REPORT

Remedial Investigation Report

Volume I of V

M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

Niagara Mohawk Power Corporation
Syracuse, New York

July 1995
Revised March 1996

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

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BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

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Certification Statement

I, David J. Ulm, the Blasland, Bouck & Lee, Inc. Project Manager for the Remedial Investigation (RI) conducted at the M. Wallace and Son, Inc. Scrapyard Site (Site No. 448003), to the best of my knowledge, certify that the RI activities were performed in general conformance with the following New York State Department of Environmental Conservation- (NYSDEC-) approved documents for the site:

- The Phase I Remedial Investigation Work Plan (April 1993);
- The Phase II Remedial Investigation Work Plan (April 1994);
- A June 3, 1994 letter to Mr. James F. Morgan of NMPC from Mr. Daniel Lightsey, P.E. of the NYSDEC;
- A July 27, 1994 letter to Mr. James F. Morgan of NMPC from Mr. Daniel Lightsey, P.E. of the NYSDEC; and
- The Biota Sampling and Analysis Plan presented in a September 16, 1994 letter to Mr. Daniel Lightsey, P.E., of the NYSDEC from Mr. James F. Morgan of NMPC.

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Section 1

1.0 - Introduction

1.1 Preface

This Remedial Investigation (RI) Report presents the results of the RI, the Fish and Wildlife Impact Analysis (FWIA), and the Human Health Risk Assessment (RA) conducted for the M. Wallace and Son, Inc. Scrapyard located in Cobleskill, New York. This RI report, which was prepared by Blasland, Bouck & Lee, Inc. (BB&L) at the request of Niagara Mohawk Power Corporation (NMPC) presents the following information:

- A detailed description of the RI activities which were implemented to assess the presence and extent of chemical constituents in soil, sediment, surface water, and ground water at the site and in surface water and sediment off-site;
- The results of the FWIA that was implemented to evaluate potential fish and wildlife concerns associated with the site;
- The results of the Human Health RA that was performed to characterize potential risks to human health associated with exposure to identified chemical constituents at the site; and
- The proposed remedial action objectives (RAOs) for the site based on the results of the RI, the FWIA, and the Human Health RA.

The RI field investigation activities, the FWIA, the Human Health RA, and this report, are consistent with the elements of an RI as set forth in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. 960 et seq.; the National Contingency Plan (NCP); and the United States Environmental Protection Agency (USEPA) guidance document entitled "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA," dated October 1988.

The RI was conducted in two phases. The Phase I RI activities, including the FWIA, were performed in accordance with the Phase I Remedial Investigation Work Plan, M. Wallace & Son, Inc. Scrapyard (Work Plan) prepared by BB&L, dated April 1993. The Work Plan was approved by the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Law (NYSDOL) in April 1993. The Phase I RI was conducted between May and December, 1993 and the results were presented in the Phase I RI Report (BB&L, January 1994). To address the data gaps identified in the Phase I RI Report, a Phase II RI was implemented. The Phase II RI was conducted in accordance with the Phase II Remedial Investigation Work Plan, M. Wallace and Son, Inc. Scrapyard (April 1994) and the modifications and additions required by the NYSDEC and the New York State Department of Health (NYSDOH). The modifications and additions were presented in a June 3, 1994 letter to Mr. James F. Morgan of NMPC from Mr. Daniel Lightsey, P.E. of NYSDEC and further clarified in a July 27, 1994 letter to NMPC from the NYSDEC. The Phase I RI and Phase II RI Work Plans are presented in Volume II (Phase I RI Appendix A) and Volume V (Phase II RI Appendix A) of this report, respectively.

Relevant background information, project objectives, and the report organization are presented below.

1.2 Background Information

Background information, used to develop a strategy for the RI, are presented below and consist of the following:

- A historical summary of scrapyard operations;
- A description of the location and physical setting of the site; and
- A summary of previous investigations at the site.

1.2.1 Site History

The M. Wallace and Son, Inc. Scrapyard is an active salvage business that recovers and resells mechanical parts and materials from various equipment and other items. Between 1978 and the mid-1980s, electrical transformers containing polychlorinated biphenyls (PCBs) were purchased by the site operator and transported to the scrapyard. The transformers were disassembled within the electrical equipment gut area to recover copper components which were then resold. During the scrapping operations, transformer dielectric fluid containing PCBs may have been released from the transformers to the ground surface.

In June 1983, personnel from the NYSDEC Bureau of Enforcement and Criminal Investigation (BECI) collected samples of soil in the electrical equipment gut area, sediment and water from the quarry pond, and sediment from the quarry pond outlet channel. The analytical results of the samples collected by BECI indicated that PCBs were present in soil, sediment, and surface water at the site. In response to the BECI's investigation, the Schoharie County Department of Health (SCDH) sampled eight household ground-water supply wells near the site for the presence of purgeable hydrocarbons, purgeable aromatics, PCBs, and metals. The analytical results of the SCDH sampling indicated that purgeable hydrocarbons, purgeable aromatics, and PCBs were not detected in the eight residential ground-water supply wells. Due to the presence of PCBs at the site, as identified by the BECI's sampling, the site is currently listed by the NYSDEC as a Class 2 Inactive Hazardous Waste Site (Site No. 448003). In response to a lawsuit filed by the State of New York Attorney General, NMPC and M. Wallace and Son, Inc., entered into an

Interim Consent Order (Case No. 85-CV-219) on October 29, 1987 to address the presence of PCBs and other chemical constituents in environmental media at the site. In response to the Interim Consent Order, NMPC initiated site investigation activities as described in Subsection 1.2.3 below.

1.2.2 Location and Physical Setting

The site location, topographic and drainage features, and geologic and hydrogeologic setting are discussed below.

1.2.2.1 Location

The site is located at the intersection of New York State Route 10 (Elm Street) and West Street in the Village of Cobleskill, Schoharie County, New York. The location of the M. Wallace and Son, Inc. Scrapyard is shown on Figure 1-1.

The RI focused on the section of the M. Wallace and Son, Inc. Scrapyard located north of Route 10 (the "site") which encompasses an area of approximately 6.6 acres. The site is bordered by West Street to the west; Route 10 to the south; several apartments and residential housing to the east; and a high school athletic field to the north. The site can be divided into two general areas, as follows:

- The "lower" section of the site consisting of a wood frame barn, a concrete and metal building, a building housing the on-site water treatment system, an active scrapyard area (including a leach field area located south of the concrete and metal building), and a quarry pond formed in a former limestone quarry; and
- The "upper" section of the site, consisting of several formerly used scrap metal stockpiles and an area known as the "electrical equipment gut area," where electrical equipment was reportedly disassembled.

A site map showing the location of features at the site is presented as Figure 1-2.

1.2.2.2 Topography and Drainage

The site is located in the glaciated Mohawk section of the Appalachian Plateau Physiographic Province. United States Geological Survey (USGS) topographic mapping (Cobleskill 7.5 Minute Quadrangle) indicates that ground surface elevations at the site range between approximately 940 and 980 feet above mean sea level (AMSL). The site is located near the base of a ridge that extends to an elevation of over

1600 feet AMSL and forms the northern boundary of a broad, shallow valley trending towards the northeast.

Figure 1-3 presents the site surface water features and the surface water drainage pathways from the site. The quarry pond and the quarry pond outlet channel are the only surface water features present at the site. Flow sources into the pond include direct precipitation, surface water runoff from the upper section of the site, and ground-water discharge. As described in Section 1.2.4, a water treatment system to control quarry pond surface water discharge was constructed as part of the 1992 Interim Remedial Measures (IRMs) for the site. Before construction of the water treatment system, the quarry pond covered an area of approximately 1.3 acres and ranged in depth between 8 and 20 feet (average depth of approximately 15 feet). The water treatment system reduces the depth of the quarry pond and correspondingly reduces the areal extent of the pond. The quarry pond formerly overflowed into a small outlet channel which flows into a culvert on the north side of Route 10. Surface water that flows out of the quarry pond is presently treated by the water treatment system which discharges into the same outlet channel. After flowing beneath Route 10, the outlet channel re-emerges and flows for a distance of approximately 75 feet prior to entering a culvert beneath the Delaware and Hudson Railroad track embankment. The outlet channel re-emerges on the south side of the embankment and flows for a short distance prior to entering a below ground culvert which combines with storm water flow from a parking lot on a neighboring property. Storm water flow from the parking lot, combined with the outlet channel flow, discharges into Cobleskill Creek approximately two-thirds of a mile downstream from the site.

1.2.2.3 Geology and Hydrogeology

The site is located within the northeast prong of the Allegheny Plateau, which comprises a portion of the Appalachian Plateau Physiographic Province. The northern and eastern limits of this plateau are formed by the Helderberg Escarpment. The Helderberg Escarpment is characterized by a series of terraces composed of resistant bedrock (Kastning, 1975).

Within the Cobleskill area of the Allegheny Plateau, bedrock is comprised of the following groups in ascending order: Helderberg, Ulster, Onondaga, and Hamilton. The Helderberg Group is composed of several limestone formations, most notably the Kalkberg, Manlius, and Coeymans Formations. The Ulster Group is composed of the Schoharie Grit, the Carlisle Center and Esopus Shales, and the Oriskany Sandstone. The Onondaga Group is composed of the Onondaga Formation, a limestone deposit separated into the Moorehouse, Nedrow, and Edgecliff Members. The Hamilton Group consists of various limestones, sandstones, and shales. These groups were deposited in a widespread sea during the Devonian Period. A brief description of each group is provided below:

Group	Formation	Description (from Kastning, 1975)
Hamilton	Various shales, sandstones, and limestones	Very fossiliferous sequence of interbedded sandstones, black shales, and limestones; combined thickness of 100 to 800 ft.
	Marcellus Shale	
Onondaga	Moorehouse Limestone	Medium gray, fine-grained limestone with beds 1 to 2 inches thick; black chert beds; uppermost portion noncherty; 65 to 72 ft. thick.
	Nedrow Limestone	Light gray, thinly bedded, medium to coarse-grained limestone; lower portion shaley with chert; 13 to 15 ft. thick.
	Edgecliff Limestone	Light gray, coarse-grained limestone with beds ranging from 0.5 to 5 ft. thick; chert common in upper half; 27 to 30 ft. thick.
Ulster	Schoharie Grit	Dark blue-gray, siliceous limestone; 8 ft. thick.
	Carlisle Center Shale	Siliceous shale with a sandstone cap; 40 to 60 ft. thick.
	Esopus Shale	Black/dark gray sandy shale; 53 to 60 ft. thick.
	Oriskany Sandstone	Dark blue-gray to black, hard, fossiliferous sandstone; 2 to 6 ft. thick.
Helderberg	Port Ewen Shales and Limestone	Fine-grained limestone with chert and interbedded shale.
	Alsen Limestone	Dark gray, fine-grained limestone with chert beds and nodules; 8 to 10 ft. thick.
	Becraft Limestone	Dark gray/pink, massively bedded, coarse-grained limestone with crinoids; 10 to 30 ft. thick.
	New Scotland Limestone	Massively bedded, fine-grained limestone; not present west of Howe Cavern.
	Kalkberg Limestone	Dark blue, thin to medium bedded, fine-grained siliceous limestone, contains chert beds and nodules; 43 to 53 ft. thick.
Helderberg (cont'd)	Coeymans Limestone	Blue, massively bedded, coarse-grained, crystalline limestone; 20 to 60 ft. thick.
	Manlius Limestone	Dark blue-black, thinly bedded, fine-grained limestone (lower) and stromatoporid biostrome/thinly bedded limestone (upper); 35 to 55 ft. thick.
	Rondout Dolomite	Light/blue-gray, thinly bedded, medium- to fine-grained dolomite; 20 to 40 ft. thick.
	Cobleskill Dolomite	Blue-black, medium-grained limestone (lower) and thinly bedded, fine-grained limestone (upper); 1 to 10 ft. thick.

