000	390	U		460	U		460	U		360	J		250	J	
Anthracene	UG/KG	50000	390	U		460	U		460	U		110	J		420	U	
Fluoranthene	UG/KG	50000	390	U		460	U		460	U		890			1600		
Pyrene	UG/KG	50000	390	U		460	U		460	U		1200			1200		
Benzo(a)anthracene	UG/KG	224	**390**	U		**460**	U		**460**	U		**630**			**520**		
Chrysene	UG/KG	400	390	U		**460**	U		**460**	U		**660**			**530**		
Benzo(b)fluoranthene	UG/KG	1100	390	U		460	U		460	U		1100			600		
Benzo(k)fluoranthene	UG/KG	1100	390	U		460	U		460	U		300	J		180	J	
Benzo(a)pyrene	UG/KG	61	**390**	U		**460**	U		**460**	U		**690**			**400**	**J**	
Indeno(1,2,3-cd)pyrene	UG/KG	3200	390	U		460	U		460	U		150	J		150	J	
Dibenzo(a,h)anthracene	UG/KG	14	**390**	U		**460**	U		**460**	U		**53**	**J**		**48**	**J**	
Benzo(g,h,i)perylene	UG/KG	50000	390	U		86	J		460	U		180	J		85	J	
Total SVOC	UG/KG	50000	5850			6526			6900			6864			6877		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.1.2 Alamo
Semi-Volatile Organic Compounds (SVOCs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	A-B-2-4-6RA Depth 4 - 6 ft. D0188-04ARA 02-15-05	Lab	Val	A-B-2-12-16 Depth 12 - 16 ft. D0161-07A 02-15-05	Lab	Val	A-B-2-12-16RA Depth 12 - 16 ft. D0161-07ARA 03-03-05	Lab	Val	A-W-1-12-14 Depth 12 - 14 ft. D0188-09A 02-15-05	Lab	Val	A-W-1-12-14RE Depth 12 - 14 ft. D0188-09ARE 02-15-05	Lab	Val	A-W-1-12-14RA Depth 12 - 14 ft. D0188-09ARA 02-15-05	Lab	Val
Naphthalene	UG/KG	13000	72	J		450	U		450	U		460	U		460	U		460	U	
Acenaphthene	UG/KG	50000	410	U		450	U		450	U		460	U		460	U		460	U	
Fluorene	UG/KG	50000	410	U		69	J		76	J		460	U		460	U		460	U	
Phenanthrene	UG/KG	50000	420			51	J		58	J		460	U		130	J		460	U	
Anthracene	UG/KG	50000	120	J		58	J		53	J		460	U		460	U		460	U	
Fluoranthene	UG/KG	50000	680			100	J		95	J		460	U		140	J		460	U	
Pyrene	UG/KG	50000	1900			310	J		420	J		460	U		120	J		460	U	
Benzo(a)anthracene	UG/KG	224	**630**			120	J		130	J		**460**	U		94	J		**460**	U	
Chrysene	UG/KG	400	**730**			230	J		150	J		**460**	U		81	J		**460**	U	
Benzo(b)fluoranthene	UG/KG	1100	750			130	J		120	J		460	U		110	J		460	U	
Benzo(k)fluoranthene	UG/KG	1100	290	J		450	U		450	U		460	U		36	J		460	U	
Benzo(a)pyrene	UG/KG	61	**570**			**130**	**J**		**110**	**J**		**270**	J		**65**	**J**		**460**	U	
Indeno(1,2,3-cd)pyrene	UG/KG	3200	310	J		450	U		450	U		460	U		460	U		460	U	
Dibenzo(a,h)anthracene	UG/KG	14	**89**	**J**		**450**	U		**450**	U		**460**	U		**460**	U		**460**	U	
Benzo(g,h,i)perylene	UG/KG	50000	260	J		450	U		450	U		460	U		460	U		460	U	
Total SVOC	UG/KG	50000	7641			3898			3912			6710			3996			6900		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.1.2 Alamo
Semi-Volatile Organic Compounds (SVOCs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	A-W-1-16-18 Depth 16 - 18 ft. D0188-11A 02-15-05	Lab	Val	A-W-1-16-18RE Depth 16 - 18 ft. D0188-11ARE 02-15-05	Lab	Val	A-W-1-18-20 Depth 18 - 20 ft. DUP OF A-W-1-12-14 D0188-10A 02-15-05	Lab	Val	A-W-1-18-20RE Depth 18 - 20 ft. DUP OF A-W-1-12-14 D0188-10ARE 02-15-05	Lab	Val	A-W-1-18-20RA Depth 18 - 20 ft. D0188-10ARA 02-15-05	Lab	Val
Naphthalene	UG/KG	13000	450	U		450	U		450	U		450	U		450	U	
Acenaphthene	UG/KG	50000	450	U		450	U		450	U		450	U		450	U	
Fluorene	UG/KG	50000	450	U		450	U		450	U		450	U		450	U	
Phenanthrene	UG/KG	50000	92	J		71	J		450	U		100	J		450	U	
Anthracene	UG/KG	50000	450	U		450	U		450	U		450	U		450	U	
Fluoranthene	UG/KG	50000	72	J		77	J		450	U		130	J		450	U	
Pyrene	UG/KG	50000	99	J		60	J		450	U		120	J		450	U	
Benzo(a)anthracene	UG/KG	224	49	J		46	J		**450**	U		91	J		**450**	U	
Chrysene	UG/KG	400	46	J		49	J		**450**	U		94	J		**450**	U	
Benzo(b)fluoranthene	UG/KG	1100	450	U		47	J		450	U		130	J		450	U	
Benzo(k)fluoranthene	UG/KG	1100	450	U		450	U		450	U		49	J		450	U	
Benzo(a)pyrene	UG/KG	61	**450**	U		**450**	U		**300**	J		**78**	**J**		**450**	U	
Indeno(1,2,3-cd)pyrene	UG/KG	3200	450	U		450	U		450	U		450	U		450	U	
Dibenzo(a,h)anthracene	UG/KG	14	**450**	U		**450**	U		**450**	U		**450**	U		**450**	U	
Benzo(g,h,i)perylene	UG/KG	50000	450	U		450	U		450	U		450	U		450	U	
Total SVOC	UG/KG	50000	4858			4400			6600			3942			6750		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.2.1 Rensselaer Iron Works Yard
Polychlorinated Biphenyls (PCBs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-B-2-8-12 Depth 8 - 12 ft. D0161-03A 02-18-05	Lab	Val	S-B-2-2-4 Depth 2 -4 ft. D0188-19A 02-18-05	Lab	Val	S-B-3-4-8 Depth 4 -8 ft. D0188-17A 02-17-05	Lab	Val	S-B-3-8-12 Depth 8 - 12 ft. D0188-18A 02-17-05	Lab	Val	S-B-5-4-6 Depth 4 - 6 ft. D0161-04A 02-18-05	Lab	Val	S-B-5-20-22 Depth 20 - 22 ft. D0161-12A 02-18-05	Lab	Val	S-B-5-22-24 Depth 22 - 24 ft. DUP S-B-5-20-22 D0161-13A 02-18-05	Lab	Val
Aroclor-1016	UG/KG		35	U		40	U		38	U		36	U		36	U		37	U		38	U	
Aroclor-1221	UG/KG		70	U		80	U		76	U		73	U		73	U		75	U		77	U	
Aroclor-1232	UG/KG		35	U		40	U		38	U		36	U		36	U		37	U		38	U	
Aroclor-1242	UG/KG		35	U		40	U		68			63	P	JN	93	P	JN	37	U		38	U	
Aroclor-1248	UG/KG		35	U		40	U		38	U		36	U		36	U		37	U		38	U	
Aroclor-1254	UG/KG		40	P	R	48	P	J	38			36	JP	J	67	P	R	37	U		38	U	
Aroclor-1260	UG/KG		35	U		40	U		38	U		36	U		36	U		37	U		38	U	
Total PCBs	UG/KG	1,000[a]/10,000[b]	285			328			334			316			377			297			305		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

[a] Applies to surface soil.

[b] Applies to soil below surface.

Table 4.4.2.1 Rensselaer Iron Works Yard
Polychlorinated Biphenyls (PCBs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-B-6-6-8 Depth 6 -8 ft. 02-18-05			S-B-6-20-22 Depth 20 - 22 ft. D0161-16A 02-18-05			S-W-1-2-6 Depth 2 -6 ft. D0161-05A 02-18-05			S-W-1-10-12 Depth 10 -12 ft. D0188-02A 02-18-05			S-W-2-2-6 Depth 2 - 6 ft. D0188-13A 02-17-05			S-W-2-8-12 Depth 8 - 12 ft. D0188-14A 02-17-05			S-W-3-18-22 Depth 18 - 22 ft. D0188-15A 02-17-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Aroclor-1016	UG/KG		36	U		38	U		37	U		38	U		37	U		38	U		37	U	
Aroclor-1221	UG/KG		73	U		78	U		74	U		78	U		74	U		78	U		74	U	
Aroclor-1232	UG/KG		36	U		38	U		37	U		38	U		37	U		38	U		37	U	
Aroclor-1242	UG/KG		36	U		38	U		260			38	U		400	P	J	220	P	J	37	U	
Aroclor-1248	UG/KG		36	U		38	U		37	U		38	U		37	U		38	U		37	U	
Aroclor-1254	UG/KG		31	J		38	U		190	P	J	38	U		140	P	J	110	P	J	37	U	
Aroclor-1260	UG/KG		36	U		38	U		37	U		38	U		37	U		38	U		37	U	
Total PCBs	UG/KG	1,000[a]/10,000[b]	284			306			672			306			762			560			296		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

[a] Applies to surface soil.

[b] Applies to soil below surface.

Table 4.4.2.1 Rensselaer Iron Works Yard
Polychlorinated Biphenyls (PCBs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-W-3-22-24 Depth 22 - 24 ft. D0188-16A 02-17-05			S-U-Y2 3 Depth 3 ft. D0977-04A 08-18-05			S-U-Y2 4 Depth 4 ft. D0977-05A 08-18-05			S-U-Y6 3 Depth 3 ft. D0978-04A 08-25-05			S-U-Y7 3 Depth 3 ft. D0978-11A 08-25-05			S-U-Y9 3 Depth 3 ft. D0977-15A 08-18-05			S-U-Y9 4 Depth 4 ft. D0977-16A 08-18-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Aroclor-1016	UG/KG		42	U		36	U		38	U		40	U		37	U		40	U		38	U	J
Aroclor-1221	UG/KG		86	U		74	U		77	U		80	U		75	U		82	U		77	U	J
Aroclor-1232	UG/KG		42	U		36	U		38	U		40	U		37	U		40	U		38	U	J
Aroclor-1242	UG/KG		42	U		36	U		38	U		40	U		37	U		40	U		38	P	R
Aroclor-1248	UG/KG		42	U		36	U		38	U		40	U		37	U		40	U		38	U	J
Aroclor-1254	UG/KG		42	U		36	U		38	U		40	U		37	U		40	U		38	U	J
Aroclor-1260	UG/KG		42	U		16	JP		38	P	JN	40	U		37	U		40	U		16	J	J
Total PCBs	UG/KG	1,000[a]/10,000[b]	338			270			305			320			297			322			283		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

[a] Applies to surface soil.

[b] Applies to soil below surface.

Table 4.4.2.1 Rensselaer Iron Works Yard
Polychlorinated Biphenyls (PCBs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-U-Y11 3 Depth 3 ft. D0978-08A 08-25-05			S-U-Y11 4 Depth 4 ft. D0978-09A 08-25-05			S-U-Y12 3 Depth 3 ft. D0977-20A 08-18-05			S-U-Y13 3 Depth 3 ft. D0978-02A 08-18-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val
Aroclor-1016	UG/KG		36	U		39	U		35	U		34	U	
Aroclor-1221	UG/KG		73	U		80	U		71	U		70	U	
Aroclor-1232	UG/KG		36	U		39	U		35	U		34	U	
Aroclor-1242	UG/KG		36	U		39	U		35	U		34	U	
Aroclor-1248	UG/KG		36	U		39	U		35	U		34	U	
Aroclor-1254	UG/KG		36	U		39	U		35	U		34	U	
Aroclor-1260	UG/KG		36	U		39	U		35	U		34	U	
Total PCBs	UG/KG	1,000[a]/10,000[b]	289			314			281			274		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

[a] Applies to surface soil.

[b] Applies to soil below surface.

By: AK Date: 5/16/2005
Chk by: RLA Date: 2/07/2006

Table 4.4.3.1 Rensselaer Iron Works Yard
Metals
Below 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	BACKGROUND-1 Depth 0 - 0.5 ft. C1463-11A 11/17/2004			BACKGROUND-2 Depth 0 - 0.5 ft. C1463-12A 11/17/2004			S-B-2-2-4 Depth 8 - 12 ft. D0188-19B 02/18/2005			S-B-2-8-12 Depth 2 -4 ft. D0161-03A 02/18/2005			S-B-3-4-8 Depth 4 -8 ft. D0188-17B 02/17/2005			S-B-3-8-12 Depth 8 - 12 ft. D0188-18B 02/17/2005			S-B-5-4-6 Depth 4 - 6 ft. D0161-04B 02/18/2005		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	0.42	UN	J	0.89	BN	J	9.6	BN	J	3.0	BE	J	4.6	BN	J	3.6	BN	J	5.8	BE	J
Arsenic	mg/Kg	10.7	14.1			7.3			0.37	U		1.9	B	J	1.7	B		1.2	B		9.2		J
Beryllium	mg/Kg	0.37	0.47	B		0.27	B		0.65	B		0.37	B	J	0.44	B		0.36	B		0.35	B	J
Cadmium	mg/Kg	1	0.042	UN	J	0.038	UN	J	12.8	*E	J	2.5	E	J	4.5	*E	J	3.9	*E	J	5.4	E	J
Chromium	mg/Kg	11.1	13.9			8.3			605	*E	J	11.7	E	J	19.1	*E	J	11.6	*E	J	16.4	E	J
Copper	mg/Kg	31.35	37.0	E	J	25.7	E	J	85.4	NE	J	13.8		J	36.1	NE	J	30.5	NE	J	559		J
Lead *	mg/Kg	400	94.1			12.5			59.2	E	J	14.1	E	J	84.9	E	J	23.5	E	J	266	E	J
Nickel	mg/Kg	16.15	17.4			14.9			674	*E	J	11.9	E	J	17.0	*E	J	10.2	*E	J	22.3	E	J
Selenium	mg/Kg	2	0.99	BN	J	0.57	UN	J	0.56	UN	R	0.58	U		0.59	UN	R	0.50	UN	R	0.62	U	
Silver	mg/Kg	4.49	8.6			0.38	U		32.2	N*E	J	7.7	E	J	13.4	N*E	J	11.9	N*E	J	14.5	E	J
Thallium	mg/Kg	2.44	4.2	N	J	0.68	BN	J	2.6			0.73	B	J	0.39	U		0.33	U		1.5	B	J
Zinc	mg/Kg	75.6	100			51.2			110	N*E	J	45.8	E	J	73.3	N*E	J	56.8	N*E	J	134	E	J
Mercury	mg/Kg	0.145	0.23			0.060	B		0.18			0.055	B	J	0.052	U		0.044	U		0.050	U	