The bedrock immediately beneath the site consists of the Onondaga Formation. East of the site lie the limestones of the Helderberg Group and the Oriskany Sandstone, while west and north at higher elevations than the site lie shales, siltstones, and sandstones of the Hamilton Group (Fisher, Isachsen, and Rickard, March 1970).

The most common structural features in the regional bedrock are bedding planes and joints. Regionally, bedrock dips 1 to 2 degrees to the south-southwest. There are three common joint sets observed in the bedrock as follows:

Set I - Characterized by planar, vertical, and smooth surfaces that strike N2E to N30E.

Set II - Characterized by irregular curved surfaces that strike N45W to N85W.

Set III - Characterized by strike N55E to N65E.

Within Set I, the dominant joint set, joints can be over 2,000 feet long and 200 feet deep. In the area of the site, the joints within Set I cluster around a strike of N19E (Kastning, 1975; Mylroie, 1977).

Unconsolidated glacial and alluvial deposits lie above the bedrock. The glacial deposits were laid down during two periods of glaciation in the Pleistocene Epoch. The Pleistocene glaciers smoothed and polished the Devonian bedrock and deepened the pre-existing valleys. The glacial deposits consist of glaciofluvial stratified sands and gravels, lacustrine silts and clays, and lodgement and drumlin till. The alluvial deposits consist of reworked glacial deposits associated with Cobleskill Creek and its tributaries. At higher elevations above the Cobleskill Creek valley, the unconsolidated deposits are less than 30 feet thick, while within the creek valley, unconsolidated deposits of over 100 feet have been observed (Berdan, 1950; Kastning, 1975; Mylroie, 1977).

Ground water is present both in the unconsolidated deposits and the bedrock. The lacustrine silt and clay, and the lodgement and drumlin till deposits are poor water-bearing formations; however, the confined glaciofluvial sand and gravel deposits beneath the till and clay beds are water-bearing. Reportedly, these sand and gravel deposits yield 2 to 35 gallons per minute (gpm); however, some of this yield may originate from the underlying bedrock (Berdan, 1950).

Within the bedrock, ground water is present primarily within the common structural features, such as bedding planes and joints. In the limestone bedrock, water flowing through these features causes solution enlargement of these features, resulting in conduit and cave systems. The ability to dissolve the limestone depends on the acidity of the water (from acidic precipitation and organic acids in soils) and the composition of the limestones (e.g., calcite content, grain size, bedding thickness) (Berdan, 1950; Kastning, 1975; Mylroie, 1977).

Most caves in the Cobleskill area were developed in the thin-bedded, high calcite-content units of the Manlius, Coeymans, and Kalkberg Limestones. The Manlius contains the majority of cave and conduit systems because of its stratigraphic location at the base of the Devonian limestone units. Cave systems developing in these formations include the commercial Howe and Secret Cavern systems. Caves and conduits are also developed in the Onondaga Limestone (Mylroie, 1977).

Brown's Depression and the Cave Mistake cave systems, the closest mapped cave systems, are approximately 2 miles northeast of the site (Mylroie, 1977). These cave systems are two of a series of downdip cave passages oriented to the southwest that connect to a master cave oriented southeast along the strike. Recharge to this system is directly into exposed structural features such as joints and via percolation through the overburden to structural features in the bedrock (Mylroie, 1977).

Once in the subsurface, ground water flows downdip in the Brown's Depression and Cave Mistake systems within the Coeymans and Kalkberg Limestones. Both of these systems discharge into the main strike-oriented (southeast) master cave system that ultimately discharges at Doc Shaul's spring. This spring is a large alluviated artesian spring with observed ground-water discharges in excess of 35 cubic feet per second (cfs). The orientation of this overall system is similar to the overall orientation of the Howe Cavern system. A series of tap-off passages located downdip of the master cave system are associated with the Howe Cavern system. These tap-off passages formed to adjust to local base levels, which in the area near Howe Caverns are primarily controlled by lithology as opposed to stream level (Mylroie, 1977). Although not mapped, similar tap-off passages could be located downdip of the master cave system located northeast of the site. In this area, the local base level of Cobleskill Creek would control the formation and ultimate discharge points of the downdip tap-off passages. These tap-off passages would likely form in areas most favorable to reach the creek level, and thus would not necessarily have predictable spacing. Discharge points could be in the form of discrete discharges at springs and rise pools south of the master cave or diffuse discharges into the unconsolidated deposits within the Cobleskill Creek valley.

No discrete springs or rise pools have been mapped south of the master cave system. A spring/spring system could be present at the site itself. Berdan (1950) reported that water entered into the active quarry through a 6-inch fissure at a rate of 100 gpm. During subsequent quarrying operations, allegedly, a water bearing zone was encountered that flooded the quarry and resulted in the cessation of further quarry operations (Chase, 1985).

1.2.3 Summary of Initial Site Investigation

NMPC retained O'Brien & Gere Engineers, Inc., (O'Brien & Gere) in early 1987 to perform an initial investigation of soil, sediment, surface water, and ground water at the site. O'Brien & Gere submitted a Work Plan for conducting the site investigation to the NYSDEC and the NYSDOL in October 1987. Following approval of the Work Plan, O'Brien & Gere implemented the initial investigation, which was completed in 1989. O'Brien & Gere submitted a final report for the investigation to the State of New York Attorney General's office and the NYSDEC in June 1990. A summary of site investigation activities conducted by O'Brien & Gere is provided below, followed by a summary of the analytical results.

Prior to preparing the initial site investigation Work Plan, O'Brien & Gere collected two surface soil samples from the electrical equipment gut area for analysis of Hazardous Substance List (HSL) parameters in order to determine the parameters of concern for the initial site investigation. PCBs, volatile organic compounds (VOCs) (e.g., 1,1-dichloroethene and xylenes), semi-volatile organic compounds (SVOCs) (e.g., phthalates and polynuclear aromatic hydrocarbons) and metals (arsenic, cadmium, copper, lead, and zinc) were detected in the samples; pesticides and cyanide were not detected.

During the initial site investigation, seven soil borings were completed to the top of bedrock (four were installed in the upper area of the site and three south of Route 10). At four of the soil boring locations, monitoring wells (MW-1 through MW-4) were installed. The soil boring and monitoring well locations are shown on Figure 3 of the Phase I RI Work Plan in Volume II (Phase I RI Appendix A) of this report. The following summarizes the geologic and hydrogeologic information obtained by O'Brien & Gere during the installation of the soil borings, as well as from the measurement of water levels at the four monitoring wells:

- The thickness of the overburden to the top of bedrock ranged between 3.3 feet in the upper area to 17.5 feet in the lower area;

- Based on water levels measured at the three monitoring wells south of Route 10 (MW-2, MW-3, and MW-4), the potentiometric surface was located between 4.12 and 8.05 feet below the ground surface;

- Ground water at the monitoring well located in the upper section of the site (MW-1) was located within bedrock at a depth of 22.62 feet below the ground surface; and

- The direction of ground-water flow generally tended towards the south-southeast.

The initial site investigation included the collection of 54 surface soil samples (44 in the electrical equipment gut area) for laboratory analysis for PCBs and oil and grease. One of the 54 surface soil samples collected from the electrical equipment gut area was analyzed for the HSL parameters. In addition, six subsurface soil samples were collected from soil borings MW-1, B-2, B-3, and B-4 for laboratory analysis for PCBs, HSL VOCs, and metals. One of the soil samples collected from B-2 was analyzed for the complete list of HSL parameters.

Four sediment samples were collected from the quarry (SED-1, SED-2, SED-3, and SED-4) and two sediment samples were collected from the quarry pond outlet channel (SED-5 and SED-6). SED-3 was analyzed for the complete set of HSL parameters, while the other sediment samples were analyzed for PCBs and metals.

Two surface water samples from the quarry pond (W-1 and W-2) and two water samples from the quarry pond outlet channel (W-3 and W-4) were also collected during the initial investigation. Sample W-1 was analyzed for the complete set of HSL parameters, and the other surface water samples were analyzed for a reduced set of HSL parameters consisting of PCBs, HSL VOCs and SVOCs, and metals.

One round of ground-water samples was collected from the existing monitoring wells (MW-1, MW-2, MW-3, and MW-4) during the initial investigation. The sample collected from monitoring well MW-3, a downgradient well, was analyzed for the complete set of HSL parameters, and the samples collected from monitoring wells MW-1 (upgradient well), MW-2, and MW-4 were analyzed for a reduced set of HSL parameters consisting of PCBs, VOCs and SVOCs, and metals.

The results of the initial investigation are summarized below.

Soil Sampling

Analytical results indicated that PCB concentrations ranged between non-detect and 2,100 parts per million (ppm) in the surface soil samples. The highest concentrations of both PCBs, and oil and grease were found in the vicinity of the electrical equipment gut area, where stained soils were observed. A surface soil sample was analyzed for the complete set of HSL parameters; VOCs, SVOCs, pesticides, and cyanide were not detected. The HSL analytical results for the subsurface soil samples collected from B-3 indicated that PCB concentrations ranged from 0.25 ppm (2 to 4 feet) to 6.6 ppm (6 to 8 feet). VOCs, SVOCs, pesticides, and cyanide were not detected in the sample collected from B-2 (6 to 8 feet), with the exception of bis(2-ethylhexyl)phthalate, a common field and laboratory contaminant. The concentrations of HSL metals detected in the surface soil samples were generally within the typical range of concentrations for trace metals in soils.

Sediment Sampling

Analytical results indicated that PCB concentrations in the sediment samples ranged from 0.23 ppm in SED-3 to 28 ppm in SED-5. Methylene chloride and acetone were detected in SED-3, but they were also detected in the trip blank at similar concentrations, indicating that their detections were likely due to laboratory contamination. Metals detected in the sediment samples included aluminum, arsenic, barium, calcium, chromium, copper, iron, lead, magnesium, manganese, nickel, silver, sodium, vanadium, and zinc.

Surface Water Sampling

Analytical results indicated that PCB concentrations in the surface water samples ranged from 0.12 parts per billion (ppb) in W-3 to 0.72 ppb in W-4. No VOCs or SVOCs were detected in any of the surface water samples. Metals detected in the surface water samples included calcium, magnesium, manganese, sodium, and zinc.

Ground-Water Sampling

PCBs were detected in the ground-water sample collected from monitoring well MW-1 at a concentration of 1.5 ppb. PCBs were not detected (detection limit of 0.065 ppb) in ground-water samples collected from monitoring wells MW-2, MW-3, and MW-4. Chloroform and bis(2-ethylhexyl)phthalate were the only other organic compounds detected in the site ground water. Metals detected in the ground water at concentrations above New York State Class GA standards listed in the New York Compilation of Rules and Regulations, Title 6, Chapter 703, included: iron, lead, and manganese. A second round of ground-water samples was collected in October of 1991 during the implementation of the interim remedial measures (IRMs) at the site, as discussed below. The analytical results from this sampling event indicated that PCBs were not detected in the ground-water samples obtained from monitoring wells MW-1, MW-2, MW-3, and MW-4.