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.3.1 Rensselaer Iron Works Yard
Metals
Below 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-B-5-20-22 Depth 20 - 22 ft. D0161-12B 02/18/2005	Lab	Val	S-B-5-22-24 Depth 22 - 24 ft. DUP S-B-5-20-22 D0161-13B 02/18/2005	Lab	Val	S-B-6-6-8 Depth 6 -8 ft. D0188-03B 02/18/2005	Lab	Val	S-B-6-20-22 Depth 20 - 22 ft. D0161-16B 02/18/2005	Lab	Val	S-W-1-2-6 Depth 2 -6 ft. D0161-05B 02/18/2005	Lab	Val	S-W-1-10-12 Depth 10 -12 ft. D0188-02B 02/18/2005	Lab	Val	S-W-2-2-6 Depth 2 - 6 ft. D0188-13B 02/17/2005	Lab	Val
Antimony	mg/Kg	0.655	**3.4**	**BE**	**J**	**3.9**	**BE**	**J**	**27.2**	**N**	**J**	**3.8**	**BE**	**J**	**6.8**	**BE**	**J**	**4.6**	**BN**	**J**	**12.6**	**N**	**J**
Arsenic	mg/Kg	10.7	1.6	B	J	1.4	B	J	**23.5**			4.8		J	6.4		J	3.6			0.38	B	
Beryllium	mg/Kg	0.37	**0.44**	**B**	**J**	**0.58**	**B**	**J**	**1.3**			0.22	B	J	**0.51**	**B**	**J**	**0.69**	**B**		**0.47**	**B**	
Cadmium	mg/Kg	1	**2.8**	**E**	**J**	**3.5**	**E**	**J**	**32.7**	***E**	**J**	**3.2**	**E**	**J**	**7.2**	**E**	**J**	**4.8**	***E**	**J**	**17.2**	***E**	**J**
Chromium	mg/Kg	11.1	10.5	E	J	**13.6**	**E**	**J**	**32.9**	***E**	**J**	10.3	E	J	**41.4**	**E**	**J**	**18.0**	***E**	**J**	**133**	***E**	**J**
Copper	mg/Kg	31.35	19.8		J	18.3		J	**93.4**	**NE**	**J**	13.6		J	**166**		**J**	**60.5**	**NE**	**J**	**835**	**NE**	**J**
Lead *	mg/Kg	400	13.3	E	J	23.1	E	J	13.2	E	J	8.8	E	J	**649**	**E**	**J**	134	E	J	299	E	J
Nickel	mg/Kg	16.15	**17.0**	**E**	**J**	**24.4**	**E**	**J**	5.3	B*E	J	10.1	E	J	**48.7**	**E**	**J**	**21.6**	***E**	**J**	**123**	***E**	**J**
Selenium	mg/Kg	2	0.51	U		0.49	U		0.56	UN	R	0.57	U		0.57	U		0.62	UN	R	0.52	UN	R
Silver	mg/Kg	4.49	**9.1**	**E**	**J**	**11.4**	**E**	**J**	**69.1**	**N*E**	**J**	**9.8**	**E**	**J**	**15.5**	**E**	**J**	**15.0**	**N*E**	**J**	**31.1**	**N*E**	**J**
Thallium	mg/Kg	2.44	1.0	B	J	1.0	B	J	0.37	U		0.38	U		0.69	B	J	0.41	U		0.35	U	
Zinc	mg/Kg	75.6	58.0	E	J	**77.7**	**E**	**J**	37.9	N*E	J	37.0	E	J	**668**	**E**	**J**	**219**	**N*E**	**J**	**915**	**N*E**	**J**
Mercury	mg/Kg	0.145	0.049	U		0.046	U		0.072	B	J	0.051	U		**0.19**		**J**	0.10	B	J	**0.73**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.3.1 Rensselaer Iron Works Yard
Metals
Below 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-W-2-8-12 Depth 8 - 12 ft. D0188-14B 02/17/2005	Lab	Val	S-W-3-18-22 Depth 18 - 22 ft. D0188-15B 02/17/2005	Lab	Val	S-W-3-22-24 Depth 22 - 24 ft. D0188-16B 02/17/2005	Lab	Val	S-U-Y2 3 Depth 3 ft. D0977-04B 08-18-05	Lab	Val	S-U-Y2 4 Depth 4 ft. D0977-05B 08-18-05	Lab	Val	S-U-Y6 3 Depth 3 ft. D0978-04B 08-25-05	Lab	Val	S-U-Y7 3 Depth 3 ft. D0978-11B 08-25-05	Lab	Val
Antimony	mg/Kg	0.655	**4.9**	**BN**	**J**	**4.6**	**BN**	**J**	**1.6**	**BN**	**J**	**0.37**	**UN**	**J**	**1.6**	**BN**	**J**	**1.1**	**B**		**1.6**	**B**	
Arsenic	mg/Kg	10.7	3.6			6.7			2.1	B		4.4			**22.6**			3.6			4.6		
Beryllium	mg/Kg	0.37	0.35	B		0.27	B		**0.85**	**B**		0.22	B		0.35	B		0.32	B		0.36	B	
Cadmium	mg/Kg	1	**5.1**	***E**	**J**	**4.9**	***E**	**J**	**1.2**	***E**	**J**	0.87	B		**3.3**			0.22	B		0.34	B	
Chromium	mg/Kg	11.1	**37.9**	***E**	**J**	**13.3**	***E**	**J**	10.2	*E	J	8.9	E	J	**17.6**	**E**	**J**	8.8			**11.3**		
Copper	mg/Kg	31.35	**95.4**	**NE**	**J**	18.1	NE	J	16.6	NE	J	26.9	E	J	**311**	**E**	**J**	27.3			**222**		
Lead *	mg/Kg	400	80.2	E	J	9.0	E	J	6.6	E	J	8.4	E	J	173	E	J	23.6			33.8		
Nickel	mg/Kg	16.15	**52.6**	***E**	**J**	10.4	*E	J	**29.7**	***E**	**J**	7.7	E	J	**24.3**	**E**	**J**	8.4			14.2		
Selenium	mg/Kg	2	0.59	UN	R	0.52	UN	R	0.66	UN	R	0.55	UN		0.56	UN		0.61	U		0.57	U	
Silver	mg/Kg	4.49	**13.2**	**N*E**	**J**	**14.7**	**N*E**	**J**	**7.7**	**N*E**	**J**	**1.0**	**B**		**1.4**	**B**		**0.63**	**B**		**0.6**	**B**	
Thallium	mg/Kg	2.44	0.39	U		0.35	U		0.44	U		0.37	U		0.37	U		0.41	U		0.38	U	
Zinc	mg/Kg	75.6	**202**	**N*E**	**J**	37.5	N*E	J	**87.2**	**N*E**	**J**	14.2	*E	J	**227**	***E**	**J**	32.7			**93.6**		
Mercury	mg/Kg	0.145	**0.35**			0.048	U		0.051	U		0.062	B	J	**0.55**			0.055	U		0.051	U	

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.3.1 Rensselaer Iron Works Yard
Metals
Below 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-U-Y9 3 Depth 3 ft. D0977-15B 08-18-05	Lab	Val	S-U-Y9 4 Depth 4 ft. D0977-16B 08-18-05	Lab	Val	S-U-Y11 3 Depth 3 ft. D0978-08B 08-25-05	Lab	Val	S-U-Y11 4 Depth 4 ft. D0978-09B 08-25-05	Lab	Val	S-U-Y12 3 Depth 3 ft. D0977-20B 08-18-05	Lab	Val	S-U-Y13 3 Depth 3 ft. D0978-02B 08-18-05	Lab	Val
Antimony	mg/Kg	0.655	**4.6**	BN	J	0.46	BN	J	**0.99**	B		**1.1**	B		**14.7**	N	J	**3.7**	B	
Arsenic	mg/Kg	10.7	**26.0**			**75.8**			4			3.6			**126**			**22.9**		
Beryllium	mg/Kg	0.37	**0.72**	B		**0.76**	B		0.33	B		**0.52**	B		**0.58**	B		0.29	B	
Cadmium	mg/Kg	1	**2.6**			**3.0**			0.32	B		0.34	B		**2.7**			**1.7**		
Chromium	mg/Kg	11.1	**13.3**	E	J	**19.0**	E	J	10			**23.9**			**21.4**	E	J	**20.8**		
Copper	mg/Kg	31.35	**9420**	E	J	**1770**	E	J	24.2			**41.9**			**144**	E	J	**492**		
Lead *	mg/Kg	400	**709**	E	J	339	E	J	31.4			30.4			273	E	J	193		
Nickel	mg/Kg	16.15	**29.2**	E	J	**20.6**	E	J	8			8.4			14.1	E	J	**34.6**		
Selenium	mg/Kg	2	0.64	UN		**4.4**	N	J	0.56	U		0.58	U		**3.5**	N	J	0.47	U	
Silver	mg/Kg	4.49	**3.2**			**0.97**	B		**0.4**	B		0.13	U		**0.66**	B		0.11	U	
Thallium	mg/Kg	2.44	0.43	U		0.40	U		0.37	U		0.38	U		0.76	B		0.32	U	
Zinc	mg/Kg	75.6	**717**	*E	J	**555**	*E	J	41.7			53.5			**272**	*E	J	**223**		
Mercury	mg/Kg	0.145	0.14		J	**0.49**			0.052	U		0.048	U		0.24			**0.19**		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.3.2 Alamo
Metals
Below 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	BACKGROUND-1 C1463-11A 11/17/2004			BACKGROUND-2 C1463-12A 11/17/2004			A-B-1-6-10 Depth 6 - 10 ft. D0161-06A 02/15/2005			A-B-1-14-16 Depth 14 - 16 D0188-07B 02/15/2005			A-B-2-4-6 Depth 4 - 6 ft. D0188-04A 02/15/2005			A-B-2-12-16 Depth 12 - 16 ft. D0161-07A 02/15/2005		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	0.42	UN	J	0.89	BN	J	**17.8**	**E**	**J**	**6.0**	**BN**	**J**	**5.1**	**BN**	**J**	**4.8**	**BE**	**J**
Arsenic	mg/Kg	10.7	14.1			7.3			4.7		J	4.0			8.8			3.3		J
Beryllium	mg/Kg	0.37	0.47	B		0.27	B		**1.9**		**J**	**1.1**			**1.2**			**0.78**	**B**	**J**
Cadmium	mg/Kg	1	0.042	UN	J	0.038	UN	J	**20.6**	**E**	**J**	**6.6**	***E**	**J**	**5.5**	***E**	**J**	**4.3**	**E**	**J**
Chromium	mg/Kg	11.1	13.9			8.3			**67.4**	**E**	**J**	**26.6**	***E**	**J**	**12.0**	***E**	**J**	**13.2**	**E**	**J**
Copper	mg/Kg	31.35	37.0	E	J	25.7	E	J	18.1		J	25.2	NE	J	20.5	NE	J	23.7		J
Lead *	mg/Kg	400	94.1			12.5			17.5	E	J	18.0	E	J	39.6	E	J	21.3	E	J
Nickel	mg/Kg	16.15	17.4			14.9			10.3	E	J	**25.7**	***E**	**J**	12.0	*E	J	**18.9**	**E**	**J**
Selenium	mg/Kg	2	0.99	BN	J	0.57	UN	J	0.57	U		0.58	UN	R	0.54	UN	R	0.56	U	
Silver	mg/Kg	4.49	8.6			0.38	U		**46.1**	**E**	**J**	**21.9**	**N*E**	**J**	**11.7**	**N*E**	**J**	**13.3**	**E**	**J**
Thallium	mg/Kg	2.44	4.2	N	J	0.68	BN	J	**4.7**		**J**	0.68	B	---	0.36	U		1.9	B	J
Zinc	mg/Kg	75.6	100			51.2			29.0	E	J	**87.3**	**N*E**	**J**	69.5	N*E	J	66.4	E	J
Mercury	mg/Kg	0.145	0.23			0.060	B		0.049	U		0.058	U		0.065	B	J	0.068	B	J

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.3.2 Alamo
Metals
Below 2 Feet Depth

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	A-W-1-12-14 Depth 12 - 16 ft. D0188-09B 02/15/2005			A-W-1-18-20 DUP OF A-W-1-12-14 D0188-10B 02/15/2005			A-W-1-16-18 DUP OF A-W-1-12-14 D0188-11B 02/15/2005		
				Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	**3.8**	**BN**	**J**	**3.9**	**BN**	**J**	**5.2**	**BN**	**J**
Arsenic	mg/Kg	10.7	2.5			2.7			3.0		
Beryllium	mg/Kg	0.37	**0.89**	**B**		**0.89**	**B**		**1.3**		
Cadmium	mg/Kg	1	**4.0**	***E**	**J**	**4.0**	***E**	**J**	**5.4**	***E**	**J**
Chromium	mg/Kg	11.1	**17.1**	***E**	**J**	**17.4**	***E**	**J**	**23.5**	***E**	**J**
Copper	mg/Kg	31.35	22.7	NE	J	21.5	NE	J	**36.4**	**NE**	**J**
Lead *	mg/Kg	400	14.1	E	J	13.9	E	J	24.5	E	J
Nickel	mg/Kg	16.15	**23.4**	***E**	**J**	**23.6**	***E**	**J**	**32.5**	***E**	**J**
Selenium	mg/Kg	2	0.64	UN	R	0.66	UN	R	0.70	UN	R
Silver	mg/Kg	4.49	**15.6**	**N*E**	**J**	**15.9**	**N*E**	**J**	**19.4**	**N*E**	**J**
Thallium	mg/Kg	2.44	0.64	B		0.72	B		0.47	U	
Zinc	mg/Kg	75.6	**83.2**	**N*E**	**J**	**85.7**	**N*E**	**J**	**115**	**N*E**	**J**
Mercury	mg/Kg	0.145	0.071	B	J	0.064	U		0.12	B	J