Based on the results of the initial site investigation, NMPC prepared an IRMs Work Plan dated March 1991 to address the presence of PCBs in the following site areas:

- Electrical equipment gut area;
- Quarry pond sediments;
- Quarry pond outlet sediments; and
- Ground water beneath the site.

1.2.4 Summary of IRMs

Following approval of the March 1991 IRM Work Plan, NMPC retained Chemical Waste Management, Inc. - Environmental Remedial Action Division (CWM-ENRAC) to implement the IRMs. In August 1991, CWM-ENRAC conducted the four following measures:

- Excavation and disposal of soil with PCB concentrations greater than 1.0 part per million (ppm), the cleanup criteria for soil established for the IRMs in the electrical equipment gut area. CWM-ENRAC excavated approximately 2,900 cubic yards of soil in the electrical equipment gut area to the limits and depths required by NMPC's on-site observer. Analytical results of samples collected by CWM-ENRAC following the excavation activities indicated that PCB concentrations in the soils remaining in the electrical equipment gut area were above the 1.0 ppm cleanup criteria.

- Removal and disposal of sediment from the section of the quarry pond outlet channel located south of Route 10 to the northern side of the railroad embankment. Analysis of a composite sediment sample collected following excavation of the sediment indicated that PCBs were present at an average concentration of 4.3 ppm.

- Underwater reconnaissance of the quarry pond by a CWM-ENRAC diver to determine the extent of sediments that may require removal. Based on sediment depth measurements performed with a calibrated probe, sediments on the bottom of the quarry pond ranged from 1 to 4 feet deep, and the total volume of sediment in the pond was estimated to be approximately 5,000 cubic yards (2,900 cubic yards of heavy mud and 2,100 cubic yards of fine silt). During the survey of the pond, the diver discovered debris at the bottom of the pond, including electrical wire spools, transformers, and 55-gallon drums. CWM-ENRAC also conducted a sediment sampling program, during which they collected sediment grab samples from 97 locations within the quarry pond. This sediment sampling program was conducted without program approval from the NYSDEC or the NYSDOL. Forty-four of the sediment samples were analyzed for PCBs. The analytical results indicated that PCBs were present in the sediments at concentrations ranging from non-detect to 100 ppm.

- Collection of ground-water samples for PCB analysis from the four existing monitoring wells at the site. PCBs were not detected in any of the samples collected. The detection limits ranged from 0.72 ppb to 1.4 ppb.

Based on the IRMs conducted during the summer of 1991, NMPC implemented additional IRMs at the site between August 1992 and April 1993. These IRMs included:

- Installing a quarry pond water treatment system to drain the quarry pond to facilitate debris removal;
- Removing the debris identified at the bottom of the pond during the August 1991 underwater reconnaissance;
- Erecting a fence to restrict access to the site from West Street and Route 10 (fencing was already present along the north and east boundaries of the site);
- Cleaning and relocating scrap metal to a location across Route 10;
- Removing scrap metal and debris located on the ground surface at the site to an off-site disposal facility and/or to a location across Route 10; and
- Installing a silt fence along the western site perimeter.

The quarry pond water treatment system was constructed as part of the 1992 IRMs to treat quarry pond water prior to discharge into the storm water drainage system. A temporary 400 gpm water treatment system was installed in December 1992 to drain the quarry pond to facilitate debris removal; subsequently, the NYSDOL and NYSDEC required NMPC to continue operation of the quarry pond water treatment system until the implementation of a final remedy for the site. Because the water treatment system was designed for temporary use, the requirement for continued long-term operation necessitated the design and implementation of a permanent system. A modified temporary system, designed to facilitate the final conversion to a permanent system, was installed in June 1993 and operated until the permanent 100 gpm system, housed in a dedicated structure located in the southwest corner of the property, was brought on-line in March 1994. A 300 gpm upgrade to the permanent water treatment system was installed in March 1995 for temporary use during periods when the recharge rate into the quarry pond exceeds the 100 gpm treatment capacity of the permanent system.

In accordance with the requirements presented by NYSDEC in an October 19, 1992 letter (NYSDEC 1992) to NMPC, the water treatment system is maintained to prevent discharge of surface water containing PCBs in excess of 65 parts per trillion (ppt) into the storm water drainage system. Sampling of process and discharge water was conducted daily for the first five days of discharge when each of the systems or the upgrade was brought on-line. During the periods of water treatment system operation, sampling of the process and discharge water for PCB analysis is conducted on a weekly basis. Between December 1992 and May 1993, water treatment system samples were collected in accordance with protocols presented in the October 19, 1992 letter from NYSDEC to NMPC. Since May 1993, water treatment system discharge samples have been collected according to similar protocols which were presented in a May 5, 1993 letter to NYSDOL from David M. Hehr, Esq., of Stenger & Finnerty. Results of PCB analysis for water treatment system discharge samples are reported in the monthly progress reports associated with the RI for the site and in periodic letters to Mr. Daniel Lightsey, P.E. of NYSDEC.

Verification sampling conducted after the soil and sediment removal activities during the 1991 IRM indicated that PCBs were still present in site soil and sediment at concentrations greater than 1 ppm. Based on these results, NMPC agreed to conduct a comprehensive Remedial Investigation/Feasibility Study (RI/FS) at the site. The objectives of the RI are discussed below.

1.3 Project Objectives

The overall objective of the RI was to provide data to assess the current site conditions and to determine the scope of future remedial activities which may be implemented at the site. Based on this general objective, the following specific objectives were established for the RI:

1. To determine the presence and extent of chemical constituents in environmental media (i.e., soil, sediment, surface water, and ground water) at the site;

2. To determine the presence and extent of chemical constituents (i.e., PCBs and mercury) in sediments and surface water downstream of the quarry pond outlet channel;

3. To determine whether additional IRMs are necessary to address existing conditions (e.g., buried debris) present at the site;

4. To identify and assess the possible impacts of the site on aquatic biota present at downstream locations;

5. To provide data for completion of a baseline RA which will evaluate potential on-site and off-site risks (if any) posed by chemical constituents identified at the site; and

6. To provide data for preparation of a Feasibility Study (FS) to determine appropriate remedial actions for implementation at the site or at off-site locations, if necessary.

1.4 Report Organization

The RI Report is organized into the following seven sections:

Section	Purpose
Section 1 - Introduction	Provides site background information, and describes the objectives and scope of the RI.
Section 2 - Description of Remedial Investigation Activities	Provides a description of the field investigation activities performed during the RI.
Section 3 - Summary of Remedial Investigation Results	Provides a summary of analytical results for samples obtained during the field investigations. A discussion of site geology and hydrogeology is also presented.
Section 4 - Fish and Wildlife Impact Analysis	Provides the results of the FWIA which evaluated potential fish and wildlife concerns associated with the site.
Section 5 - Human Health Risk Assessment	Provides the results of the Human Health RA, which characterized potential risks to human health associated with exposure to identified chemical constituents at the site.
Section 6 - Remedial Action Objectives	Presents the proposed RAOs for the site that are protective of human health and the environment.
Section 7 - Summary and Conclusion	Summarizes the findings of the RI, the FWIA, and the Human Health RA.

Section 2

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2.0 - Description of Remedial Investigation Activities

2.1 General

This section presents a description of the field activities performed during the RI to generate the data needed to meet the objectives set forth in Section 1.3. These activities were conducted to determine the concentration of PCBs and other chemical constituents in soil, sediment, surface water, and ground water at a number of locations at the site, and at specific locations downstream of the quarry pond outlet channel.

The field activities associated with the RI were conducted in two phases. The Phase I and Phase II RI field activities and the dates these activities were conducted are identified below:

Field Activity	Phase I RI	Phase II RI
Area Reconnaissance and Mapping	October 1992 and August 1993	September 1994 and April 1995
Soils Investigation	May - September 1993	September 1994
Sediment Investigation	November 1992 and January and May 1993	NR
Surface Water Investigation	May 1993	NR
Ground-Water Investigation	August 1993	August and September 1994 and March and April 1995
Fish and Wildlife Impact Analysis	June and July 1993	October 1994
Note: NR = field activity not required during this phase		

Each of the RI field activities is detailed in this section, along with a discussion of the basis for implementing each activity to attain the overall project objectives. Field activities associated with the RI were performed in accordance with the following project documents (prepared in April 1993 by BB&L, unless otherwise stated in this report):

- Field protocols followed during the investigations are detailed in the Remedial Investigation, M. Wallace and Son, Inc. Scrapyard, Sampling and Analysis Plan, Volume I: Field Sampling Plan (FSP).

- Analytical procedures followed for the samples collected as part of the RI are presented in the Remedial Investigation, M. Wallace and Son, Inc. Scrapyard, Sampling and Analysis Plan, Volume II:

Quality Assurance Project Plan (QAPP). As detailed in the QAPP, samples collected for the RI were analyzed by Aquatec, Inc. of Colchester, Vermont (Aquatec), with the exception of four surface soil samples (SS-36 through SS-39) that were analyzed by Upstate Laboratories, Inc. of Syracuse, New York (Upstate), using NYSDEC 1991 Analytical Services Protocols (ASP) methods. Analytical procedures for biota samples are presented in the Biota Sampling and Analysis Plan (SAP) (September 16, 1994 letter to Mr. Daniel Lightsey, P.E. of the NYSDEC from Mr. James F. Morgan of NMPC). Biota samples were analyzed by Hazelton Environmental Services, Inc. of Madison, Wisconsin.

- Health and safety protocols followed by field sampling personnel during implementation of the RI work tasks are presented in the Remedial Investigation, M. Wallace and Son, Inc. Scrapyard, Health and Safety Plan (HASP).

A copy of each of the aforementioned documents, except the Biota SAP, is included in Volume II (Phase I RI Appendices B, C, and D, respectively) of this report. The Biota SAP is included in Volume V (Phase II RI Appendix A) of this report.

2.2 Area Reconnaissance and Mapping

The area reconnaissance and mapping task consisted of activities to determine ground-water usage within a 2-mile radius of the site and a topographic survey of the site to facilitate development of a site map. Local ground-water usage information obtained during reconnaissance activities, as well as details of the topographic survey, are presented below.

2.2.1 Local Ground-Water Usage

The reconnaissance activities included contacting the SCDH and other appropriate agencies to obtain available information regarding the construction of residential water supply wells within a 2-mile radius the site. This information is discussed in Section 3.2 - Area Reconnaissance.

2.2.2 Topographic Survey

BB&L conducted a topographic survey of the site in October 1992. The topographic survey included locating the property boundary, buildings, roads, utilities, rights-of-way, quarry pond, existing monitoring wells, as well as spot elevations on a grid pattern and breaks in grade. Elevations of permanent structures were obtained to the nearest 0.01 foot, and all spot elevations were surveyed to the nearest 0.01 foot, based on the National Geodetic Vertical Data (NGVD) of 1929. In addition, during the field survey activities, benchmarks and baseline stations with physical ties were established. A topographic base map was prepared at a scale of 1" = 50', with 2-foot elevation contours (Figure 2-1). The locations of rock cores, monitoring wells, soil samples, test pits, as well as sediment and surface water samples were surveyed in the field and added to the topographic map. The map also identifies surface water drainage channels at the site. The base map for off-site sampling locations (Figure 2-2) was developed from a storm sewer map from the village of Cobleskill, New York. Sampling locations on Figure 2-2 are based on field descriptions and field measurements from notable features.