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.4.1 Rensselaer Iron Works Yard
Volatile Organic Compounds (VOCs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-B-2-8-12 Depth 8 -12 ft. D0161-03B 02-18-05			S-B-2-8-12RE Depth 8 -12 ft. D0161-03BRE 02-18-05			S-B-5-4-6 Depth 4 - 6 ft. D0161-04C 02-18-05			S-B-5-4-6RE Depth 4 - 6 ft. D0161-04CRE 02-18-05			S-W-1-2-6 Depth 2 - 6 ft. D0161-05C 02-18-05			S-W-1-2-6RE Depth 2 - 6 ft. D0161-05CRE 02-18-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Methyl tert-butyl ether	UG/KG	120	NA			5	U	J	NA			5	U	J	NA			6	U	J
Benzene	UG/KG	60	11	U		5	U	J	11	U		5	U	J	11	U		6	U	J
Toluene	UG/KG	1500	11	U		5	U	J	11	U		5	U	J	11	U		6	U	J
Ethylbenzene	UG/KG	5500	11	U		5	U	J	11	U		5	U	J	11	U		6	U	J
m,p-Xylene	UG/KG	-	NA			5	U	J	NA			5	U	J	NA			6	U	J
o-Xylene	UG/KG	-	NA			5	U	J	NA			5	U	J	NA			6	U	J
Xylene (Total)	UG/KG	1200	11	U		5	U	J	11	U		5	U	J	11	U		6	U	J
Isopropylbenzene	UG/KG	5000	11	U		5	U	J	11	U		5	U	J	11	U		6	U	J
n-Propylbenzene	UG/KG	14000	NA			5	U	J	NA			5	U	J	NA			6	U	J
1,3,5-Trimethylbenzene	UG/KG	3300	NA			5	U	J	NA			5	U	J	NA			6	U	J
tert-Butylbenzene	UG/KG	-	NA			5	U	J	NA			5	U	J	NA			6	U	J
1,2,4-Trimethylbenzene	UG/KG	13000	NA			5	U	J	NA			5	U	J	NA			6	U	J
sec-Butylbenzene	UG/KG	25000	NA			5	U	J	NA			5	U	J	NA			6	U	J
4-Isopropyltoluene	UG/KG	11000	NA			5	U	J	NA			5	U	J	NA			6	U	J
n-Butylbenzene	UG/KG	18000	NA			5	U	J	NA			5	U	J	NA			6	U	J
Naphthalene	UG/KG	-	NA			5	U	J	NA			5	U	J	NA			6	U	J

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.4.4.2 Alamo
Volatile Organic Compounds (VOCs)
Below 2 Feet Depth

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	A-B-1-6-10 Depth 6 - 10 ft. D0161-06B 02-15-05			A-B-1-6-10RE Depth 6 - 10 ft. D0161-06BRE 02-15-05			A-B-1-6-10RE Depth 6 - 10 ft. D0161-06BRE 02-15-05			A-B-2-12-16 Depth 12 - 16 ft. D0161-07B 02-15-05			A-B-2-12-16RE Depth 12 - 16 ft. D0161-07BRE 02-15-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val		Lab	Val
Methyl tert-butyl ether	UG/KG	120	NA			6	U	J	NA			NA			7	U	J
Benzene	UG/KG	60	12	U	J	6	U	J	12	U		14	U		7	U	J
Toluene	UG/KG	1500	1	J	J	6	U	J	12	U	J	14	U	J	7	U	J
Ethylbenzene	UG/KG	5500	12	U	J	6	U	J	12	U	J	14	U	J	7	U	J
m,p-Xylene	UG/KG	-	NA			6	U	J	NA			NA			7	U	J
o-Xylene	UG/KG	-	NA			6	U	J	NA			NA			7	U	J
Xylene (Total)	UG/KG	1200	12	U	J	6	U	J	12	U	J	14	U	J	7	U	J
Isopropylbenzene	UG/KG	5000	12	U	J	6	U	J	12	U	J	14	U	J	7	U	J
n-Propylbenzene	UG/KG	14000	NA			6	U	J	NA			NA			7	U	J
1,3,5-Trimethylbenzene	UG/KG	3300	NA			6	U	J	NA			NA			7	U	J
tert-Butylbenzene	UG/KG	-	NA			6	U	J	NA			NA			7	U	J
1,2,4-Trimethylbenzene	UG/KG	13000	NA			6	U	J	NA			NA			7	U	J
sec-Butylbenzene	UG/KG	25000	NA			6	U	J	NA			NA			7	U	J
4-Isopropyltoluene	UG/KG	11000	NA			6	U	J	NA			NA			7	U	J
n-Butylbenzene	UG/KG	18000	NA			6	U	J	NA			NA			7	U	J
Naphthalene	UG/KG	-	NA			5	JB	UJ	NA			NA			7	U	J

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.6.1 Groundwater
Semi-Volatile Organic Compounds (SVOCs)

ANALYTE	Units	Water Quality Standards	**A-W-1** D0257-04A 03-03-05			**S-W-1** D0257-01A 03-03-05			**S-W-2** D0257-02A 03-03-05			**S-W-3** D0257-03A 03-03-05		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val
Naphthalene	UG/L	10	10	U		10	U		10	U		10	U	
Acenaphthene	UG/L	20	10	U		10	U		10	U		10	U	
Fluorene	UG/L	50	10	U		10	U		10	U		10	U	
Phenanthrene	UG/L	50	10	U		10	U		4	J		10	U	
Anthracene	UG/L	50	10	U		10	U		1	J		10	U	
Fluoranthene	UG/L	50	10	U		1	J		5	J		10	U	
Pyrene	UG/L	50	10	U		10	U		4	J		10	U	
Benzo(a)anthracene	UG/L	0.002	**10**	**U**		**10**	**U**		**2**	**J**		**10**	**U**	
Chrysene	UG/L	0.002	**10**	**U**		**10**	**U**		**2**	**J**		**10**	**U**	
Benzo(b)fluoranthene	UG/L	0.002	**10**	**U**		**10**	**U**		**2**	**J**		**10**	**U**	
Benzo(k)fluoranthene	UG/L	0.5	**10**	**U**		**10**	**U**		**1**	**J**		**10**	**U**	
Benzo(a)pyrene	UG/L	--	10	U		10	U		2	J		10	U	
Indeno(1,2,3-cd)pyrene	UG/L	0.002	**10**	**U**		**10**	**U**		**10**	**U**		**10**	**U**	
Dibenzo(a,h)anthracene	UG/L	--	10	U		10	U		10	U		10	U	
Benzo(g,h,i)perylene	UG/L	---	10	U		10	U		10	U		10	U	

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.6.2 Groundwater Metals

ANALYTE	Units	Water Quality Standards	A-W-1 D0257-04B 03/03/2005			S-W-1 D0257-01B 03/03/2005			S-W-2 D0257-02B 03/03/2005			S-W-3 D0257-03B 03/03/2005		
				Lab	Val		Lab	Val		Lab	Val		Lab	Val
Antimony	ug/L	3	**39.5**	**BN**		**10.3**	**BN**		**18.1**	**BN**		2.2	BN	
Arsenic	ug/L	25	**179**			20.9			**29.3**			**26.1**		
Beryllium	ug/L	3	**33.7**	**E**		**4.7**	**BE**		**3.1**	**BE**		**10.8**	**E**	
Cadmium	ug/L	5	**104**	**E**		**17.3**	**E**		**19.8**	**E**		**10.4**	**E**	
Chromium	ug/L	50	**329**	**E**		**55.5**	**E**		**86.1**	**E**		49.5	E	
Copper	ug/L	200	**861**			**367**			**884**			**394**		
Lead	ug/L	25	**419**	**E**		**902**	**E**		**1590**	**E**		**106**	**E**	
Nickel	ug/L	100	**550**	**E**		**115**	**E**		**106**	**E**		89.2	E	
Selenium	ug/L	10	3.0	UN		3.0	UN		3.0	UN		3.0	UN	
Silver	ug/L	50	**275**	**E**		30.2	E		41.8	E		29.0	E	
Thallium	ug/L	.5	**29.6**			**15.2**			**8.5**	**B**		2.0	U	
Zinc	ug/L	2000	**2570**	**E**		839	E		989	E		730	E	
Mercury	ug/L	.7	**2.7**	**N**		**3.7**	**N**		**8.0**	**N**		0.14	UN	

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

By: AK Date: 5/16/2005
Chk by: RLA Date: 2-3-06

Table 4.6.3 Groundwater
Volatile Organic Compounds (VOCs)

Analyte	Units	Water Quality Standards	**A-W-1** D0257-04C 03-03-05		
				Lab	Val
Methyl tert-butyl ether	UG/L	10	5	U	
Benzene	UG/L	1	**5**	**U**	
Toluene	UG/L	5	5	U	
Ethylbenzene	UG/L	5	5	U	
m,p-Xylene	UG/L	5	5	U	
o-Xylene	UG/L	5	5	U	
Xylene (Total)	UG/L	5	5	U	
Isopropylbenzene	UG/L	5	5	U	
n-Propylbenzene	UG/L	5	5	U	
1,3,5-Trimethylbenzene	UG/L	5	5	U	
tert-Butylbenzene	UG/L	5	5	U	
1,2,4-Trimethylbenzene	0.5	5	5	U	
sec-Butylbenzene	UG/L	5	5	U	
4-Isopropyltoluene	UG/L	5	5	U	
n-Butylbenzene	UG/L	5	5	U	
Naphthalene	UG/L	10	5	U	

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.7.1 Hudson River Sediments
Semi-Volatile Organic Compounds (SVOCs)

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-U-Y15 D1058-01A 09-09-05	Lab	Val	S-U-Y14 D1058-02A 09-09-05	Lab	Val	S-U-Y8 D1058-03A 09-09-05	Lab	Val
Naphthalene	ug/Kg	13,000	460	U		510	U		400	U	
Acenaphthene	ug/Kg	50,000	460	U		510	U		400	U	
Fluorene	ug/Kg	50,000	460	U		510	U		400	U	
Phenanthrene	ug/Kg	50,000	380	J		420	J		400	U	
Anthracene	ug/Kg	50,000	66	J		63	J		400	U	
Fluoranthene	ug/Kg	50,000	910			1000			400	U	
Pyrene	ug/Kg	50,000	800			970			400	U	
Benzo(a)anthracene	ug/Kg	224	**380**	J		**400**	J		**400**	U	
Chrysene	ug/Kg	400	**470**			**530**			400	U	
Benzo(b)fluoranthene	ug/Kg	1,100	550			620			400	U	
Benzo(k)fluoranthene	ug/Kg	1,100	240	J		290	J		400	U	
Benzo(a)pyrene	ug/Kg	61	**350**	J		**380**	J		**400**	U	
Indeno(1,2,3-cd)pyrene	ug/Kg	3,200	120	J		130	J		400	U	
Dibenzo(a,h)anthracene	ug/Kg	14	**460**	U		**510**	U		**400**	U	
Benzo(g,h,i)perylene	ug/Kg	50,000	83	J		120	J		400	U	
Total SVOC	ug/Kg	50,000	6,189			6,963			6,000		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.7.2 Hudson River Sediments
Polychlorinated Biphenyls (PCBs)

ANALYTE	Units	RECOMMENDED SOIL CLEANUP OBJECTIVES	**S-U-Y15** D1058-01A 09-09-05			**S-U-Y14** D1058-02A 09-09-05			**S-U-Y8** D1058-03A 09-09-05		
				Lab	Val		Lab	Val		Lab	Val
Aroclor-1016	ug/Kg		45	U		51	U		40	U	
Aroclor-1221	ug/Kg		92	U		100	U		81	U	
Aroclor-1232	ug/Kg		45	U		51	U		40	U	
Aroclor-1242	ug/Kg		220	P		260	P		40	U	
Aroclor-1248	ug/Kg		45	U		51	U		40	U	
Aroclor-1254	ug/Kg		49	P		64	P		40	U	
Aroclor-1260	ug/Kg		45	U		51	U		40	U	
Total PCBs	ug/Kg	1,000 / 10,000	541			628			321		

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

Table 4.7.3 Hudson River Sediments
Metals

ANALYTE	UNITS	RECOMMENDED SOIL CLEANUP OBJECTIVES	S-U-Y15 D1058-01A 09-09-05			S-U-Y14 D1058-02A 09-09-05			S-U-Y8 D1058-03A 09-09-05		
				Lab	Val		Lab	Val		Lab	Val
Antimony	mg/Kg	0.655	0.40	U		0.54	U		0.38	U	
Arsenic	mg/Kg	10.7	3.3			3.1			5.2		
Beryllium	mg/Kg	0.37	**0.55**	B		**0.56**	B		**0.78**	B	
Cadmium	mg/Kg	1	0.91	B		0.95	B		0.99		
Chromium	mg/Kg	11.1	**20.6**			**20.4**			**16.8**		
Copper	mg/Kg	31.35	**34.2**			**40.1**			21.4		
Lead *	mg/Kg	400	41.4			32.9			19.5		
Nickel	mg/Kg	16.15	**17.8**			**18.1**			0.053		
Selenium	mg/Kg	2	0.81	U		1.1	U		**27.8**	U	
Silver	mg/Kg	4.49	0.10	U		3.0			0.76		
Thallium	mg/Kg	2.44	**2.8**			**2.8**	B		**9.3**		
Zinc	mg/Kg	75.6	**105**	E		**116**	E		4.3	E	
Mercury	mg/Kg	0.145	0.063	U		0.070	U		**107**	U	

*See Document titled "Data Qualifiers" for information regarding qualifiers and data interpretation

DRAFT

Site-Specific Brownfields
Remedial Alternatives Report

Brownfields Assessment Demonstration Pilot Project
South Troy Brownfields
Troy, New York

Prepared for:

City of Troy
City Hall
1 Monument Square
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May 16, 2006

Site-Specific Brownfields
Remedial Alternatives Report

Brownfields Assessment Demonstration Pilot Project
South Troy Brownfields
Troy, New York

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EXECUTIVE SUMMARY

This report is a Remedial Alternatives Report (RAR) prepared by Sterling Environmental Engineering, P.C. concerning the Rensselaer Iron Works Area of Concern (AOC).

The Phase I Environmental Site Assessments for the Rensselaer Iron Works AOC and the Alamo AOC identified the potential presence of residual metals and hydrocarbon compounds at the AOCs. Additional site investigation was deemed necessary to determine the nature and extent of residual source areas and to evaluate if exposure to those impacts results in significant risk to human health or the environment, and to determine what, if any, remedial action is needed. Thus, the Phase II Site Investigation Process goals were used to obtain data to define site physical characteristics, contaminated source areas, and the extent of migration through potential pathways.

The Rensselaer Iron Works AOC is located along the east shore of the Hudson River and the south shore of the Poesten Kill. The AOC is bounded on the south by Madison Street and on the east by railroad tracks. The site is reportedly 5.72 acres in size and contains two major buildings, the former foundry and the maintenance building, has a small area of railroad siding, and has a large yard area where a scrap metal transfer station operates and loads barges that tie up to the bulkhead along the Hudson River.

A Phase II investigation, summarized in the Site Investigation Report (SIR), determined the following types of contamination and recommendations.

The SVOC and metals concentrations, particularly the lead concentrations in the Foundry Building, represent a potential risk of human health exposure via direct ingestion and dust inhalation (see Table 1). The City is planning to raise the floor of this building during the redevelopment of this site. Careful placement of fill while protecting the workers and capping with a poured concrete slab would create a cover that will seal these contaminants below the cap, thereby preventing human exposure.