2.3 Soil Investigation

The soil investigation was conducted to define the presence and extent of chemical constituents in soil and to characterize surface and subsurface soils. The soil investigation activities, including surface and subsurface soil sampling and analysis, the installation of test pits and soil borings, and photoionization detector (PID) field screening during soil investigation activities, were conducted during the following two events:

- Phase I RI performed in May, August, and September 1993; and
- Phase II RI performed in September 1994.

A discussion of the surface and subsurface soil investigation activities is presented below. Soil sample locations are shown on Figure 2-1.

2.3.1 Surface Soil Sampling

During the RI soil investigation, surface soil samples were collected from the 0- to 6-inch depth interval at each surface soil sampling location. Each surface soil sample was segregated and placed into appropriate sample containers for laboratory analysis for one or more of the following: PCBs, TCL SVOCs, and TAL inorganic parameters. A separate container was prepared for each sample for visual characterization by the on-site engineer and for headspace screening with a PID to determine the level of organic vapors. PID headspace screening levels are presented in Table 2-1. The purpose and locations of the Phase I and Phase II surface soil sampling activities are presented below.

2.3.1.1 Phase I RI Surface Soil Sampling

To determine the presence, distribution, and extent of chemical constituents in the site surface soils, a total of 35 surface soil sampling locations (S-1 through S-35) were established at alternating intersection points along a 100-foot by 100-foot sampling grid. This grid excluded the paved area and the active scrap storage area around the concrete and metal building which houses the site office/garage. In May

1993, samples from the 35 locations were visually characterized by the on-site engineer, PID screened for organic vapors, and segregated into appropriate containers for laboratory analysis for PCBs, TCL SVOCs, and TAL inorganic parameters.

To determine the presence and concentrations of PCBs in soils in the active scrapyard, 11 additional surface soil samples were collected in August 1993 from the southwest corner of the site (sample locations S-36 through S-39 and S-51 through S-57). These surface soil samples were submitted to Upstate (SS-36 through SS-39) or Aquatec (SS-51 through SS-57) for PCB analysis.

To evaluate the potential presence of PCBs in surface soils immediately north of the site, 11 surface soil samples (not including QA/QC samples) were collected on August 5, 1993 in the Cobleskill High School athletic field along the northern fenceline of the site. The 11 surface soil sample points (S-40 through S-50) were located approximately 6 feet north of the fenceline and spaced approximately 50 feet apart. These surface soil samples were submitted to Aquatec for PCB analysis.

2.3.1.2 Phase II RI Surface Soil Sampling

To determine the presence and extent of PCBs along the northeastern property line, seven surface soil samples were collected in September 1994 at locations S-62 through S-68. These locations were spaced at 50-foot intervals, beginning at the northeast corner of the property and ending near the Phase I RI soil sample location S-27. These surface soil samples were submitted for PCB analysis.

To assist in defining the presence and extent of PCBs in the leachfield area located south of the concrete and metal building in the active scrapyard area, two additional surface soil samples, S-60 and S-61, were collected during the Phase II RI soil investigation. One surface soil sample from each location was submitted for PCB analysis.

Ten Phase I RI surface soil locations (S-3, S-4, S-7, S-8, S-11, S-13, S-20, S-21, S-24, and S-28) were resampled for EP toxic metals analysis during the Phase II RI soil investigation. At the request of Mr. Daniel Lightsey, P.E., (June 3, 1994 letter) of the NYSDEC, these ten locations were selected for Phase II RI sampling based on Phase I RI total concentrations of greater than 1,000 ppm for the eight EP toxic metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) as listed in 6 NYCRR 371.3. These samples were analyzed by Aquatec using USEPA SW-846, Method 1310, to evaluate whether the surface soil at these locations may exhibit the hazardous characteristic of EP toxicity. The NYSDEC requested this data to assist in the selection of a site remedy during the Feasibility Study (FS).

2.3.2 Subsurface Soil Sampling

The RI soil investigation at the site also included the collection of subsurface soil samples at test pit and soil boring locations. The following presents a description of the subsurface soil sampling activities conducted during the Phase I RI and the Phase II RI.

2.3.2.1 Phase I RI Subsurface Soil Sampling

Using a backhoe, Parratt-Wolff, Inc. (Parratt-Wolff) excavated test pits at 32 locations (S-1 through S-31 and S-34) between May 20-25, 1993, under the supervision of an on-site engineer. Test pits were not excavated at three sample locations: S-32, S-33, and S-35 in concurrence with the NYSDEC. On May 18, 1993, Mr. Daniel Lightsey, P.E., of the NYSDEC agreed that due to the inaccessibility of these locations to a backhoe, test pits would not have to be excavated unless warranted by the detection of PCBs in surface soil samples SS-32S, SS-33S, and SS-35S. Because PCBs were not subsequently detected in samples SS-32S, SS-33S, and SS-35S, test pits were not excavated at these three surface soil locations.

At each 2-foot depth interval, a sample of soil was collected from the sidewall of the test pit using a dedicated stainless-steel trowel and placed in a glass container for volatile headspace screening using a PID, and for visual characterization (e.g., staining, soil type, etc). PID measurements are summarized in Table 2-1. During the test pit excavation activities, the on-site engineer also examined the test pits for the presence of buried electrical equipment or other potential source materials. The results of the visual characterization of the soil samples and the examination for the presence of buried electrical equipment or other potential source materials are reported on the test pit logs, which are presented in Volume II (Phase I RI Appendix E) of this report.

One soil sample from each test pit was collected for laboratory analysis of PCBs, and for laboratory analysis of TAL inorganic parameters and TCL VOCs and SVOCs, if warranted based on the presence of staining or odors, or on PID measurements above background levels. If no staining, odors, or PID measurements above background were encountered, then several discrete samples were collected from the 6-inch to 18-inch depth interval inside the test pit excavation and composited in the field to form one sample for PCB analysis. At the conclusion of daily test pit activities, soil samples were selected for analysis for TCL VOCs and SVOCs and TAL inorganic parameters based on PID readings and visual observations, and with the objective of achieving a uniform distribution of TCL/TAL data for subsurface soils across the site. A total of 15 subsurface soil samples (not including QA/QC samples) were collected and analyzed for TCL VOCs and SVOCs and TAL inorganics; 32 subsurface soil samples (QA/QC samples not included) were collected for PCB analysis.

Based on the presence of PCBs in the subsurface soil samples collected in May 1993, Parratt-Wolff excavated four supplemental Phase I RI test pits with a backhoe on August 16, 1993 at locations S-52, S-53, S-54, and S-55 under the observation of a geologist. The four test pits were excavated at the southwest corner of the site to determine the presence and concentrations of PCBs, TCL VOCs and SVOCs, and TAL inorganics in subsurface soils within the active scrapyard area. The sample locations are shown on Figure 2-1. One sample was collected with a hand auger from the sidewall of each test pit for laboratory analysis of PCBs, TCL VOCs and SVOCs, and TAL inorganics. The subsurface soil samples selected for laboratory analyses from these four supplemental test pits were selected using the same protocols followed during the sampling of the original 32 test pits, as described above. Test pit logs from these four supplemental test pits are included in Volume II (Phase I RI Appendix E) of this report.

During the July 1993 field activities, PID readings ranging from 1,044 ppm to 2,500 ppm were detected from the 2- to 4-foot depth interval of bedrock corehole C-12 located in the leachfield area south of the concrete and metal building. Based on these elevated PID levels, an additional soil boring (TPC-12A) was installed adjacent to corehole C-12 and sampled on July 30, 1993 for analysis of PCBs, TCL VOCs, SVOCs, and TAL inorganics. The sample was collected from the 2- to 4-foot depth interval. Section 2.6.2.1 provides details of soil/bedrock coring activities. PID levels observed during coring are presented in the subsurface logs (Phase I RI Appendix G) in Volume II of this report.

2.3.2.2 Phase II RI Subsurface Soil Sampling

To define the presence and extent of PCBs in the leachfield area located in the southwestern corner of the property, soil borings were installed by Parratt-Wolff in September 1994 at soil sampling locations S-60 and S-61. The soil borings were installed to the top of bedrock (approximately 7 feet below ground surface) and continuously sampled with a split spoon sampler. Subsurface soil samples were collected from the 18-inch to 30-inch depth interval, and from the 36-inch to 48-inch depth interval, from each boring, and submitted to Aquatec for PCB analysis.

Subsurface soil samples from the 6 inch to 24 inch depth interval from Phase I RI test pit locations TP-8 and TP-28 were collected for EP toxic metals analysis during the September 1994 Phase II RI soil investigation. At the request of Mr. Daniel Lightsey, P.E., of the NYSDEC (June 3, 1994 letter), these locations and depth intervals were selected for EP toxic metals analysis based on Phase I RI total concentrations of greater than 1,000 ppm for the eight EP toxic metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) as listed in 6NYCRR 371.3. These samples were analyzed by Aquatec using USEPA SW-846 Method 1310, to evaluate whether the subsurface soil at these locations may exhibit the hazardous characteristic of EP toxicity. The NYSDEC requested this data to assist in the selection of a site remedy during the FS.

The Phase I RI and Phase II RI subsurface soil sampling locations are presented on Figure 2-1. The results of the RI subsurface soil investigation are presented in Section 3.3.2.

2.4 Sediment Investigation

The sediment investigation was conducted in two parts, both associated with the Phase I RI. The January 1993 sediment investigation activities focused on the quarry pond and the quarry pond outlet channel and the May 1993 sediment investigation activities focused on the storm water drainage system below the quarry pond outlet channel and on Cobleskill Creek. The sediment investigation consisted of sediment probing, coring, and sampling performed to:

- Investigate the distribution and depths of sediment; and
- Determine the presence and extent of chemical constituents in the sediment.

The sediment investigation activities conducted within the quarry pond and outlet channel, the storm water drainage system, and Cobleskill Creek are described below.

2.4.1 Quarry Pond Sediment Sampling

The quarry pond sediment investigation performed during January 1993 consisted of sediment probing, coring, and sampling. These sediment investigation activities are described below.

Sediment Probing

Sediment probing was conducted in January 1993 at 24 locations in the quarry pond (SD-1 through SD-24), based on a 50-foot by 50-foot grid, and at three locations in the quarry pond outlet channel north of the railroad embankment (SD-35 through SD-37) to determine the depths of the sediment. Based on the results of the probing, six sediment core sample locations were selected to provide an even distribution of sediment sample locations over the quarry pond.

Sediment Core Sampling

Ten sediment samples from six sediment core sampling locations (SD-3, SD-5, SD-14, SD-16, SD-18, and SD-24) were collected in January 1993 and submitted for laboratory analysis of PCBs, TCL VOCs and SVOCs, TAL inorganic parameters, total organic carbon (TOC), percent solids, and particle size distribution. Sediment samples were collected from the 0- to 6-inch depth interval at all six sediment core sampling locations; from the 6- to 18-inch depth interval at locations SD-14, SD-18, and SD-24; and from the 18- to 30-inch depth interval at location SD-18.