The SVOC, PCB and metal concentrations in the yard area represent a potential risk of human exposure via direct ingestion, dust inhalation and dermal contact. The City is planning to raise the ground elevation during the redevelopment of this site. Careful placement of fill while protecting the workers and capping with vegetated areas, asphalt parking areas and roadways, and poured concrete sidewalks and an amphitheater would create a cover that will seal these contaminants below the cap, thereby preventing human exposure.

The Perlite should be vacuumed from the locations where it is found using High Efficiency Particulate Atmosphere (HEPA) vacuums and appropriate barriers to prevent inhalation of the dust by workers or visitors.

Based on these recommendations and the status of the site as an area the City has an interest in redeveloping for the recreational value and the proposed Hudson Rivers and Estuaries Center, the Rensselaer Iron Works AOC was selected for analysis and development of this Remedial Alternatives Report (RAR), which is structured similar to a Feasibility Study in the inactive hazardous waste program.

Four alternatives were found potentially suitable for the site characteristics, contaminated media, range of contaminants, and contaminant concentrations. The four alternatives subjected to detailed consideration are:

1. No Further Action
2. Consolidation, Capping and Institutional Controls
3. Soil Excavation and Off-Site Disposal
4. In-Situ Soil Treatment

After detailed screening and comparison, Alternative 2 is found to be protective of human health and the environment, fulfills the remedial goals, and permanently eliminates potential exposure to contaminants in groundwater and soil on-site. Therefore, consolidation, capping and institutional controls is the recommended remedial alternative for the Rensselaer Iron Works site in South Troy, New York.

1.0 INTRODUCTION

Sterling Environmental Engineering, P.C. (STERLING) in conjunction with Chazen Co./Engineers & Enviro. Professionals (Chazen), River Street Planning and Development, and Gary Bowitch, Esq., collectively referred to as "the Project Team" was hired by the City of Troy (the City) to implement the South Troy Brownfields Assessment Demonstration Pilot Project (the Project).

The Project is organized into the following tasks:

Task 0: Interagency Coordination and Project Management.

Task 1: Community Involvement/Brownfields Task Force/Communication.

Task 2: Site Inventory/Identification and Ranking, Site Assessments and Remediation Plans, including:

- Phase II Site Assessments and Remedial Designs.

Task 3: Legal Issues and Redevelopment Planning.

Task 4: Planning and Marketing Tools and Public Notification.

To initiate Task 2, STERLING conducted a Historical Data Review and prepared the Site Reconnaissance Reports. These reports are principally extractions from the Phase I Brownfields Site Assessment Report that is entitled the "Environmental Planning and Research Report" dated July 26, 2000, with supplemental information obtained in subsequent site visits by STERLING.

The Phase I Brownfields Site Assessment was completed for approximately 54 parcels in an area from Congress Street at the north to the Troy City Line at the south and from the Hudson River on the west to approximately 1st Street on the east.

After public input, recommendations from a special task force formed as part of the Project, and careful ranking for a range of criteria by the consultants and the City, three sites were selected for Phase II sampling. These were:

1. An Area Of Concern (AOC) consisting of the former Rensselaer Iron Works (also known as the former Scolite Property) which is currently owned by City of Troy;

2. An AOC consisting of a six (6) acre area within land owned by the Rensselaer County Industrial Development Authority; and,

3. An AOC consisting of the northernmost King Fuels property (also known as the Alamo Property), which was owned by King Fuels, Inc., at the time.

However, after the selection of these three AOCs, the Rensselaer County Industrial Development Authority obtained Environmental Restoration Funding from the New York State Department of Environmental Conservation (NYSDEC) to conduct its own investigation of all its lands in the South Troy Waterfront area, including the six (6) acre parcel that the City of Troy selected.

Therefore, the two sites selected for Phase II Site Investigation are:

1. An Area Of Concern (AOC) consisting of the former Rensselaer Iron Works (also known as the former Scolite Property) which is currently owned by the City of Troy; and,

2. An AOC consisting of a property known as the Alamo, which was designated Site 43 in the Phase I Brownfields Site Assessment Report and is currently owned by the City of Troy.

1.1 Phase II Investigation Objectives

The Phase I Environmental Site Assessments for the Rensselaer Iron Works AOC and the Alamo AOC identified the potential presence of residual metals and hydrocarbon compounds at the AOCs. Additional site investigation was deemed necessary to determine the nature and extent of residual source areas and to evaluate if exposure to those impacts results in significant risk to human health or the environment, and to determine what, if any, remedial action is needed. Thus, the Phase II Site Investigation Process goals were used to obtain data to define site physical characteristics, contaminated source areas, and the extent of migration through potential pathways.

The specific objectives of the Phase II Site Investigation were:

- Locating and identifying potential sources of hazardous waste or petroleum contamination (sampling data are used when formulating remediation strategies, and estimating remediation costs).

- Insofar as feasible given budget constraints, delineating horizontal and vertical contaminant concentrations, identifying clean areas, and estimating volume of contaminated soil.

- Determining if there is an impact threat to public health or the environment from hazardous waste or petroleum releases.

- Providing data to assist in determining treatment and disposal options and characterizing soil for on-site or off-site treatment.

- Selecting appropriate remediation goals.

1.2 Phase II Investigation Results

The Phase II Site Investigation was completed and is summarized in the Site Investigation Report (SIR).

The results of the investigation of the Rensselaer Iron Works AOC pertain to this Remedial Alternatives Report (RAR) and include the following.

1.2.1 Site Background

The Rensselaer Iron Works AOC is located along the east shore of the Hudson River and the south shore of the Poesten Kill. The AOC is bounded on the south by Madison Street and on the east by railroad tracks. The site is reportedly 5.72 acres in size and contains two major buildings, the former foundry and the maintenance building, has a small area of railroad siding, and has a large yard area where a scrap metal transfer station operates and loads barges that tie up to the bulkhead along the Hudson River.

1.2.2 Physical Characteristics of Site

The site has an accumulation of materials from the historical and present uses of the site. Old structures and items exist on-site from the indicated uses:

- Foundry:

  Foundry building including: furnace area, blowers, processing areas.
  Hudson Deepwater Development office and maintenance building.

- Roofing Company:

  Steel 55-gallon drums containing asphalt, truck tanker containing asphalt.

- Scolite: Insulated Concrete:

  Bags of Perlite, piles and loose Perlite, mixing conveyors and machinery.

- Miscellaneous Maintenance:

  Used cars, miscellaneous parts and containers, and spray cans.

- Lumber Processing:

  Used equipment, logs, wood pieces.

- Scrap Metal Transfer Station:

  Scrap metal pieces, river sediment from recovering pieces dropped in Hudson River, Aboveground Storage Tank (AST) for fuel oil, equipment in use, maintenance items.

These structures and items provide evidence of possible exceedances of the recommended soil cleanup objectives and represent a potential cost in the long-term use of the site with regards to the cost of proper physical removal.

1.2.3 Nature and Extent of Impacts

1.2.3.1 Soils

Individual SVOCs exceed the recommended soil cleanup objectives in the surface of the rail siding area, throughout the foundry building surface, and throughout the top two (2) feet of the yard area. As depth increases in the yard area, fewer individual SVOCs exceed the recommended soil cleanup objectives.

Total SVOCs exceed the recommended soil cleanup objectives in the surface of the rail siding area, at seven of eight locations in the foundry building surface, and at five of the twenty-eight locations in the yard area. As depth increases in the yard area, fewer Total SVOCs exceed the recommended soil cleanup objectives, with the exception of the two sample locations designated as S-U-Y9 and S-U-Y13.

Total PCBs do not exceed the recommended soil cleanup objective of 1.0 ppm in the surface of the rail siding area. Total PCBs do exceed the recommended soil cleanup objective of 1.0 ppm at nine locations of the yard area. As depth increases in the yard area, Total PCBs do not exceed the recommended soil cleanup objective of 10.0 ppm below two (2) feet.

Individual metals exceed the recommended soil cleanup objectives in the surface of the rail siding area, at seven of eight locations in the foundry building surface, and throughout the top two (2) feet of the yard area. As depth increases in the yard area, fewer individual metals exceed the recommended soil cleanup objectives. Lead concentrations generally decrease with depth and do not exceed the recommended soil cleanup objectives below six (6) feet.

1.2.3.2 Groundwater

Five (5) SVOCs appear to exceed the water quality standards in 6 NYCRR Part 703 at the three groundwater wells within the yard area. The apparent detection limits are higher than the relevant water quality standards, so it not possible to determine if the compounds were present in the samples at higher than the water quality standards.

Ten (10) metals, Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Thallium, and Mercury, appear to exceed the water quality standards in 6 NYCRR Part 703 at least one of the three groundwater wells within the yard area. Five of the metals in groundwater from well S-W-3, which is presumed to be the upgradient well at the AOC, exceeded the water quality standards, whereas, nine of the metals in the groundwater from well S-W-1 and ten of the metals in the groundwater from well S-W-2, exceed 6 NYCRR Part 703. However, the exceedances are all within one or two powers of ten more than the corresponding water quality standard.

1.2.3.3 Sediments

Sediments in the Hudson River were sampled at three (3) locations. The sediments were sampled in the Hudson River immediately west of the bulkhead at the site, and upstream at two locations beyond the reach of runoff from the site and the Poesten Kill delta upstream of the site.

All three sediment locations have individual SVOCs exceeding their recommended soil cleanup objective. All three locations have the same four SVOCs that exceed their recommended soil cleanup objectives.

None of the three locations have Total SVOCs concentrations that exceed the recommended soil cleanup objective of 50 ppm Total SVOCs.

None of the three locations have samples where PCBs exceed the recommended soil cleanup objective.

Eight (8) metals, Beryllium, Chromium, Copper, Nickel, Selenium, Thallium, Zinc and Mercury, exceed the recommended soil cleanup objectives at one or more locations within the Hudson River sediment. However, the exceedances are generally within a power of ten more than the corresponding recommended soil cleanup objective.

Sediments which adhere to scrap metal pieces that have fallen into the Hudson River adjacent to the bulkhead and are subsequently recovered do not appear to be a likely source of exceedances of the recommended soil cleanup objectives at the Rensselaer Iron Works AOC.

1.2.3.4 Perlite

Perlite was found in a trench north of the foundry building and on the maintenance building floor.

1.3 Assessment of Potential Risks for the Rensselaer Iron Works AOC

The potential risks at the Rensselaer Iron Works are posed by the contaminated soil, contaminated groundwater, and Perlite.

The contaminated soil poses potential pathways through direct contact, ingestion of soil, and inhalation of fugitive emissions.

Direct contact poses a potential pathway to workers and people visiting the site. The fencing and the operation of the scrap metal facility restricts access. However, the risk posed by direct contact limits the site to commercial/industrial uses.

Ingestion of the soil is primarily a risk if residents were to bring children to the site or were to grow food crops at the site. The likelihood appears low of residents bringing young children to the site in the site's present condition and management. Older children, especially teenagers, could conceivably spend time at the facility, but they would be discouraged by the scrap metal facility operators from entering the yard area. The foundry building is vulnerable to unauthorized entry by children or adults.

Inhalation of fugitive emissions primarily poses a potential risk to on-site workers, although fugitive emissions could reach residential areas under certain conditions.

Contaminated groundwater poses a potential risk to people ingesting groundwater and threatens Hudson River water quality. The area is served by municipal water supplied by the City of Troy. The site is on the east shore of the Hudson River so there is no property upon which a groundwater extraction well could be located to intercept the groundwater from the site before it enters the Hudson River. With regards to the impact on the Hudson River, the flows pass the site at an annual average rate of 7,750 cubic feet per second based on the years 1947 to 2003. This converts to an annual average rate of 83 million gallons per day. This rate of flow necessarily must greatly dilute the flow of groundwater from the Rensselaer Iron Works AOC.

The Perlite poses a potential risk of lung irritation to on-site workers from fugitive emissions. Perlite is not known to be a carcinogenic but like all fine dusts can cause lung irritation that can range from mild to debilitating.

1.4 Recommendations for the Rensselaer Iron Works AOC

The SVOC and metals concentrations, particularly the lead concentrations in the Foundry Building, represent a potential risk of human health exposure via direct ingestion and dust inhalation (see Table 1). The City is planning to raise the floor of this building during the redevelopment of this site. Careful placement of fill while protecting the workers and capping with a poured concrete slab would create a cover that will seal these contaminants below the cap, thereby preventing human exposure.

The SVOC, PCB and metal concentrations in the yard area represent a potential risk of human exposure via direct ingestion, dust inhalation and dermal contact. The City is planning to raise the ground elevation during the redevelopment of this site. Careful placement of fill while protecting the workers and capping with vegetated areas, asphalt parking areas and roadways, and poured concrete sidewalks and an amphitheater would create a cover that will seal these contaminants below the cap, thereby preventing human exposure.

The Perlite should be vacuumed from the locations where it is found using High Efficiency Particulate Atmosphere (HEPA) vacuums and appropriate barriers to prevent inhalation of the dust by workers or visitors.

Based on these recommendations and the status of the site as an area the City has an interest in redeveloping for the recreational value and the proposed Hudson Rivers and Estuaries Center, the Rensselaer Iron Works AOC was selected for analysis and development of this Remedial Alternatives Report (RAR), which is structured similar to a Feasibility Study in the inactive hazardous waste program.

2.0 REMEDIAL ACTION OBJECTIVES

The regulations in 6 NYCRR Part 375 allow a municipality to apply for State assistance under ECL Article 56, Title 5 to investigate or remediate a property if a number of criteria are met.

The regulatory goal specified in 6 NYCRR Part 375 is to return the site to predisposal conditions, to the extent feasible and authorized by law. A selected remedy must, at a minimum, eliminate or mitigate all significant threats to the public health and to the environment presented by hazardous waste disposed at the site through the proper application of scientific and engineering principles.

Remedial action objectives developed for the Rensselaer Iron Works AOC reflect results of the site investigation as stated in the Site Investigation Report and applicable regulatory requirements and guidance, resulting in the establishment of site specific cleanup objectives. Remedial objectives are selected that will be protective of human health and the environment.

2.1 Remedial Goals

The Rensselaer Iron Works AOC remedial action objectives are as follows:

1. Minimize exposure (inhalation, ingestion, and dermal contact) to soils containing unacceptable levels of metals, Semi-volatile Organic Compounds (SVOCs), and Polychlorinated Biphenyls (PCBs).

2. Prevent degradation of off-site groundwater and stream quality resulting from movement of contaminants from soil into groundwater and surface water.

3. Stabilize surface soil to control wind and water erosion and dust generation.

2.2 Applicable or Relevant and Appropriate Requirements (ARARs)

Applicable requirements are defined as cleanup standards or standards of control that specifically address a hazardous substance or contaminant detected at a New York State inactive hazardous waste disposal site. The NYSDEC defines applicable requirements as all Standards, Guidance and Criteria (SGCs) relevant to the site remedial alternatives. *Relevant and appropriate* requirements are Federal or state requirements that, while not applicable, address problems sufficiently similar to those encountered at CERCLA sites that their application is appropriate.

In addition to ARARs and SGCs, other Federal, State, and local criteria, advisories, or guidances may also apply to the conditions found at the site, and are known as *to-be-considered* (TBC) items. TBCs are not legally binding, but may be useful for assessing site risks and selecting site cleanup goals.

Chemical-specific ARARs provide guidance on acceptable or permissible contaminant concentrations in soil, air and water (see Table 2).

2.2.1 Chemical-Specific ARARs and TBCs

New York State Groundwater Standards have been promulgated by the NYSDEC and apply to Class GA groundwater, which underlies the site and vicinity: The best usage of Class GA waters is as a source of potable water supply. Class GA waters are fresh groundwaters found in the saturated zone of unconsolidated deposits and consolidated rock or bedrock. Class GA groundwater standards are equivalent to the maximum contaminant levels (MCLs) established by the NYSDOH for public drinking water supplies, and are published in the New York Code of Rules and Regulations (NYCRR) Title 10 Chapter I (State Sanitary Code) Subpart 5-1. Class GA standards for the Rensselaer Iron Works metals of concern are: Antimony (3 ppb); Arsenic (25 ppb); Cadmium (5 ppb); Chromium (50 ppb); Copper (200 ppb); Lead (25 ppb); Nickel (100 ppb); Selenium (10 ppb); Silver (50 ppb); and Mercury (0.7 ppb). Multiple SVOCs have standards, as well. 6 NYCRR Part 703 Surface Water Standards have been promulgated by the NYSDEC and apply to surface waters in New York State. By extension they apply to discharges in that such discharges must not cause a contravention of the surface water standards.

New York State Recommended Soil Cleanup Objectives are TBCs published by the NYSDEC in Technical and Administrative Guidance Memorandum (TAGM) #4046 [NYSDEC 1994]. This guidance outlines the basis and procedure for determining soil cleanup levels at inactive hazardous waste sites. The cleanup objectives apply to unsaturated soils above the water table.

The Occupational Safety and Health Administration (OSHA) has promulgated *permissible exposure limits (PELs)* for workers for a variety of contaminants in the air (29 CFE 1910, Subpart Z). The PELs are *time-weighted average (TWA)* concentrations to which workers may be exposed over an 8-hour exposure period without adverse health effects. PELs and TWAs are intended for adult workers exposed in an occupational setting and are not directly applicable to CERCLA or New York inactive hazardous waste sites. The PELs and TWAs may be used as guidance values to determine whether long-term exposures to contaminants in air pose a potential human health risk.

The National Institute for Occupational Safety and Health (NIOSH) has developed concentrations for contaminants in the air that are *immediately dangerous to life or health (IDLH)* for individuals in occupational settings. The IDLH is the maximum concentration, in the event of respirator failure, that could be tolerated for 30 minutes without experiencing irreversible health effects. The IDLHs are appropriate only for subchronic exposures to non-carcinogenic compounds or effects of compounds in air. These values are not directly applicable to CERCLA or inactive hazardous waste sites; however, they may provide guidance regarding on-site workers. NIOSH also has *recommended exposure limits (RELs)* for each Chemical of Concern (COC). An REL is generally a 10-hour time-weighted average based on toxicological and industrial hygiene data.

The American Conference of Governmental Industrial Hygienists (ACGIH) has developed threshold limit values (TLVs) for occupational settings. The TLV is a time-weighted average concentration of contaminant under which most people can work consistently for eight (8) hours per day, day after day, and avoid harmful effects.

2.2.2 Action-Specific ARARs and TBCs

The Resource Conservation and Recovery Act (RCRA) and the ***New York State Hazardous Waste Regulations*** deal with the treatment and disposal methods of hazardous wastes. Wastes generated on the site must be handled in accordance with the Federal hazardous waste regulations (40 CFR Part 260-268) promulgated under RCRA as well as New York State Hazardous Waste Regulations (6 NYCRR Parts 370-376), if applicable. Disposal to off-site landfills shall be in accordance with Federal and State land disposal restrictions. Determination of the presence and appropriate waste code for any hazardous wastes at the site will be made in accordance with 6 NYCRR Part 371 (Identification and Listing of Hazardous Wastes). If soils need to be removed from the site as hazardous, they will be assigned an appropriate waste classification based on the waste characterization analysis.

6 NYCRR Part 375 describes general provision for inactive hazardous waste disposal sites and remediation thereof. This regulation describes the procedure for conducting *Interim Remedial Measures (IRMs)*.

The Comprehensive Environmental Response, Compensation and Liability Act **(CERCLA)**, specifically Section 121, Subsections 104 and 106, states that the selected remedial alternative must attain a cleanup level that is protective of human health and the environment.

EPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (EPA/540/G-89/004) establishes the methodology that the Superfund program has setup for characterizing the nature and extent of the risks posed by uncontrolled hazardous wastes sites and for evaluating potential remedial options. This TBC would apply if the site were to become an USEPA Superfund-listed site.

2.2.3 Site Specific Action Levels

Future use of the property may be considered in developing site-specific action levels. The aforementioned NYS Recommended Soil Cleanup Objectives establishes cleanup guidance values which assume future use with a high likelihood of human exposure.

3.0 REMEDIAL TECHNOLOGY SCREENING PROCESS

An initial screening is performed to develop a list of potentially applicable remedial technologies applicable to site conditions, contaminants, and contaminated media. Applicable technologies undergo a detailed analysis of alternatives.

3.1 Identification and Screening of Technologies

The screening of technology types and process options are discussed below. This screening was based on the criteria of effectiveness for treating impacted soils, and implementability.

3.1.1 Source Controls

Controls to prevent the continued migration of contaminants from source soils include institutional measures, containment, in-situ treatment, excavation and removal, on-site treatment, and disposal. These general response actions and the applicable technology types are described below.

Institutional Measures for addressing soil contamination can include use restrictions and deed restrictions to reduce the possibility of human contact with contaminants. Fencing may deter unauthorized access to contaminated soil/source areas on the site. Signs can be placed on the site to warn utility and construction workers of the contaminated soil and advise calling NYSDEC prior to excavation. Deed restrictions will provide notice to prospective owners that certain uses and/or development of the site may be restricted without further remedial action, in the event the property should be transferred in the future.

Containment of contaminated soils in place will minimize human contact through capping. Much of the site is already paved or covered by buildings. Pavement will divert precipitation away from the contaminated area and reduce infiltration, reducing potential for contaminant leaching into groundwater.

In Situ Treatment technologies include biological, thermal, and physical/chemical treatment processes. Many of these processes are innovative technologies, with unproven effectiveness for sites such as Rensselaer Iron Works. As a result, the need for treatability or pilot-scale studies often makes these technologies less economically feasible.

Excavation & Removal of contaminated surficial soil can be accomplished with conventional equipment.

On-site Treatment of contaminated soils is sometimes employed, but is usually only economically feasible if large quantities of soil require treatment.

Disposal options for soil excavated from the Rensselaer Iron Works site include on-site consolidation and capping.

3.2 Development of Remedial Alternatives

Although the site is not a hazardous waste site, STERLING evaluated the preliminary alternatives against the criteria of effectiveness and implementability as is generally prescribed by the NYSDEC's TAGM HWWR-89-4025, Guidelines for Remedial Investigations/Feasibility Studies (NYSDEC 1989) and HWR- 90-4030, Selection of Remedial Actions at Inactive Hazardous Waste Sites (NYSDEC 1990). This provides a proven format for alternative development and consideration. The development and selection of remedial alternatives are presented below.

- <u>Alternative 1</u> is the No Further Action alternative, which will allow contaminated soil at the Rensselaer Iron Works site to be left in place. No monitoring of groundwater contaminants will be conducted in the future. This alternative might necessitate institutional controls, such as groundwater and land use restrictions, to minimize human contact with contaminated media. Signs can be posted to warn construction or utility workers to contact the NYSDEC before excavating.

  Existing pavement and buildings will act as a cover by diverting water away from some areas of contamination, thereby reducing infiltration of surface water to the extent these items provide.

- <u>Alternative 2</u> consists of Consolidation, Capping and Institutional Controls. Such measures can be incorporated into the design of the proposed development project: the Upper Hudson Rivers and Estuaries Center.

  In summary, the initial phase of the project will involve remediation of the site by consolidation, paving or placement of a soil layer over impacted portions of the site. Prior to construction, the impacted soils in the Rensselaer Iron Works yard will be stabilized to control erosion by wind and storm water runoff.

Soil excavated for placement of building foundations, if any, the amphitheater, if any, and utilities could be consolidated in a designated area on-site, and capped. All other surficial soils exceeding cleanup objectives will be capped in place with a one (1) foot thick layer of clean soil.

Covering the identified soil contamination with pavement, clean soil or other materials, combined with appropriate storm water runoff controls, will: 1) Minimize potential contact with contaminated surface soil by on-site workers; 2) Minimize leaching of metals by reducing infiltration of precipitation and storm water; and 3) Stabilize surface soil to control wind erosion and dust generation.

Under this remedy, all soil exceeding the action level will be covered in-place by clean soil (a 12-inch minimum thickness), asphalt pavement or other material. Paved areas would be used as parking lots and roadways. The Rensselaer Iron Works Foundry Building will have cover soil and a floor slab installed, effectively capping contaminated soil. Capping will minimize human contact with contaminated soil, and the pavement will be an effective barrier to infiltration of water into underlying soil as well. Drainage controls will be employed to divert storm water from coming into contact with contaminated soil. Groundwater use restrictions will be formally implemented, and deed restrictions will disallow or restrict future construction or other disturbance within designated areas of the site without prior approval of the NYSDEC. This alternative also includes monitoring of on-site groundwater twice annually for 30 years.

Two types of institutional controls will be implemented to further reduce contact with contamination: 1) Groundwater use restrictions that would prevent future withdrawal and use of on-site groundwater; and 2) Deed restrictions that would disallow future construction or other disturbance within the capped area without prior approval of the NYSDEC.

- *Alternative 3* includes excavation and off-site disposal of contaminated soil, which would prevent continued leaching of contaminants to groundwater. Soil would be removed to a depth of four (4) feet over most of the yard area, with deeper removal in certain areas, as indicated by the borings. Soil would be removed to a depth of two (2) feet over the rest of the site outside the on-site buildings. Soil would be removed to a depth of two (2) feet or refusal within the Foundry Building, as concrete may prevent excavation within certain areas of the Foundry Building. Contaminant concentrations below these described depths have been shown to be within acceptable limits over most of the site. The Rensselaer Iron Works floor slabs and underlying soil would remain in place.

  Excavation would be conducted using conventional earthmoving equipment, such as backhoes, excavators and front-end loaders. For cost estimating purposes, it is assumed that post-excavation samples would be collected from the bottom of the excavation at the rate of four (4) samples per acre. The samples would be analyzed for the same Metals, SVOCs and PCBs that were analyzed in the site investigation. The excavation would be backfilled with suitable clean fill material, then left unpaved.

  This alternative would also include long-term groundwater monitoring. The Rensselaer Iron Works building would require institutional controls to prevent future disturbance or exposure to contaminated soils remaining below the foundation, if any.

- *Alternative 4* includes treatment of contaminated soil in place (in-situ). A variety of in-situ treatment technologies have been developed for contaminated soils. However, the only technology that has repeatedly been proven effective against metals, SVOCs, and PCBs is solidification/stabilization.

  Solidification and stabilization involves changes to the physical or chemical properties of the soil in order to immobilize contaminants.

  The stabilization technique potentially appropriate for this site utilizes cement dust and/or coal ash, which is spread on and disked into the surficial soil in contaminated areas. The introduction of these materials into the soil raises the pH of the soil and binds the metals within the soils matrix. This technique may have limited effectiveness against high concentrations of SVOCs and PCBs but is likely to be effective on the concentrations of these substances found at this site.

  Alternative 4 would also include long-term groundwater monitoring. The Rensselaer Iron Works building and areas designated for in-situ treatment might require institutional controls to prevent future disturbance to contaminated soils remaining beneath the building and to prevent inappropriate contact with the solidified soil.

4.0 DETAILED EVALUATION OF ALTERNATIVES

This section presents an evaluation of the remedial alternatives described in Section 3. The purpose of the evaluation is to identify the advantages and disadvantages of each alternative as well as key trade-offs among the alternatives. The criteria used to evaluate the alternatives are specified in the USEPA guidance (USEPA 1988), which is accepted by the NYSDEC, and are as follows:

1. Overall Protection of Human Health and the Environment
2. Compliance with ARARs
3. Long-Term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility and Volume Through Treatment
5. Short-Term Effectiveness
6. Implementability
7. Cost

Community and State acceptance are also considered after public comments have been received on the Site Investigation Report (SIR) and the proposed remedial action plan. The Record of Decision (ROD) for the site will address community and State acceptance.

4.1 Individual Analysis of Alternatives

4.1.1 Alternative 1: No Further Action

Overall Protection of Human Health and the Environment. The potential exposure to groundwater via drinking water wells does not exist both because the site is adjacent to the Hudson River and because the City of Troy serves the area with its municipal water system. Alternative 1 is protective of human health through the fact that the location of the site amounts to groundwater use restrictions that prevent human contact with the contaminants that will remain at the site in the groundwater; however, the potential for human exposure to the soil contaminants will remain. Remaining contaminants in surface soil may be inhaled or directly contacted by workers that excavate in this area.

Compliance With ARARs. Chemical-specific ARARs and TBCs for the site, including the New York State soil cleanup objectives and the Class GA groundwater standards, will not be achieved.

Long-Term Effectiveness and Permanence. As the No Further Action alternative, Alternative 1 does not provide a high degree of long-term effectiveness and permanence.

Reduction of Toxicity, Mobility and Volume Through Treatment. Implementation of Alternative 1 will not result in a reduction of toxicity, mobility or volume of contamination present at the site.

Short-Term Effectiveness. As the No Further Action alternative, Alternative 1 does not provide a high degree of short-term effectiveness.

Implementability. If institutional controls are implemented, such as groundwater use restrictions, implementability would be relatively straightforward.

Cost. Estimated capital and long-term operation and maintenance costs for Alternative 1 are presumed to be zero.

4.1.2 Alternative 2: Consolidation, Capping and Institutional Controls

Overall Protection of Human Health and the Environment. Alternative 2 will eliminate the most direct exposure by placing a permanent soil and/or paved cap over contaminated surface soil. The cap would also be protective of groundwater by minimizing the contact of storm water with the underlying impacted soils. Alternative 2 is further protective of human health through the use of groundwater use restrictions and deed restrictions to prevent human contact with contaminants that will remain at the site and in the soil and groundwater.

Compliance With ARARs. Chemical-Specific ARARs and TBCs for the site, including the New York State soil cleanup objectives and the Class GA groundwater standards, will not be achieved for unrestricted use if the intended use would be residential. But the intended use of this site is commercial with the major use being the Hudson Rivers and Estuaries Center. Commercial facilities may be built above the cap if properly designed and constructed. Site specific cleanup objectives set forth by the NYSDEC are expected to be protective of human health and the environment.