Two additional sediment core sample locations (SD-28 and SD-34) were selected by the NYSDEC and NYSDOL during a January 22, 1993 telephone conversation with BB&L. (The additional sediment core sample locations were also discussed in a January 22, 1993 letter from Mr. Daniel Lightsey, P.E. of NYSDEC, to Mr. James F. Morgan of NMPC). Two samples from each additional core location were collected on January 28, 1993 and submitted for PCB analysis. These sediment samples were collected from 0 to 6 inches at both locations; from 6 to 11 inches at location SD-34; and from 6 to 20 inches at location SD-28.

Surface Sediment Sampling

Surface sediment samples were collected from 18 locations within the quarry pond (SD-1, SD-2, SD-4, SD-6 through SD-13, SD-15, SD-17, and SD-19 through SD-23) during January 1993 and submitted for laboratory analysis of PCBs, TOC, percent solids, and particle size distribution.

During a January 22, 1993 telephone conversation between NYSDEC, NYSDOL, and BB&L, eight additional surface sediment sample locations within the quarry pond (SD-27 through SD-34) were also established. (Pursuant to this telephone conversation, a follow-up letter dated January 22, 1993 was provided by Mr. Daniel Lightsey, P.E., of NYSDEC to Mr. James F. Morgan of NMPC). The eight sediment samples were collected and submitted to the laboratory for PCB analysis on January 28, 1993.

The locations of the sediment probing, coring, and surface sediment sampling for quarry pond sediments are shown on Figure 2-1.

2.4.2 Storm Water Drainage System Sediment Sampling

The sediment sampling conducted along the quarry pond storm water drainage system consisted of the following activities:

- November 1992 surface sediment sampling at two locations (WS-CC-1 and WS-CC-2) downstream from the quarry pond outlet channel;

- January 1993 surface sediment sampling at three locations (SD-35 through SD-37) in the quarry pond outlet channel; and

- May 1993 sediment sampling at select locations in the storm water drainage system further downstream from the quarry pond outlet channel.

Prior to the implementation of the Work Plan, two sediment samples (WS-CC-1 and WS-CC-2) were collected in November 1992 from the storm water drainage system downstream of the quarry pond outlet channel at a location specified by Ms. Judy Ross of the NYSDEC. The sampling was performed in accordance with BB&L's scope of work letter to NMPC dated December 1, 1992. Sediment samples WS-CC-1 and WS-CC-2 were collected from the 0- to 6-inch depth interval and submitted for laboratory analysis for PCBs, TOC, and percent solids. The locations are presented on Figure 2-2.

Surface sediment samples were collected from locations SD-35 through SD-37 located in the quarry pond outlet channel (Figure 2-1) during January 1993 sediment sampling activities and submitted for laboratory analysis for one or more of the following: PCBs, TOC, percent solids, particle size distribution, TCL VOCs, TCL SVOCs, and TAL inorganics.

Based on the results of the November 1992 and January 1993 sediment sampling, a sediment sampling program was initiated which focused on locations in the storm water drainage system further from the site. Surface sediment sampling at locations SD-38 through SD-43 and SD-45, along with sediment core sampling at locations SD-44, SD-46, SD-47, and SD-55 were conducted in May 1993. All of these storm water drainage system sediment samples were submitted for analysis for PCBs and TOC. A sample was collected for mercury analysis from each of the following locations: SD-39, SD-41, SD-43, and SD-44. Sediment sampling locations in the storm water drainage system are presented on Figure 2-2. The physical findings from visual analysis of the May 1993 samples are presented in Table 2-2.

2.4.3 Cobleskill Creek Sediment Sampling

The Cobleskill Creek sediment investigation, conducted during May 1993 consisted of the following activities:

- Sediment probing in Cobleskill Creek; and

- Collection of sediment core samples in Cobleskill Creek.

Sediment Probing

The sediments at the 10 sediment sampling locations within Cobleskill Creek (SD-47 through SD-56) were field probed. After these locations were probed and staked, personnel from BB&L, NMPC, and the NYSDOL agreed to relocate SD-47 and SD-55 from Cobleskill Creek to the storm water drainage system. NYSDOL also decided to eliminate sediment sample location SD-53 [see Figure 4 of the Phase I RI Work Plan presented in Volume II (Phase I RI Appendix A)]. Figure 2-2 depicts the seven locations remaining within Cobleskill Creek (SD-48 through SD-52, SD-54, and SD-56).

Sediment Core Sampling

Based on the results of the sediment depth probing activities described above, seven sediment sample locations (SD-48 through SD-52, SD-54, and SD-56) within Cobleskill Creek were chosen for sediment core sampling. Nine sediment core samples (not including QA/QC samples) were collected from the seven sediment sample locations within Cobleskill Creek on May 25, 1993 and submitted for laboratory analysis of PCBs and TOC. A surface sediment sample was collected from each Cobleskill Creek location and samples were collected from the 6- to 13-inch and 6- to 15-inch depth intervals at locations SD-49 and SD-52, respectively. Sediment core sampling locations are presented on Figure 2-2. Each sediment core was examined to determine the presence and depth of sediment lenses, layering of varying sediment types, percent recovery, sediment water interface, color, texture, and odor. The physical findings are summarized in Table 2-2.

2.5 Surface Water Investigation

Surface water sampling was conducted in May 1993 to determine the presence, concentration, and spatial distribution of chemical constituents in the quarry pond and in the storm water drainage system south of the quarry pond outlet channel, and to aid in the determination of the extent to which surface water acts as a migration pathway for constituents associated with the site. In addition, three surface water level monitoring points (Takedown 1, Takedown 2, and Takedown 3) were established at the edge of the quarry pond and referenced to NGVD of 1929 to facilitate a comparison of surface water levels with the groundwater levels observed in monitoring wells and coreholes. Due to protruding rock within the quarry pond at the location of Takedown 1 and Takedown 3, BB&L field personnel judged that the most accurate water level measurements could be obtained from Takedown 2. Therefore, after November 1993 all quarry pond surface water elevations were calculated from Takedown 2 measurements.

Details of the surface water investigation are described below.

2.5.1 Quarry Pond Surface Water Sampling

Surface water samples were collected for laboratory analysis for PCBs, TCL VOCs and SVOCs, TAL inorganics, and total suspended solids (TSS) from the quarry pond on May 26, 1993 at five locations (SW-1 through SW-5), as shown on Figure 2-1. Both field filtered and unfiltered surface water samples were collected at each location for PCBs and TAL inorganic analyses. Samples collected for VOC, SVOC and TSS analyses were not filtered.

At each surface water sample location, temperature, pH, specific conductivity, and dissolved oxygen were measured in the field, as summarized in Table 2-3.

2.5.2 Storm Water Drainage System Surface Water Sampling

On May 24, 1993 surface water samples were collected at four off-site locations (SW-6 through SW-9) within the storm water drainage system, as shown on Figure 2-2. Surface water sample points SW-6, SW-7, and SW-8 were located inside catch basins; surface water sample point SW-9 was located in an open drainage ditch.

A field filtered and an unfiltered surface water sample were submitted from each of the four sample locations for PCBs and mercury analysis. Temperature, pH, specific conductivity, and dissolved oxygen were measured at each location, as summarized in Table 2-3.

Prior to implementation of the Phase I RI Work Plan, two surface water samples (WS-CC-1 and WS-CC-2) were collected on November 10, 1992 from the storm water drainage system downstream of the quarry pond outlet channel (see Figure 2-2). The sampling was performed in accordance with BB&L's scope of work letter to NMPC, dated December 1, 1992. These unfiltered discrete surface water samples were submitted to the laboratory for the following analyses: PCBs (using USEPA Method 608) and TOC.

2.6 Ground-Water Investigation

A ground-water investigation was conducted as part of the RI to generate hydrogeologic and water quality data to support the evaluation of the following:

- The dynamics of the ground-water system(s) at the site (e.g., horizontal and vertical flow directions, hydraulic gradients, ground-water flow velocities, as well as discharge areas);

- The lateral and vertical extent of chemical constituents in the ground-water flow system(s) at the site; and
- The geologic characteristics of subsurface soil and bedrock (e.g., secondary permeability features such as fractures, bedding planes, and joints) that may affect the migration of chemical constituents at the site.

The ground-water investigation consisted of the following activities:

- Evaluation of existing monitoring wells;
- Ground-water monitoring well installation;
- Collection of soil/bedrock cores;
- Hydraulic conductivity testing;
- Reconnaissance of regional and site-specific geologic features;
- Ground-water sampling;
- Separate-phase oil monitoring and monthly water surface elevation measurements; and
- Ground water and surface water elevation measurements obtained in April 1995 during the initial operation of the 300 gpm water treatment system upgrade to confirm the hydraulic connection between the quarry pond and the surrounding site ground water.

Each of these ground-water investigation activities are described below.

2.6.1 Evaluation of Existing Monitoring Wells

The four existing bedrock wells at the site (MW-1 through MW-4) were evaluated in May 1993, prior to utilizing the wells as monitoring locations. BB&L conducted a field inspection and reviewed existing data on well specifications to determine the well construction details. The wells were installed by Parratt-Wolff, Inc. under the supervision of O'Brien & Gere in September 1989.

The field inspection of the existing wells was conducted on May 17, 1993 to evaluate the integrity of each well. The field inspection consisted of evaluating the following:

- Condition of the protective casing, cap, and lock;
- Condition of the surface seal surrounding the protective casing;
- Presence of depressions or standing water around the casing;
- Presence of grout between the riser and outer protective casing and the presence of a drain hole in the protective casing; and
- Comparison of monitoring well depths.

This information was recorded on the Well Inspection Checklist Forms included in Volume II (Phase I RI Appendix F) of this report. The results of the field inspection are discussed below.

The casing at all existing wells appeared to be straight and intact. Each well had a single 4-inch steel casing with no inner riser. The well collar, which is placed over the steel casing to install a locking protective cap, was cracked at monitoring well MW-2. A new well collar was installed on May 21, 1993. All protective caps and existing locks were in place. Surface seals were either partially or completely cracked leaving a gap between the steel casing and the seals at monitoring wells MW-1, MW-2 and MW-4. Consequently, Parratt-Wolff replaced the surface seals by excavating an area around each well and placing cement inside a form within the excavation. There was no standing water around any of the casings, and no depressions were noted.

A reference point for water level measurements had been marked on each well casing, and each well had been checked for a marked identification. The identifications on the well casings were readable, and it appeared that the following identifications were marked on the casings: MW N-1, MW E-2, MW E-3 and MW E-1. These designations corresponded to locations MW-1, MW-2, MW-3 and MW-4, respectively shown on Figure 2-1. Depth to water and depth to the bottom of each well were measured with a water level indicator. The well depths were compared to the September 1989 depths recorded by O'Brien and Gere, as listed below:

Well No.	Well Depth Below Grade (ft.) (BB&L 1993)	Well Depth Below Grade (ft.) (O'Brien & Gere 1989)
MW-1	35.3	35.9
MW-2	24.78	34.5
MW-3	34.14	25.5
MW-4	33.55	34.5

The well depths measured in 1989 and the well depths measured by BB&L in 1993 were similar, except at monitoring wells MW-2 and MW-3. The depth at monitoring well MW-2 recorded by O'Brien & Gere appears to be similar to the 1993 measured depth at monitoring well MW-3, and vice versa. BB&L understood the designations located on the well casings, N-1, E-2, E-3, and E-1, to correspond to MW-1, MW-2, MW-3, and MW-4. Therefore, the well designations on the O'Brien & Gere subsurface logs were corrected. New subsurface logs were generated by BB&L for existing wells MW-1, MW-2, MW-3, and MW-4 based on the O'Brien & Gere logs and the above-described modification in well nomenclature.

All existing wells were deemed usable as monitoring locations with the minor repairs performed. A brief description of each existing well follows, and complete descriptions are presented on the subsurface logs in Volume II (Phase I RI Appendix G - Monitoring Well/Corehole Subsurface Logs and Monitoring Well Construction Details) of this report.

Monitoring well MW-1 was installed to 35.9 feet below ground level (bgl). Bedrock consisting of light to medium gray limestone containing chert nodules and fossilized rugose coral, brachiopods, and biherms was encountered at 3.3 feet bgl. The overburden consisted of brown silt with some clay and little fine to medium sand from 0 to 2 feet bgl and brown clay with little silt and trace fine to coarse sand from 2 to 3.3 feet bgl. Four-inch steel casing was installed to 5.9 feet bgl.

Monitoring well MW-2 was installed to 25.5 feet bgl. Bedrock consisting of light to medium gray fossiliferous limestone containing chert nodules, was encountered at 15.5 feet bgl. The overburden was not described in detail on the subsurface log. A 4-inch casing was installed to 17.5 feet bgl.

Monitoring well MW-3 was installed to 34.5 feet bgl. Bedrock was described as similar to the bedrock encountered at location MW-2 and was encountered at 13.5 feet bgl. Again, there was no detailed description of the overburden in the subsurface log. A 4-inch casing was installed to 15.5 feet bgl.

Monitoring well MW-4 was installed to 34.5 feet bgl. Bedrock was described as similar to the bedrock encountered at location MW-2 and was encountered at 17.5 feet bgl. A detailed description of the overburden was not presented on the subsurface log. A 4-inch casing was installed to 19.5 feet bgl.

2.6.2 Monitoring Well and Bedrock Corehole Installations

Four bedrock monitoring wells, three overburden monitoring wells, and 17 bedrock coreholes were installed at the site as part of the RI ground-water investigation. Details of the Phase I RI and Phase II RI monitoring well and bedrock corehole installations, which are identified with the MW and C prefixes, respectively, are presented below.

2.6.2.1 Phase I RI Monitoring Well and Bedrock Corehole Installations

Bedrock Monitoring Wells

Parratt-Wolff installed four bedrock monitoring wells (MW-5 through MW-8) at the site in May 1993 under the supervision of a geologist. Monitoring wells MW-5 and MW-6 were installed at the eastern and western edges of the quarry pond, respectively, to aid in evaluating ground-water quality in areas not investigated during the initial site investigation, to provide information on the ground-water flow system at the site, and to provide additional information on the geologic characteristics of the overburden and bedrock at the site. Monitoring well MW-7 was installed hydraulically upgradient of the site to replace existing monitoring well MW-1 as a background well and to provide ground-water data more representative of upgradient ground-water conditions. Monitoring well MW-8 (C-3) was installed in the bedrock corehole C-3 located upgradient from a bedrock fissure observed at the northwestern sidewall of the quarry pond. Figure 2-1 presents the locations of the bedrock monitoring wells.

Each borehole was advanced to the top of bedrock with 6¼-inch inner diameter (I.D.), continuous flight hollow-stem augers in accordance with the procedures set forth in the FSP. Continuous soil samples were obtained by driving a 2-inch I.D., 2-foot-long split-spoon sampler. Additionally, a rock socket was installed to minimize the possible introduction of constituents from the overburden into the bedrock during bedrock coring. The rock socket was installed by advancing the hollow stem auger or by spinning casing to at least one foot into bedrock, and setting a 4-inch diameter casing in place to the bottom of the socket. A cement/bentonite grout was installed around the 4-inch casing from the bottom of the hole to the ground surface. The grout was allowed to set (a minimum of 12 hours), and then a corehole was advanced by means of NX coring. Five-foot-long rock cores were obtained at each location, and overburden soils and the rock cores were described by the on-site supervising geologist. The wells were installed in the first water-bearing zone, as determined by fracturing and weathering of the rock cores and depths of the existing wells. Each well was constructed as an open NX corehole with 4-inch steel casing, installed at least one foot into the bedrock. A summary of the depths to bedrock and total depths of the Phase I RI bedrock monitoring wells is provided below:

Phase I RI Bedrock Monitoring Well	Ground Surface Elevation (ft.)	Depth to the Top of Bedrock (ft.)	Total Corehole Depth Below Ground Level (ft.)	Elevation of the Bottom of the Corehole (ft.)
MW-5	968.5	4.8	35.0	933.5
MW-6	966.2	30.6	50.0	916.2
MW-7	997.6	4.0	45.5	952.1
MW-8 (C-3)	971.6	0.5	45.1	926.5

Complete subsurface logs, including overburden and bedrock descriptions, are presented in Volume II of this report (Phase I RI Appendix G). Section 3.6.1 of this report contains a geologic characterization of the site.

During the installation of monitoring well MW-5, a slight sheen was observed at an approximate depth of 25 feet bgl. The sheen did not persist, and the well was continued to a depth of 35 feet bgl. After installation, no separate-phase oil was observed while performing packer testing. However, during well development, separate-phase oil was observed after approximately 45 gallons of water had been pumped from the well.

During the installation of MW-8 (C-3), a sheen was observed on the core barrel after drilling the 40- to 45-foot core run. Upon further examination of the rock cores, oil-like odors were noted in the fractures from approximately 30 to 40 feet. The day after installation of MW-8(C-3), separate-phase oil was observed on top of the water column at this location.

Overburden Monitoring Wells

During coring activities (as described above), saturated conditions were encountered in the overburden at monitoring well location MW-6 and at temporary corehole locations C-1 and C-2 (the temporary coreholes were grouted to the surface and abandoned); therefore, three overburden monitoring wells (MW-9 through MW-11) were installed in May 1993. Monitoring well MW-9 was installed east of existing bedrock monitoring well MW-4; monitoring well MW-10 was installed between existing bedrock monitoring wells MW-2 and MW-3; and monitoring well MW-11 was installed adjacent to bedrock monitoring well MW-6. Figure 2-1 displays the location of these overburden monitoring wells.

Prior to completion, soil borings were installed using a hollow-stem auger. The overburden monitoring wells are constructed of 2-inch-diameter PVC screen and riser casing. The slot size of each well screen is 0.010-inches wide. The well screens at monitoring wells MW-9 and MW-10 are 10 feet long, and the well screen at monitoring well MW-11 is 5 feet long. A quartzite sand pack was placed around the screen from the bottom of each well to a minimum of 2 feet above the top of the screened interval. A 2-foot-thick seal of hydrated bentonite was placed above the sand pack, and a cement/bentonite grout was placed over this to the surface. Flush-mount protective casings were installed at wells MW-9 and MW-10, and a 4-inch steel protective casing was installed over the PVC riser at well MW-11. Well screens were placed just above the bedrock, where saturated conditions were encountered. A summary of well screen placement is provided below:

Phase I RI Overburden Monitoring Well	Ground Surface Elevation	Total Boring Depth (feet bgl)	Well Screen Interval (feet bgl)	Well Screen Interval Elevation (feet)
MW-9	954.3	19	9 - 19	945.3 - 935.3
MW-10	956.6	17	7 - 17	949.6 - 939.6
MW-11	965.2	29.5	24.5 - 29.5	940.7 - 935.7

The subsurface logs in Volume II (Phase I RI Appendix G) of this report provide additional overburden well construction details.

<u>Soil/Bedrock Coreholes</u>

In May 1993, temporary coreholes C-1 and C-2 were installed to a maximum depth of 10 feet into bedrock between the three existing bedrock wells (MW-2 through MW-4) in the active scrapyard area south of Route 10. Corehole C-1 was installed between monitoring wells MW-2 and MW-4. Corehole C-2 was installed between monitoring wells MW-2 and MW-3. Based on saturated overburden observed during installation of coreholes C-1 and C-2, overburden monitoring wells MW-9 and MW-10 were located in this area.

After continuous samples of the overburden were obtained, temporary casings were set at coreholes C-1 and C-2. NX coring equipment was used to obtain rock core samples to 10 feet into the bedrock. Upon completion of the soil sampling and rock coring, these coreholes were sealed with a cement/bentonite grout to the surface by means of a tremie pipe. In May 1993, coreholes C-3 through

C-5 were installed adjacent to the northern boundary of the quarry pond. Coreholes C-3, C-4, and C-5 were installed by advancing 6¼-inch I.D., continuous flight, hollow-stem augers to the top of bedrock. A rock socket was installed by advancing the hollow stem auger or by spinning casing into bedrock (up to 2 feet), and a 4-inch-diameter casing was set in place to the bottom of the socket. A cement/bentonite grout was installed around the 4-inch casing from the bottom of the hole to the ground surface. The grout was allowed to set (a minimum of 12 hours), and then the corehole was advanced by means of NX coring. Rock cores of up to 5 feet long were obtained at each location. Corehole C-3 was designated as monitoring well MW-8.

After separate-phase oil was observed on the top of the water table at monitoring well/corehole locations MW-5 and MW-8 (C-3), additional coreholes (C-6 through C-14) were installed to assist in evaluating the horizontal and vertical extent of the separate-phase oil. Corehole C-6 was installed in June 1993, coreholes C-7 through C-12 were installed in July 1993, and coreholes C-13 and C-14 were installed in August 1993. The coreholes were oriented along the planes of the two dominant vertical fracture trends observed at the site, both upgradient and downgradient of monitoring wells MW-5 and MW-8(C-3). The locations of the coreholes are shown on Figure 2-1.

The additional coreholes were advanced to depths that corresponded to the depths of monitoring wells MW-5 and MW-8(C-3), the depth of the bottom of the quarry pond, and/or the depths of the water-bearing zones observed at the site. A summary of the depths to bedrock and total depths of the coreholes is provided below:

Corehole	Ground Surface Elevation (feet)	Depth to the Top of Bedrock (ft.)	Total Corehole Depth bgl (feet)	Elevation of the Bottom of the Corehole (feet)
C-1	954.8	16.8	28.1	926.7
C-2	957.4	15.2	28.5	928.9
MW-8 (C-3)	971.6	0.5	45.1	926.5
C-4	971.4	0.0	45.1	926.3
C-5	975.6	0.0	39.5	936.1
C-6	977.7	6.1	50.5	927.2
C-7	985.9	7.5	50.5	935.4
C-8	983.0	5.5	55.5	927.5
C-9	979.9	3.3	49.7	930.2
C-10	964.9	5.2	40.5	924.4
C-11	961.8	8.6	40.0	921.8

Corehole	Ground Surface Elevation (feet)	Depth to the Top of Bedrock (ft.)	Total Corehole Depth bgl (feet)	Elevation of the Bottom of the Corehole (feet)
C-12	957.6	6.5	34.9	922.7
C-13	963.5	6.5	39.8	923.7
C-14	971.6	3.9	58.9	912.7

Complete subsurface logs, including overburden and bedrock descriptions, are presented in Volume II (Phase I RI Appendix G) of this report. A geologic characterization of the site is addressed in Section 3.5.1.