Long-Term Effectiveness and Permanence. Alternative 2 provides a high degree of effectiveness and permanence. Institutional controls would ensure that the capped areas and drainage controls are properly maintained, and would prevent future disturbance or construction within the capped area without prior approval of the NYSDEC.

Reduction of Toxicity, Mobility and Volume Through Treatment. Alternative 2 will reduce mobility of subsurface metals by reducing infiltration of water. Impacted surficial soils will also be prevented from erosion by wind and water.

Short-Term Effectiveness. Alternative 2 would be immediately effective, in that the potential for worker and on-site visitor exposure to surface soil would be eliminated. Soil disturbance at this site could temporarily result in potential adverse health effects for on-site workers through the generation of contaminated dust and metals emission. Controls would be implemented during the excavation phase to reduce the risk of exposure to contaminants.

Implementability. Alternative 2 is easily implemented. Implementation of remedial measures can be incorporated into future construction. Paving and capping will be done in accordance with municipal codes. Water use restrictions and deed restrictions will be arranged by the City of Troy through the NYSDEC.

Cost. Estimated capital costs for Alternative 2 are presented in Table 3. Long-term monitoring and maintenance costs include pavement maintenance and groundwater monitoring.

4.1.3 Alternative 3: Soil Excavation and Off-Site Disposal

Overall Protection of Human Health and the Environment. Alternative 3 includes remediation through excavation and off-site disposal of contaminated soils and monitoring groundwater in on-site monitoring wells. This alternative will reduce further leaching of metals into groundwater, and will eliminate the potential health risk posed by human contact with contaminated soil. A major drawback of excavation is the potential exposure of on-site workers and remediation personnel to metals via ingestion and inhalation of airborne dust during excavation, loading and off-site transport. Site access and egress are via Madison Street, which leads to north-south routes through residential neighborhoods. There is also a high potential for spread of metals via soil erosion. Appropriate measures must be incorporated into any excavation/disposal work plan to prevent human exposure.

For groundwater, Alternative 3 is protective of human health through the use of institutional measures to reduce human contact with the contaminants in groundwater. Long-term groundwater monitoring is included in this alternative to assess whether contaminants are moving off-site.

Compliance With ARARs. By removing contaminated soil from the site, Alternative 3 would achieve chemical-specific ARARs and TBCs, including New York State soil cleanup objectives in those areas where soil is excavated. Although some improvement in local groundwater quality may be expected under Alternative 3, Class GA groundwater standards will probably not be achieved.

Long-Term Effectiveness and Permanence. Alternative 3 provides a high degree of effectiveness and permanence.

Reduction of Toxicity, Mobility, and Volume Through Treatment. Alternative 3 will reduce the volume of contaminated soil by virtually 100% in those areas which are excavated.

Short-Term Effectiveness. Alternative 3 would be immediately effective, in that the potential for human exposure to surface soil would be eliminated. Soil excavation at the site during remediation could temporarily result in potential adverse health effects for on-site workers through the generation of contaminated dust and metals emission. Controls would be implemented during the excavation phase to reduce the risk of exposure to contaminants.

Implementability. Excavation and backfilling are commonly applied technologies at hazardous waste sites and do not require special equipment or operators. However, off-site transport of excavated wastes may not be feasible given current market conditions. Recent canvassing of permitted facilities in the Capital District of New York indicate that both the Albany County Landfill and the Colonie Landfill are nearing their permitted capacities and have prohibited contaminated soil shipments from new customers. The Ontario County Landfill and the Seneca Meadows Landfill are operating and accepting contaminated soils. Institutional controls for groundwater use restrictions may be established by the City of Troy in consultation with the NYSDEC. Long-term groundwater monitoring and sampling are also readily accomplished.

Cost. Estimated capital costs for Alternative 3 are presented in Table 4. Long-term monitoring and maintenance costs include groundwater monitoring.

4.1.4 Alternative 4: In Situ Soil Treatment

Overall Protection of Human Health and the Environment. This alternative will reduce further leaching of metals into groundwater, and will minimize the potential health risk posed by human contact with contaminated soil.

For groundwater, Alternative 4 is protective of human health through the use of institutional measures to reduce human contact with the contaminants in groundwater. Long-term groundwater monitoring is included in this alternative to assess whether contaminants are moving off-site.

Compliance With ARARs. Because the proposed in situ remediation technique does not remove metals from the soil, it is questionable whether Alternative 3 would achieve chemical-specific ARARs and TBCs, including New York State soil cleanup objectives. Although some improvement in local groundwater quality may be expected under Alternative 4, Class GA groundwater standards will probably not be achieved.

Long-Term Effectiveness and Permanence. Long-term effectiveness and permanence for the proposed in-situ remediation technique is unproven or inconclusive and would need bench and pilot scale studies.

Reduction of Toxicity, Mobility, and Volume Through Treatment. Alternative 4 is designed to significantly reduce the mobility of contaminated soil. The toxicity may not be significantly reduced. Volume will not be reduced.

Short-Term Effectiveness. Alternative 4 would be immediately effective, in that the potential for metal mobility would be significantly reduced. Exposure to soils during remediation could temporarily result in potential adverse health effects for on-site workers through the generation of contaminated dust and metals emission. Controls would be implemented during the excavation phase to reduce the risk of exposure to contaminants.

Implementability. Most in-situ remediation techniques have not been available commercially for very long and can depend on the site soil characteristics and for metals the chemical species that are present, such as oxides, sulfides, etc. Because all in-situ methods are highly site-specific, bench or pilot scale tests would precede full-scale remediation. This would significantly delay the remediation of the site.

Institutional controls for groundwater use restrictions may be established by the owner in consultation with the NYSDEC. Long-term groundwater monitoring and sampling are also readily accomplished.

Cost. Estimated capital costs for stabilization vary with cleanup objective. Table 5 presents the cost for remediation to site background conditions. Long-term monitoring and maintenance costs include groundwater monitoring.

4.2 Comparative Analysis of Alternatives

In the previous section, each of the remedial alternatives was individually evaluated with respect to seven criteria. In this section the comparative performance of the alternatives is discussed where common elements exist among alternatives.

4.2.1 Protection of Human Health and the Environment

Alternative 1 provides the least protection of human health, as workers that excavate contaminated soil may be exposed to metal, SVOC and PCB contaminants. Airborne dust will also remain a potential threat. Institutional measures may be implemented to prevent human exposure to contaminants in the area of concern. In comparison to Alternative 1, Alternative 2 provides more protection to the community by eliminating the potential for direct exposure to contaminated soil, and by minimizing contact between storm water and contaminated soil, thereby protecting groundwater. Alternatives 3 and 4 will also eliminate exposure pathways to contaminants in soil and minimize leaching of metals into groundwater and stream water. Alternative 3, however, will entail complete disturbance of contaminated soil over a period of many weeks while soil is excavated, loaded and transported off-site, which will create significant exposure potential for on-site workers and potentially for community members.

4.2.2 Compliance with ARARs

Alternatives 1, 2 and 4 would not result in compliance with chemical-specific ARARs and TBCs for New York State soil cleanup objectives; however Alternative 2 will effectively eliminate potential exposure pathways of soil and groundwater ingestion, dermal contact and dust inhalation. Alternative 3 will result in compliance with ARARs and TBCs.

4.2.3 Long-Term Effectiveness and Permanence

Alternative 1 provides the least long-term effectiveness and permanence. Alternative 2 provides immediate effectiveness by eliminating all potential on-site exposure pathways. Alternative 3 provides immediate effectiveness by transporting metal contaminants off-site. The long-term effectiveness of Alternative 4 is less certain, and will depend, in part, on soil characteristics and on selection of the most appropriate treatment/immobilization methods indicated by pre-remediation pilot studies.

4.2.4 Reduction of Toxicity, Mobility and Volume Through Treatment

Alternatives 1 and 2 do not achieve a reduction in the toxicity or volume of contamination, but Alternative 2 will reduce mobility of metals in soil by preventing infiltration of water, thereby reducing the potential for leaching. Alternative 3 will reduce the volume of contaminants at the Rensselaer Iron Works AOC. Alternative 4 will reduce contaminant mobility, but not toxicity or volume.

4.2.5 Short-Term Effectiveness

Alternatives 2, 3, and 4 will all be immediately effective by eliminating direct exposure pathways affecting on-site receptors. Institutional controls, once implemented, would also prevent short-term and long-term exposure. No short-term adverse impacts will result from the implementation of Alternative 1. Alternatives 2 and 4 will have minimal potential short-term adverse impacts, but only for a short period during active handling of contaminated soil in preparation for paving (Alternative 2) or during treatment of surface soil (Alternative 4). Alternative 3 will have the most significant adverse effects in the short-term as the potential for airborne dust movement will extend over the entire period of soil excavation, loading and transport.

4.2.6 Implementability

Alternative 1 is the easiest alternative to implement. Alternative 2 is the next easiest alternative to implement as it involves standard materials, techniques and equipment. Alternative 2 would require long-term maintenance of new paved surfaces and drainage features. Alternatives 2 and 3 involve standard techniques and equipment, but would require extensive monitoring and control of fugitive dust, storm water and sediment during the remediation process. Alternative 4 involves specialized equipment for mixing and applying stabilizing agents to the soil. Alternative 4 would also be preceded by bench- or pilot-scale tests to determine the applicability and effectiveness of various soil treatment methods.

4.2.7 Cost

Alternative 1, the No Further Action alternative, has an estimated capital cost of zero. The capital costs for each alternative vary with cleanup objective. Tables 2 through 5 provide a summary of the costs.

5.0 RECOMMENDED REMEDIAL ALTERNATIVE

Based on the Feasibility Study (FS) type of analysis and intended use of the property, the recommended remedy for the Rensselaer Iron Works site is Alternative 2, consisting of soil management controls, including capping, that will: 1) Minimize human exposure to surface soils; 2) Minimize infiltration and leaching of metals into groundwater and surface water, and 3) Stabilize surficial soil to control wind erosion and dust generation. These soil management controls will be addressed in the remedial design.

Soil exhibiting elevated metals, SVOCs and PCBs will remain on-site in designated areas. In addition to capping, institutional controls will also be employed to prevent future exposure. Periodic groundwater monitoring will also continue.

Soil management measures are appropriate to Rensselaer Iron Works because remedial actions as such can be incorporated into any future site development projects.

On-site management of contaminated soil has been endorsed by the NYSDEC for properties with significant contamination by heavy metals, such as orchard land. On those sites, which typically exhibit higher concentrations of metals than are present at Rensselaer Iron Works, contaminated soil is capped under roads and parking areas, or covered so that human exposure to the soil is minimized. These remedial measures are commonly employed when the future use of the property is residential.

At the Rensselaer Iron Works, the proposed remedy addresses all areas where soil sampling shows that target metals, SVOCs and PCBs exceed the NYSDEC recommended soil cleanup objectives within the uppermost 24 inches and deeper. Alternative 2 will improve groundwater quality over time by reducing percolation of precipitation through contaminant-impacted soils. Nearby residences are served by a central water system supplied by the City of Troy, and are not, therefore, exposed to any contaminant-impacted groundwater.

Sediments in the Hudson River do not appear to have been affected by surface runoff from the Rensselaer Iron Works property, and the observable impact to on-site flora or fauna appears to be minimal. Capping contaminated soil beneath permanent parking lots and buildings will eliminate erosion of contaminated surface soil, which will provide sufficient stream protection.

While Alternative 2 effectively caps contaminated soil exceeding cleanup objectives for the individual contaminants of concern, disturbance of contaminated areas may necessitate that soil, dust, and erosion control measures be incorporated into any site development.

The institutional controls under Alternative 2 will permanently eliminate potential exposure to contaminants in groundwater and soil on-site. For these reasons, Alternative 2 is the preferred remedial option for the Rensselaer Iron Works site.

FIGURE 1

TABLES

TABLE 1

POTENTIAL EXPOSURE PATHWAYS RENSSELAER IRON WORKS AOC

Potential Receptor	Exposure Route, Contaminated Media, and Point of Exposure	Pathway Selected for Evaluation (Yes/No)	Reason for Selection or Exclusion
Residential	Ingestion of soils on-site	No	Residential development and use will not occur in contaminated soil.
Residential	Ingestion of soils off-site	No	Residential development and use are not found nearby; contaminant concentrations are relatively low.
Residential	Ingestion of groundwater on-site	No	The AOC is supplied by municipal water system, which is supplied by City of Troy.
Residential	Ingestion of groundwater off-site	No	Closest homes and all homes in City are supplied by municipal water system, which is supplied by City of Troy.
On-site workers	Ingestion or inhalation of soil or dust	Yes	Surface soils are contaminated with metals, SVOCs, and PCBs.
On-site workers	Ingestion of groundwater on-site	No	Municipal water is supplied to the AOC.
On-site construction workers	Ingestion, inhalation or dermal contact with soils on-site	Yes	Surface & subsurface soils are contaminated with metals, SVOCs, and PCBs. Future construction on-site is possible using correct techniques.
On-site residential or workers	Dermal contact with stream sediments	No	Since no discernable increase in contaminant concentrations in sediment is discernable, no adverse impact to stream fauna is expected.

TABLE 2
APPLICABLE OR RELEVENT AND APPROPRIATE REQUIREMENTS
RENSSELAER IRON WORKS AOC

	SOIL	GROUNDWATER	AIR[3]			
Contaminant	**Recommended Cleanup Objectives[1] (ug/m^3)**	**New York State Groundwater Standards[2] (ug/m^3)**	**NIOSH IDLH (mg/m^3)**	**NIOSH REL/TWA (mg/m^3)**	**OSHA PEL (mg/m^3)**	**ACGIH TLV (mg/m^3)**
Antimony	655	3				
Arsenic	10,700	25				
Beryllium	370	3				
Cadmium	1,000	5				
Chromium	11,100	50				
Copper	31,350	200				
Lead *	400,000	25	100	0.05	0.05	0.05
Nickel	16,150	100				
Selenium	2,000	10				
Silver	4,490	50				
Thallium	2,440	.5				
Zinc	75,600	2,000				
Mercury	145	0.7				
Total PCBs	1,000[a]/10,000[b]	0.09	Ca 5*	Ca 0.001*	0.5*	0.5*
Naphthalene	13,000	10				
Phenanthrene	50,000	50				
Fluoranthene	50,000	50				
Benzo(a)anthracene	224	0.002				
Chrysene	400	0.002				
Benzo(b)fluoranthene	1,100	0.002				
Benzo(k)fluoranthene	1,100	0.5				
Benzo(a)pyrene	61	--	Ca 80**	Ca 0.1**	0.2**	NA
Indeno(1,2,3-cd)pyrene	3,200	0.002				
Dibenzo(a,h)anthracene	14	--				

[a] -- Applies to surface soil.
[b] -- Applies to soil below surface.
[1] -- As presented in NYSDEC TAGM 4046
[2] -- As presented in 6 NYCRR Part 703
[3] -- Selected contaminants only
[4] -- Exception to TAGM 4046, set by the NYSDOH for unrestricted residential use
* -- NIOSH, OSHA, and ACGIH do not provide exposure limits for total PCBs, therefore exposure limits for Aroclor 1254 have been included here.
** -- NIOSH and OSHA provide exposure limits for Benzo(a)pyrne indirectly as a constituent of "Coal Tar Volatiles"
NA -- Not Available
IDLH = Immediate danger to life or health
REL = Recommended Exposure Limit
TWA = Time Weighted Average
PEL = Permissible Exposure Limit
ACGIH = American Conference of Governmental Industrial Hygienists
TLV = Threshold Limit Value
Ca -- Potential Human Carcinogen

TABLE 3

COST ESTIMATE - ALTERNATIVE 2
CONSOLIDATION, CAPPING AND INSTITUTIONAL CONTROLS

	UNIT COST	UNIT	QUANTITY	COST
CAPITAL COSTS:				
Direct:				
Groundwater Use Restrictions				Unknown
Site Construction and Use Restrictions				Unknown
Capping [1] :				
Remove Abandoned Vehicles, Solid Waste	\$5,000	Lump Sum	1	\$5,000
Remove Perlite From Maintenance Building	\$10,000	Lump Sum	1	\$10,000
Initial Site Topographic Survey	\$10,000	Lump Sum	1	\$10,000
Grading & Subbase Preparation	\$6,000	Per Acre	2.907	\$17,400
Cover Soil for Capping Inside Foundry Building	\$16	Per yd^3	2,635	\$42,200
Cover Soil for Capping Outside, Not in Yard Area	\$16	Per yd^3	2,736	\$43,800
Cover Soil for Capping in Yard Area	\$16	Per yd^3	1,953.3	\$31,300
Seed, Mulch, Erosion Control[2]	\$4,000	Per Acre	2.91	\$11,600
Storm Water Management	\$100,000	Lump Sum	1	\$100,000
Raise Wells	\$5,000	Lump Sum	1	\$5,000
Final Site Topographic Survey	\$5,000	Lump Sum	1	\$5,000
Create and File Deed Restrictions	\$5,000	Lump Sum	1	\$5,000
			Subtotal Direct Costs:	\$286,300
				COST
Indirect:				
Engineering and Design @ 8.5% Direct Costs				\$24,336
Construction Monitoring, Reporting @ 5% Direct Costs				\$14,315
Contingency @ 25% Direct Costs				\$71,575
			Subtotal Indirect Costs:	\$110,226
			TOTAL CAPITAL COSTS:	**\$396,526**
	UNIT COST	**UNIT**	**QUANTITY**	**COST/YR**
Operation & Maintenance (O&M) Costs per year:				
Cover Soil Maintenance	\$10,000.00	Lump Sum	1	\$10,000
Asphalt Maintenance (ft^2)	\$0.25	ft^2	25,323.8	\$6,300
Semi-annual Groundwater Monitoring (3 wells, per year)	\$7,000.00	Lump Sum	1	\$7,000
Annual ECIC Certification	\$2,500.00	Lump Sum	1	\$2,500
			TOTAL ANNUAL O&M COST:	**\$25,800.00**
			TOTAL PRESENT WORTH PROJECT COST (30 years @ 5% interest):	**\$793,100**

Notes:

[1] - Capping to consist of a minimum 12-inch thickness of soil cover, asphalt paved roadways, driveways, parking lots, and park facilities.

[2] - Cost estimated from STERLING's experience with bids at Rotterdam and knowledge of other local bids.

TABLE 4

COST ESTIMATE - ALTERNATIVE 3
SOIL EXCAVATION AND OFF-SITE DISPOSAL

	UNIT COST	UNIT	QUANTITY	COST
CAPITAL COSTS:				
Direct:				
Remove Abandoned Vehicles, Solid Waste	$5,000	Lump Sum	1	$5,000
Remove Perlite From Maintenance Building	$10,000	Lump Sum	1	$10,000
Initial Site Topographic Survey	$10,000	Lump Sum	1	$10,000
Excavation & Loading of Soil From Inside Foundry Building	$13	Per yd3	878	$11,400
Excavation & Loading of Soil From Outside, Not in Yard Area	$13	Per yd^3	5,473	$71,100
Excavation & Loading of Soil From Yard Area	$13	Per yd3	7,813	$101,600
Confirmatory Sampling for Metals, SVOCs, and PCBs	$17,000	Lump Sum	1	$17,000
Transport to Disposal Site	$46	Per yd3	14,164.2	$651,600
Soil Disposal Fee (1)	$23	Per Ton	21,246	$488,700
Clean Backfill	$16	Per yd3	14,164	$226,600
Place, Grade and Compact	$13	Per yd3	14,164	$184,100
Seed, Mulch, Erosion Control(2)	$4,000	Per Acre	2.91	$11,600
Storm Water Management (during in-situ program)	$100,000	Lump Sum	1	$100,000
Create and File Deed Restrictions	$5,000	Lump Sum	1	$5,000
			Subtotal Direct Costs:	$1,893,700
				COST
Indirect:				
Engineering and Design @ 8.5% Direct Costs				$160,965
Construction Monitoring, Reporting @ 5% Direct Costs				$94,685
Contingency @ 25% Direct Costs				$473,425
			Subtotal Indirect Costs:	$729,075
			TOTAL CAPITAL COSTS:	**$2,622,775**
	UNIT COST	**UNIT**	**QUANTITY**	**COST/YR**
Operation & Maintenance (O&M) Costs per year:				
Semi-annual Groundwater Monitoring (3 wells, per year)	$7,000	Lump Sum	1	$7,000
Annual ECIC Certification	$2,500/year	Lump Sum	1	$2,500
			TOTAL ANNUAL O&M COST:	**$9,500**
			TOTAL PRESENT WORTH PROJECT COST (30 years @ 5% interest):	**$2,768,800**

Notes:

(1) - Disposal cost at Ontario County Sanitary Landfill.

(2) - Cost estimated from STERLING's experience with bids at Rotterdam and knowledge of other local bids.

TABLE 5

COST ESTIMATE - ALTERNATIVE 4
IN-SITU SOIL TREATMENT

	UNIT COST	UNIT	QUANTITY	COST
CAPITAL COSTS:				
Direct:				
Remove Abandoned Vehicles, Solid Waste	$5,000.00	Lump Sum	1	$5,000
Remove Perlite From Maintenance Building	$10,000.00	Lump Sum	1	$10,000
Initial Site Topographic Survey	$10,000.00	Lump Sum	1	$10,000
Cover Soil for Capping Inside Foundry Building	$16.00	Per yd^3	2,635	$42,200
Pilot Program and Test Panel Construction, Evaluation & Monitoring	$60,000.00	Lump Sum	1	$60,000
Site Preparation (grading, clearing/grubbing) (1)	$6,000.00	Per Acre	2.907	$17,400
Soil Stabilization Outside, not in Yard Area (disk/mix in cement dust)(2)	$200.00	Per yd3	5,472.6	$1,094,500
Soil Stabilization Outside, in Yard Area (disk/mix in cement dust)(2)	$200.00	Per yd3	7,813	$1,562,600
Topsoil (delivered & placed)(3)	$19.50	Per yd3	2,736	$53,400
Seed, Mulch, Erosion Control(1)	$4,000.00	Per Acre	2.907	$11,600
Create and File Deed Restrictions	$5,000.00	Lump Sum	1	$5,000
			Subtotal Direct Costs:	$2,871,700
	UNIT COST		**QUANTITY**	**COST**
Indirect:				
Engineering and Design @ 8.5% Direct Costs				$244,095
Construction Monitoring, Reporting @ 5% Direct Costs				$143,585
Contingency @ 25% Direct Costs				$717,925
			Subtotal Indirect Costs:	$1,105,605
			TOTAL CAPITAL COSTS:	**$3,977,305**
	UNIT COST		**QUANTITY**	**COST/YR**
Operation & Maintenance (O&M) Costs per year:				
Annual Asphalt Maintenance (ft^2)	$0.25	ft^2	25323.8	$6,300
Semi-Annual Groundwater Monitoring (3 wells, per year)	$7,000/year	Lump Sum	LS	$7,000
Annual ECIC Certification	$2,500/year	Lump Sum	LS	$2,500
			TOTAL ANNUAL O&M COST:	**$15,800**
			TOTAL PRESENT WORTH PROJECT COST (30 years @ 5% interest):	**$4,220,200**

Notes:

(1) - Cost estimated from STERLING's experience with bids at Rotterdam and knowledge of other local bids.

(2) - Cost estimated using data published in: *Solidification/Stabilization Use at Superfund Sites*, United States Environmental Protection Agency Office of Solid Waste and Emergency Response. EPA-542-R-00-010, September 2000

(3) - Depending on the details of site development, the need for this layer and its thickness could vary.

SAMPLE LOCATION KEY:

METALS SVOC PCB VOC = SAMPLE LOCATION (FILLED IN QUARTER INDICATES EXCEEDANCE IN TOP 6")

1ST LETTER:
A = THE ALAMO

2ND LETTER:
W = BORING SAMPLE AND WELL SAMPLE
B = BORING SAMPLE
S = SURFACE SAMPLE

3RD LETTER OR NUMBER:
= NUMBER DESIGNATING LOCATION

MAP NOTES:
AERIAL PHOTOGRAPHY CIRCA APRIL 2000.

FIGURE 4.3.2

STERLING
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24 Wade Road • Latham, New York 12110

ALAMO AOC
SOIL SAMPLING RESULTS
CITY OF TROY
SOUTH TROY BROWNFIELD STUDY AREA

CITY OF TROY							RENSSELAER CO., N.Y.		
PROJ. No.:	22026	DATE:	4/19/06	SCALE:	1" = 40'	DWG. NO.	22026023	FIGURE	4.3.2

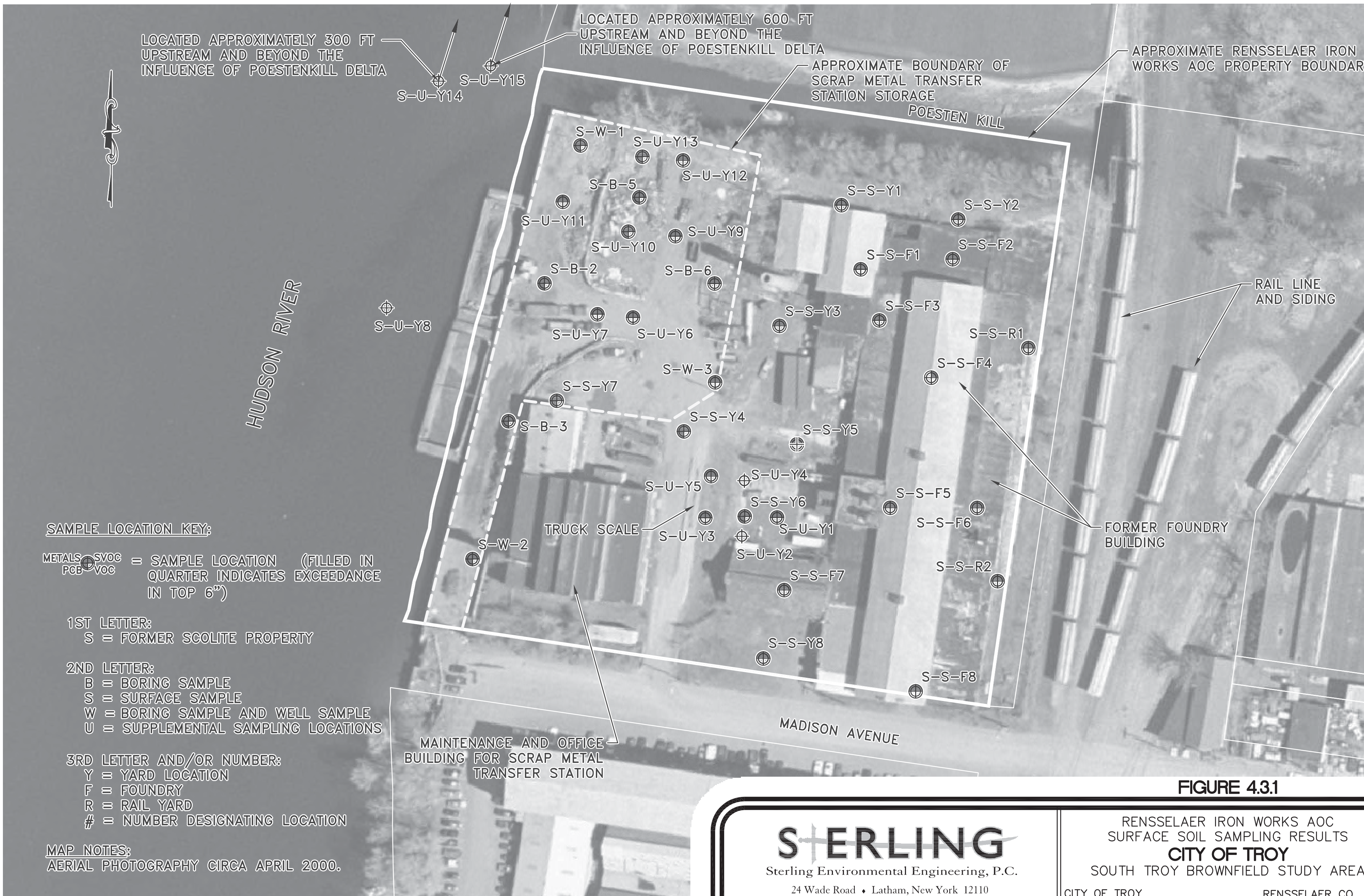


FIGURE 4.3.1

STERLING
Sterling Environmental Engineering, P.C.
24 Wade Road • Latham, New York 12110

RENSSELAER IRON WORKS AOC
SURFACE SOIL SAMPLING RESULTS
CITY OF TROY
SOUTH TROY BROWNFIELD STUDY AREA

CITY OF TROY — RENSSELAER CO., N.Y.