2.6.2.2 Phase II RI Bedrock Corehole Installations

During the August 1994 Phase II RI ground-water investigation activities, four bedrock corehole/monitoring wells (C-15, C-16, C-18, and C-19) were installed along the southwestern site boundary to assist in defining the extent of the separate phase oil present on the ground-water surface within the bedrock ground-water flow system. These soil borings/bedrock cores were installed to depths similar to the depth of corehole C-14 and completed as open-hole bedrock monitoring wells, in accordance with the procedures described in Subsection 2.6.2.1. The proposed locations for the Phase II corehole/monitoring well installations were presented in the Phase II RI Work Plan; the final locations were determined on August 9, 1994 during consultation between BB&L, NYSDEC, NMPC, and M. Wallace and Son, Inc. on-site personnel. At that time, it was determined to replace proposed corehole C-17, which was inaccessible due to overhead power lines, with existing corehole C-11. Verbal permission to place temporary corehole C-19 in the West Street right-of-way was granted on August 10, 1994 by Mr. Tom Fissell, Superintendent of the Village Street Department of Cobleskill, New York. Figure 2-1 presents the locations of the Phase II bedrock corehole/monitoring wells.

A summary of the depths to bedrock and total depths of the Phase II RI bedrock corehole/monitoring wells is provided below:

Phase II RI Bedrock Monitoring Well	Ground Surface Elevation	Depth to Top of Bedrock (ft)	Total Corehole Depth Below Ground Level (ft)	Elevation of Bottom of the Corehole (ft)
C-15	977.4	2.8	65.0	912.4
C-16	969.1	9.5	60.0	909.1
C-18	958.6	10.1	49.5	909.1

Phase II RI Bedrock Monitoring Well	Ground Surface Elevation	Depth to Top of Bedrock (ft)	Total Corehole Depth Below Ground Level (ft)	Elevation of Bottom of the Corehole (ft)
C-19	965.2	10.0	55.0	910.2

The subsurface logs in Volume V (Phase II RI Appendix B) of this report provide additional well construction details.

2.6.3 Monitoring Well/Bedrock Corehole Development

Following installation, all bedrock and overburden monitoring wells, along with each bedrock corehole selected for development as a monitoring well, was developed by bailing or pumping to facilitate communication with the surrounding formation. The wells/coreholes could not be developed to 50 nephelometric turbidity units (NTUs) due to the presence of fines (fine sands, silts, and clays) in the overburden and in the bedrock fractures. Therefore, development continued until three consecutive measurements of pH, conductivity, and temperature agreed within 10 percent. Phase I RI bedrock monitoring well MW-8(C-3) was not developed due to the presence of separate-phase oil on the water table. During the Phase II RI, corehole C-11 was developed as a bedrock monitoring well. Bedrock corehole C-11 replaced the proposed corehole C-17, the location of which was inaccessible due to overhead power lines.

2.6.4 Hydraulic Conductivity Testing

Hydraulic conductivity testing was performed at Phase I RI and Phase II RI bedrock monitoring wells and coreholes using the packer test method. In-situ hydraulic conductivity ("slug") testing was performed at the overburden monitoring wells during the Phase I RI ground-water investigation. Each hydraulic conductivity testing method and its application during Phase I RI and Phase II RI ground-water investigation activities are discussed below.

2.6.4.1 Phase I RI Hydraulic Conductivity Testing

Hydraulic conductivity testing was performed at all Phase I RI bedrock monitoring wells and coreholes, with the exception of monitoring well MW-8 (C-3) and temporary coreholes C-1 and C-2. Packer testing was not performed at monitoring well MW-8 (C-3), due to the presence of separate phase oil on the water table. Packer testing at corehole C-4 was stopped when separate-phase oil was observed entering the quarry pond while testing was being performed. Packer testing was performed at the Phase I RI bedrock monitoring wells and the coreholes following installation, using the procedures outlined in the FSP. Generally, the packer tests were performed by sealing off and pressurizing the entire corehole using one packer at the top of the tested interval; however, at monitoring wells/coreholes MW-5, MW-6 and C-14, this could not be accomplished. At these locations, the target pressure could not be achieved by pressurizing the entire corehole interval, because the test interval was too permeable. Therefore, discrete intervals of the coreholes were tested at these locations using the double packer method and testing at 5-foot intervals either beginning at the top of the corehole and continuing downwards to the bottom of the corehole; or beginning from the bottom of the corehole and continuing upwards. By testing certain intervals, the permeable zones could be ascertained.

Packer test data were reduced to develop estimates of hydraulic conductivity for each tested interval, based on standard data reduction procedures (United States Bureau of Reclamation, 1974; Houlsby, 1976). The data was entered into packer test data reduction spreadsheet program developed by BB&L. In addition to the hydraulic conductivity value, the packer test data reduction spreadsheet calculated a Ludgeon value (Houlsby, 1976). Ludgeon values were evaluated to interpret the type of flow, the rock formation response, and the most representative calculated hydraulic conductivity value for the tested rock interval.

In-situ hydraulic conductivity ("slug") testing was performed at overburden monitoring wells MW-9, MW-10, and MW-11 on July 1, 1993 by introducing a pre-cleaned PVC slug into the well. The change in water levels was measured using a pressure transducer and recorded with an electronic data logger. Hydraulic conductivity values were calculated using the Bouwer-Rice Method (Bouwer and Rice, June, 1976 and Bouwer, 1989).

The results of the hydraulic conductivity testing in the overburden and bedrock wells/core holes are discussed in Sections 3.6.2.1 and 3.6.2.2, respectively. Hydraulic conductivity values are summarized in Table 2-4. Packer test data reduction forms and hydraulic conductivity spreadsheet calculations and graphs are presented in Volume II (Phase I RI Appendices H and I, respectively) of this report.

2.6.4.2 Phase II RI Hydraulic Conductivity Testing

Packer tests were performed at each of the Phase II RI corehole/monitoring wells. The packer tests were performed by sealing off and pressurizing the entire corehole interval. The packer test data were reduced, and hydraulic conductivities and Ludgeon valves were evaluated in accordance with the procedures outlined in Section 2.6.4.1. The results of the Phase II RI packer tests are presented in Table 2-4 and discussed in Section 3.6.2.1, and the packer test data reduction forms are presented in Volume V (Phase II RI Appendix C) of this report.

2.6.5 Reconnaissance of Regional and Site-Specific Geologic Features

To integrate site-specific geologic characteristics to the regional features discussed in Section 1.2.2.3, BB&L performed two reconnaissance efforts: an evaluation of bedrock structures exposed at the quarry pond and an assessment of potential off-site discharge features (e.g., springs and rise pools).

To assess the orientations of bedrock structures, including joints and bedding plane fractures at the site, BB&L completed a structural geologic analysis. The field component of this structural analysis consisted of measuring the spatial orientations (strike and dip) of 33 bedrock joints using a Brunton geologic compass on June 4, 1993. The strike is the direction of the imaginary horizontal line on the planar joint surface. The dip is the direction and magnitude of the greatest downward angle the planar feature makes with respect to horizontal. These structural data were then plotted using a stereonet to allow a visual interpretation of site-specific joint groups.

To estimate the bedding plane orientation, a vector analysis was completed. At five locations, the elevation of a distinct single bedding plane fracture was measured as a height above the common level of the top of the quarry pond. Using the relative elevation measurements, the mapped distances between the measurement locations and trigonometric equations, imaginary vectors along the fracture plane were calculated. These vector orientations were then plotted on the stereonet to evaluate the orientation of the plane common to all the vectors.

BB&L conducted an off-site field reconnaissance on August 16, 1993. The purpose of this reconnaissance was to identify springs, seeps, or other karst discharge features downgradient and downdip of the site. During the installation of corehole C-14, a 6-foot void was encountered at an approximate depth of 47 feet. This void indicates that there is a large-scale solution enlargement of the Onondaga Limestone in this area. This void, if indicative of a tap-off cave passage, would have an associated discharge point somewhere in the valley of Cobleskill Creek. Ground water within this void could also discharge into the quarry pond based on the observations of the alleged flooding of the quarry during active quarry operations.

The reconnaissance concentrated on the area to the southwest of the site because conduits in this area are statistically more likely to be oriented along the dip, which is to the southwest (Mylroie 1977, Palmer 1993).

2.6.6 Ground-Water Sampling

BB&L collected ground-water samples between June 29 and July 1, 1993 (Phase I RI), September 1994, and March and April 1995 (Phase II RI) to evaluate the presence and distribution of chemical constituents in the ground-water flow systems at the site. During ground-water sampling activities, each well was inspected for separate phase oil and purged until the measured values of pH/temperature/conductivity stabilized within 10 percent. Ground-water samples were collected following procedures presented in the FSP, and submitted to Aquatec for analysis of one or more of the following: TCL VOCs and SVOCs, PCBs (laboratory filtered and unfiltered), and TAL inorganic parameters (field filtered and unfiltered). Descriptions of the ground-water sampling activities which were conducted during the Phase I RI and Phase II RI ground-water investigation are presented below.

2.6.6.1 Phase I RI Ground-Water Sampling

Ground-water samples were collected at six bedrock monitoring wells (MW-1 through MW-4, MW-6, and MW-7) and three overburden monitoring wells (MW-9 through MW-11) during Phase I RI ground-water sampling activities. Monitoring wells MW-5 and MW-8(C-3) contained separate phase oil; therefore, ground-water samples were not collected from these wells. The separate-phase oils were sampled and analyzed for TCL VOCs and SVOCs, PCBs, TAL inorganics, specific gravity, and fuel oil fingerprinting. The results of these analyses are discussed in Section 3.5.5. Monitoring wells MW-1 through MW-4, MW-6, MW-7, and MW-9 through MW-11 were sampled using dedicated teflon bailers, following procedures presented in the FSP, with the exception of the samples requiring filtration. For samples filtered in the field, ground water from the dedicated teflon bailer was poured into dedicated, pre-cleaned, laboratory-supplied, glass jars (instead of a pre-cleaned glass bowl, as stated in the FSP) and then filtered into the sample containers by using 0.45-micron in-line filter.

The ground-water samples were analyzed for PCBs, TCL VOCs and SVOCs, and TAL inorganics following NYSDEC 1991 ASP methods. Both filtered and unfiltered ground-water samples were collected from each of the six bedrock wells and three overburden wells for PCB and TAL inorganic analyses. Subsequent to purging, monitoring well MW-1 did not recover enough to provide sufficient sample volume for all analyses; therefore, unfiltered TAL inorganic analysis was not performed.

During the Phase I RI ground-water sampling activities, pH, conductivity, dissolved oxygen, and temperature were measured and recorded in the field. Readings of pH, conductivity, dissolved oxygen, and temperature obtained at overburden monitoring wells ranged from 6.68 to 6.85, 1,200 to 2,020 micromhos per centimeter (umhos/cm), 1.9 to 5.2 milligrams per liter (mg/L), and 58.3 to 60.5 degrees Fahrenheit (°F), respectively. Measurements of pH, conductivity, dissolved oxygen, and temperature

Section 3

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3.0 - Summary of Remedial Investigation Results

3.1 General

This section presents the ground-water usage information, analytical sample data, and hydrogeologic and geologic characterization data obtained from the Phase I and Phase II RI field activities. A description of each field activity, along with a discussion of the basis for implementing each activity, was presented in Section 2.0. Laboratory analyses were performed by Aquatec, Inc. (Aquatec) of Colchester, Vermont, in accordance with the NYSDEC 1991 ASP methods, with the exception of four surface soil samples (SS-36 through SS-39) that were analyzed by Upstate Laboratories, Inc. of Syracuse, New York; two sediment samples collected in November 1992 that were analyzed by O'Brien & Gere Laboratories of Syracuse, New York; and fish tissue samples which were analyzed by Hazelton Environmental Services, Inc., of Madison, Wisconsin. QA/QC measures, as defined in the QAPP [Volume II (Phase I RI Appendix C) of this report], were followed during the analysis of the samples. All analytical sample results were third-party data validated by Upstate Laboratories, Inc., of Syracuse, New York (Upstate) or Data Val, Inc., of Endwell, New York (Data Val), except for the fish tissue samples and the ground-water samples collected in March and April 1995, which were validated by BB&L.