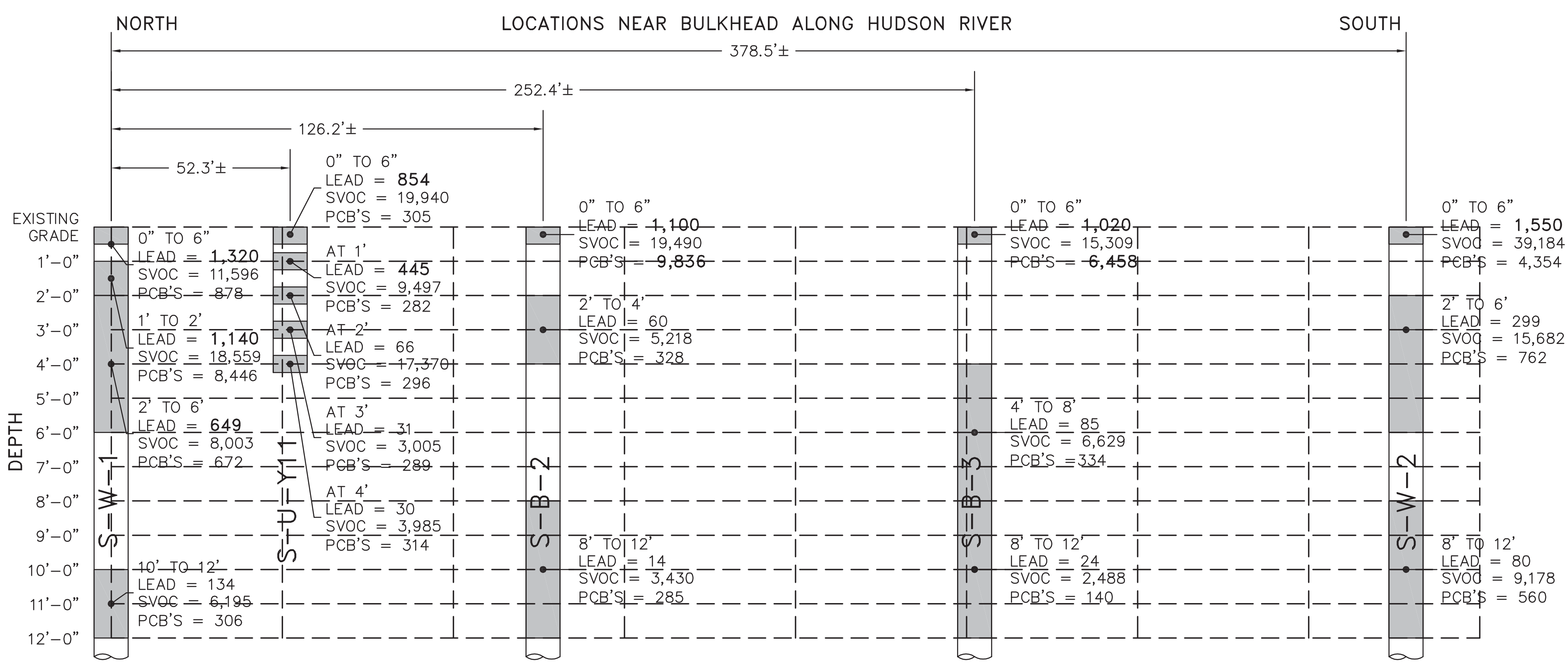
PROJ. No.:	22026	DATE:	4/19//06	SCALE:	1" = 80'	DWG. NO.	22026022	FIGURE	4.3.1

FIGURE 2.3.1

STERLING
Sterling Environmental Engineering, P.C.
24 Wade Road • Latham, New York 12110

RENSSELAER IRON WORKS AOC
INITIAL SOIL SAMPLING PLAN
CITY OF TROY
SOUTH TROY BROWNFIELD STUDY AREA

CITY OF TROY								RENSSELAER CO., N.Y.	
PROJ. No.:	E22026	DATE:	3-8-04	SCALE:	1" = 80'	DWG. NO.	22026021	FIGURE	2.3.1



CROSS-SECTION
(HORIZ. SCALE: 1" = 30')
(VERT. SCALE: 1" = 3')

CONCENTRATION KEY

LEAD UNITS ARE MILLIGRAMS PER KILOGRAMS (mg/kg)

SVOC'S UNITS ARE MICROGRAMS PER KILOGRAMS (ug/kg)

PCB'S UNITS ARE MICROGRAMS PER KILOGRAMS (ug/kg)

FIGURE 4.5.1

STERLING
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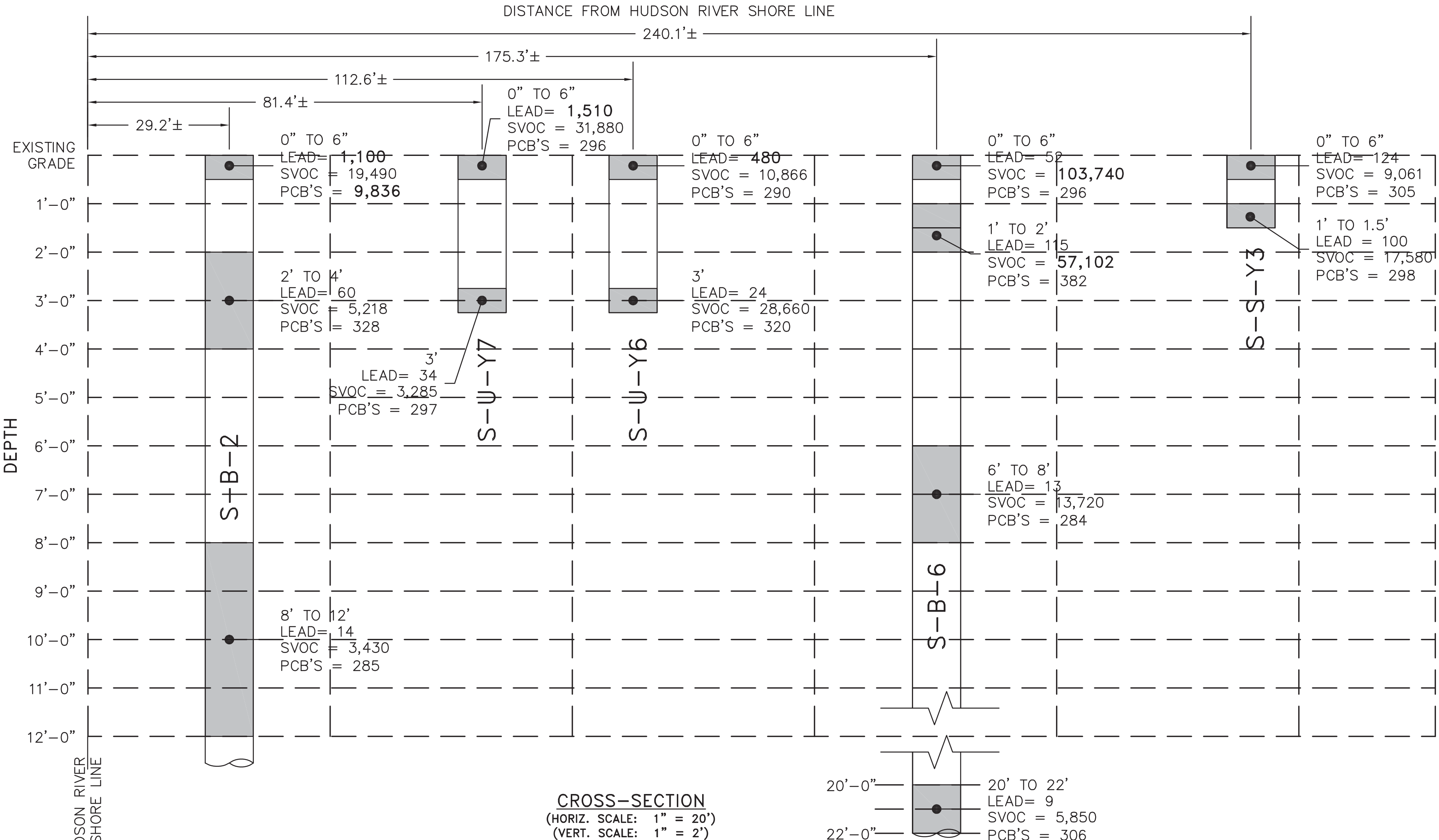
24 Wade Road • Latham, New York 12110

RENSSELAER IRON WORKS AOC
CONCENTRATION PROFILE ALONG BULKHEAD
CITY OF TROY
SOUTH TROY BROWNFIELD STUDY AREA

CITY OF TROY								RENSSELAER CO., N.Y.	
PROJ. No.:	22026	DATE:	1/11/06	SCALE:	AS SHOWN	DWG. NO.	22026018	FIGURE	4.5.1



CROSS-SECTION
(HORIZ. SCALE: 1" = 20')
(VERT. SCALE: 1" = 2')

CONCENTRATION KEY

LEAD UNITS ARE MILLIGRAMS PER KILOGRAMS (mg/kg)

SVOC'S UNITS ARE MICROGRAMS PER KILOGRAMS (ug/kg)

PCB'S UNITS ARE MICROGRAMS PER KILOGRAMS (ug/kg)

FIGURE 4.5.2

STERLING
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RENSSELAER IRON WORKS AOC
CONCENTRATION PROFILE PERPENDICULAR TO BULKHEAD
CITY OF TROY
SOUTH TROY BROWNFIELD STUDY AREA
CITY OF TROY | RENSSELAER CO., N.Y.

PROJ. No.: 22026	DATE: 1/11/06	SCALE: AS SHOWN	DWG. NO. 22026017	FIGURE 4.5.2

FIGURE 4.2.3.1.2

STERLING
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RENSSELAER IRON WORKS AOC
LEAD CONCENTRATIONS IN FOUNDRY
CITY OF TROY
SOUTH TROY BROWNFIELD STUDY AREA
CITY OF TROY — RENSSELAER CO., N.Y.

PROJ. No.:	DATE:	SCALE:	DWG. NO.	FIGURE
22026	1/11/06	1" = 80'	22026016	4.2.3.1.2

FIGURE 4.6

STERLING Sterling Environmental Engineering, P.C. 24 Wade Road • Latham, New York 12110		RENSSELAER IRON WORKS AOC GROUNDWATER MONITORING WELLS **CITY OF TROY** SOUTH TROY BROWNFIELD STUDY AREA CITY OF TROY RENSSELAER CO., N.Y.	
PROJ. No.: 22026	DATE: 1/11/06	SCALE: 1" = 80'	DWG. NO. 22026015
FIGURE 4.6			

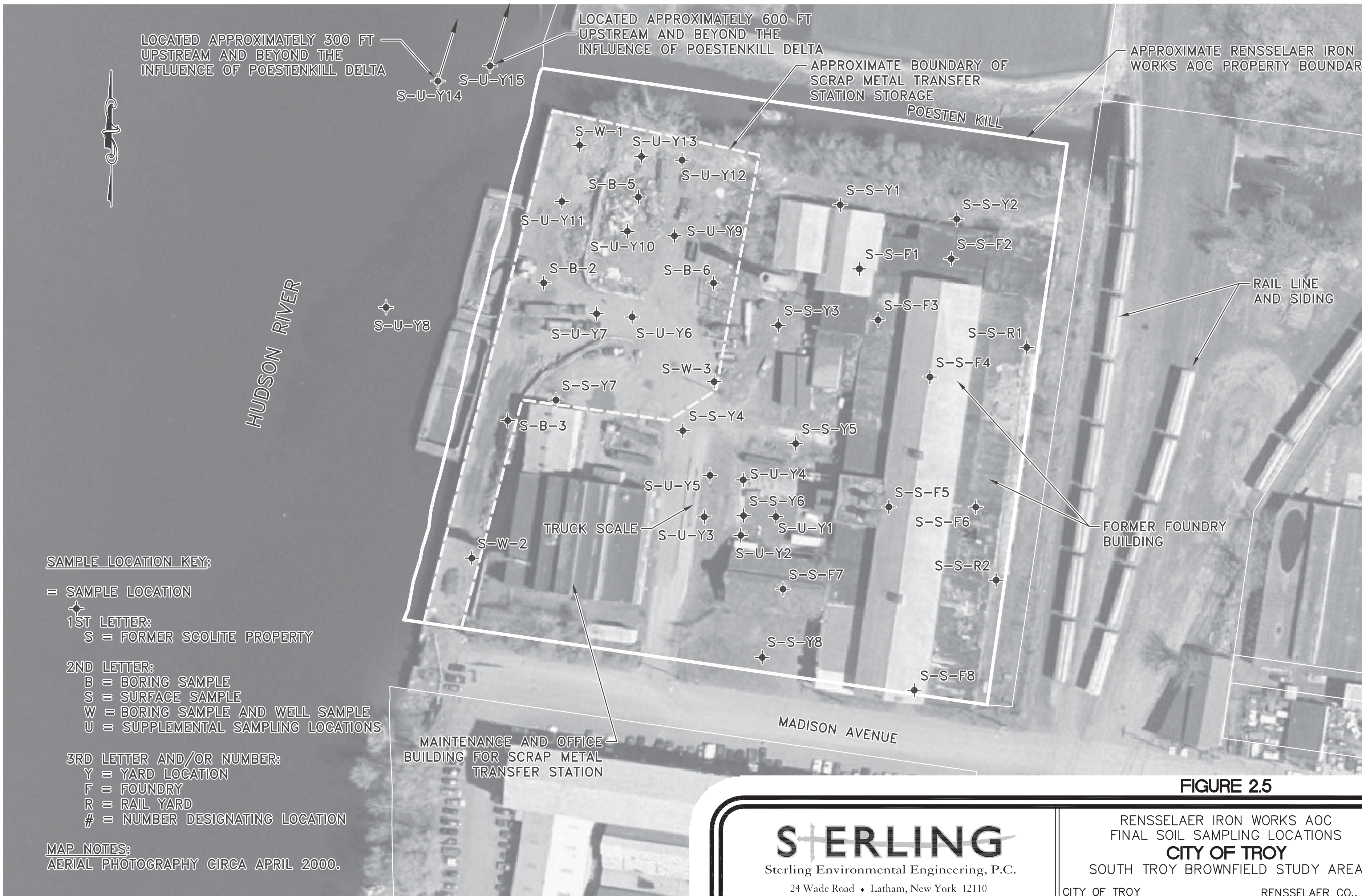
FIGURE 2.3.2

STERLING
Sterling Environmental Engineering, P.C.
24 Wade Road • Latham, New York 12110

ALAMO AOC
SOIL SAMPLING LOCATIONS
CITY OF TROY
SOUTH TROY BROWNFIELD STUDY AREA

CITY OF TROY					RENSSELAER CO., N.Y.

PROJ. No.:	22026	DATE:	1/11/06	SCALE:	1" = 40'	DWG. NO.	22026014	FIGURE	2.3.2



SAMPLE LOCATION KEY:

= SAMPLE LOCATION

1ST LETTER:
S = FORMER SCOLITE PROPERTY

2ND LETTER:
B = BORING SAMPLE
S = SURFACE SAMPLE
W = BORING SAMPLE AND WELL SAMPLE
U = SUPPLEMENTAL SAMPLING LOCATIONS

3RD LETTER AND/OR NUMBER:
Y = YARD LOCATION
F = FOUNDRY
R = RAIL YARD
# = NUMBER DESIGNATING LOCATION

MAP NOTES:
AERIAL PHOTOGRAPHY CIRCA APRIL 2000.

FIGURE 2.5

STERLING
Sterling Environmental Engineering, P.C.
24 Wade Road • Latham, New York 12110

RENSSELAER IRON WORKS AOC
FINAL SOIL SAMPLING LOCATIONS
CITY OF TROY
SOUTH TROY BROWNFIELD STUDY AREA

CITY OF TROY								RENSSELAER CO., N.Y.	
PROJ. No.:	22026	DATE:	1/11/06	SCALE:	1" = 80'	DWG. NO.	22026013	FIGURE	2.5