The following notes pertain to the presentation of the analytical data in this section:

- Soil, sediment, and biota data are presented in ppm; aqueous data (i.e., surface water, ground water, rinse blanks, trip blanks) are presented in ppb, unless otherwise noted.

- The designations for ground-water samples are presented with either the prefix "MW" or "C." This deviates from the FSP [Volume II (Phase I RI Appendix B)], which states that ground-water samples are to be designated with "GW."

- For ease of discussion in the text and presentation in the tables, concentrations of individual tentatively identified compounds (TICs) for both VOC and SVOC analyses have been totaled and reported as total TICs. TICs are compounds that are detected during analysis but are not part of the required list of compounds. Individual TICs are presented in the validated laboratory data packages in Volumes III and IV (Phase I RI Appendix L) and Volume V (Phase II RI Appendix E) of this report.

- In the tables presenting VOC and SVOC data results, only the detected compounds and their respective concentrations are reported. The full list of compounds analyzed and the sample detection limits are included in the validated laboratory data Form 1, which are included in Volumes III and IV (Phase I RI Appendix L) and Volume V (Phase II RI Appendix E) of this report.

3.2 Area Reconnaissance

An area reconnaissance was conducted to determine ground-water usage within the vicinity of the site. The SCDH was contacted for information pertaining to residential water supply wells near the site. In 1986, the SCDH conducted a private well user survey in the vicinity of the site. Based on BB&L's review of information provided by SCDH, the apartments, schools, and residences to the east of the site are supplied by public water. The public water system does not extend west of West Street. The residences and businesses to the west of the site are supplied by private water supply wells. The 10 wells closest to the site were inventoried by the SCDH. Information pertaining to well construction details was limited, due to the fact that some wells were approximately 40 years old. The depths of the wells range from 15 to 450 feet.

3.3 Soil Investigation Results

BB&L collected surface and subsurface soil samples at the site between May 1993 and September 1994 for analysis for one or more of the following: PCBs, TCL VOCs and SVOCs, TAL inorganic parameters and EP Toxic metals. Surface soil samples are designated with the prefix "SS" and subsurface soil samples are designated with the prefix "TP" for test pit samples and "S (depth)" or "TPC" for borings. The analytical results for surface and subsurface soil samples are discussed below.

3.3.1 Surface Soil Sampling

During May 1993, 35 surface soil samples (not including QA/QC samples) were collected at locations S-1 through S-35 prior to test pit activities and were analyzed for PCBs, TCL SVOCs, and TAL inorganics. Soil was also collected at locations S-1 through S-35 for PID field screening and visual characterization. Twenty-one surface soil samples, including 11 samples in the active scrapyard area and 10 samples along the northern fenceline, were collected in August and September 1993 at locations S-36 through S-57, and analyzed for PCBs only. In September 1994, 9 surface soil samples were collected at locations S-60 through S-68 for PCB analysis and 10 previously sampled locations (S-3, S-4, S-7, S-8, S-11, S-13, S-20, S-21, S-24, and S-28) were resampled for analysis for EP toxic metals. Sample locations are presented on Figure 2-1.

3.3.1.1 Field Screening Results and Visual Characterization

Staining was observed in a surface soil sample collected from S-4 (Phase I RI Appendix E - Test Pit Logs). PID measurements were taken from surface soil samples collected at S-1 through S-35. The

PID readings ranged from 0 ppm to 4 ppm. Twenty-four of the 35 samples had PID readings of 0 ppm. Table 2-1 summarizes the surface soil PID screening results.

3.3.1.2 Polychlorinated Biphenyls

The results of PCB analysis range from not detected (at the detection limits ranging from 0.02 ppm to 0.04 ppm) in seven surface soil samples (not including QA/QC samples) collected from locations S-29, S-31, S-33, S-40, S-41, S-46, and S-50 to 164 ppm in the sample collected from S-4. Samples collected from along the north fenceline (outside the site boundary) at locations S-40 through S-50 contained PCBs at concentrations ranging from not detected (detection limit of 0.02 ppm) to 0.07 ppm (sample SS-42S). Samples taken from outside the eastern fenceline (inside the site boundary) at locations S-62 through S-68 contained PCBs at concentrations ranging from 0.02 J ppm to 0.23 ppm. The PCB analytical results are presented in Table 3-1, and Figure 3-1 illustrates the presence, concentration, and extent of PCBs in the surface soils at the site.

3.3.1.3 Target Compound List (TCL) Semi-Volatile Organic Compounds

The surface soil samples contained 26 TCL SVOCs above the detection limit, as presented in Table 3-2. The surface soil sample collected from location S-2 contained the highest concentrations of total SVOCs reported at 129.1 ppm. SVOC total TIC concentrations ranged from 7 ppm to 555 ppm in the samples collected from S-18 and S-21, respectively. The SVOC TICs reported included such compounds as 4-hydroxy-4-methyl-2-pentanone, benzo(c)pyrene, and hexadecanoic acid. Figure 3-2 illustrates the presence, concentration, and extent of SVOCs detected in surface soil samples.

3.3.1.4 Target Analyte List (TAL) Inorganic Parameters

The measured concentrations of inorganic parameters detected in surface soil samples collected at the site are compiled in Table 3-3 and illustrated on Figure 3-3. Surface soil sample (SSMW-7S) was collected along the north fenceline at the location of monitoring well MW-7 as a potential background sample for TAL inorganic parameters. However, the detection of SVOCs in the surface soil sample collected at the adjacent soil sampling location S-3 indicates that soil samples collected from the MW-7 location may not be indicative of true background levels. For this reason, regional background levels consistent with the NYSDEC Technical and Administrative Guidance (TAGM) entitled, "Determination of Soil Cleanup Objectives and Cleanup Levels" (TAGM No. HWR-94-4046, dated January 24, 1994) are presented in Table 3-3, where soil background concentrations of inorganic parameters are required. Elevated levels of cadmium (5.6 to 68.8 ppm), copper (231 J to 4,740 J ppm), lead (149 J to 9,700 J ppm), mercury (0.82 J to 19.6 J ppm), and zinc (179 to 6,750 ppm), on the order of one to two magnitudes greater than the NYSDEC-recommended cleanup objective/background concentrations, were detected in surface soil samples collected from location S-28 and from the upper section of the site. Samples collected at locations S-29 through S-35 in the southeast quadrant of the site contained concentrations of inorganic parameters at levels consistent with the NYSDEC-recommended cleanup objective/background levels.

3.3.1.5 EP Toxic Metals

In accordance with the request by Mr. Daniel Lightsey, P.E., of the NYSDEC (June 3, 1994 letter) to Mr. James F. Morgan of NMPC, surface soil samples from 10 site locations were submitted to Aquatec for EP toxic metals analysis. The samples were collected in September 1994 during Phase II RI soil investigation activities. Table 3-3A presents the results of the EP toxic metals analysis, as well as the regulatory levels of inorganic parameters in the EP toxic extract at or above which a solid waste is considered a hazardous waste [as outlined in 6NYCRR 371.31(e)]. The concentration of lead in the extract of the surface soil sample from S-28 was 7,320 J ppb. This was the only concentration detected above the regulatory levels.

3.3.2 Subsurface Soil Sampling

Thirty-two subsurface soil samples (not including QA/QC samples) were collected at test pit locations S-1 through S-31 and S-34, in May 1993, following the surface soil sampling activities at the same locations. Fifteen of the subsurface soil samples were collected and analyzed for PCBs, TCL VOCs and SVOCs, and TAL inorganic parameters. The remaining 17 samples were analyzed only for PCBs, in accordance with the Work Plan protocols. In August 1993, subsurface soil samples were collected from test pit locations S-52 through S-55. These samples were analyzed for PCBs, TCL VOCs and SVOCs, and TAL inorganic parameters. During all test pit excavation activities, subsurface soils were described, and samples were collected for PID field screening.

In addition to the test pits, a boring, TPC-12A, located adjacent to corehole C-12, was drilled and sampled on July 30, 1993 for analysis of PCBs, TCL VOCs and SVOCs, and TAL inorganic parameters. This boring was installed and sampled due to elevated PID readings measured during the installation of corehole C-12. Subsurface soil samples for laboratory analysis were not collected during the installation of corehole C-12. Therefore, boring TPC-12A was installed to the depth (4 feet bgl) where elevated PID readings were detected in corehole C-12 and samples were collected from the 2 to 4 foot depth interval for laboratory analysis for the aforementioned parameters. In September 1994, subsurface soil samples were collected from leachfield area soil boring locations S-60 and S-61 for PCB analysis and from Phase

I RI test pit locations S-8 and S-28 for EP toxic metals analysis. Sample locations are presented on Figure 2-1.

3.3.2.1 Physical Description

Subsurface soils from locations S-1 through S-31 and S-34 were generally described as brown, clayey silt with gravel and some cobbles. Subsurface soils from locations S-52 through S-55 located in the southwest quadrant of the site were generally described as silty sand and gravel. Additionally, the following observations regarding the presence of debris and/or staining were noted during test pit excavation activities:

- Black staining from 0 to 2 feet bgl at location S-4;
- Buried debris from 0 to 4 feet bgl at location S-8;
- A buried transformer lid located between 6 to 18 inches bgl at location S-11;
- A buried transformer at location S-19;
- Surface debris at location S-22; and
- Scrap metal encountered from 0 to 2 feet bgl at location S-55.

The physical soil description and presence of subsurface debris were noted on the test pit logs, presented in Volume II (Phase I RI Appendix E) of this report.

3.3.2.2 Field Screening Results

PID field screening measurements were taken from the headspace of subsurface soil samples collected at S-1 through S-31, S-34, and S-52 through S-55. As presented in Table 2-1, PID measurements ranged from 0 to 153 ppm. The highest PID readings of 110 ppm and 153 ppm were reported in the 0- to 2-foot sample depth interval at locations S-14 and S-15, respectively. The other detections were at least one order of magnitude lower in concentration. Forty out of the 62 subsurface soil samples collected had PID field screening measurements of 0 ppm.

Headspace PID readings averaging 1.45 ppm were recorded for subsurface samples collected from locations S-52 through S-55 in the southwest quadrant of the site. The PID readings from each depth interval are presented in Table 2-1.

3.3.2.3 Polychlorinated Biphenyls

The results of PCB analysis of the 40 subsurface soil samples collected (not including QA/QC samples) ranged from not detected at 14 locations to 15.99 ppm at location S-13. Twenty of the 40 samples contained detected concentrations of PCBs at less than 1 ppm, four between 1 and 10 ppm, and two between 10 and 20 ppm. The two samples with PCB concentrations between 10 and 20 ppm were collected from locations S-13 and S-19 at depth intervals of 0-2' and 2-4', respectively. S-13 and S-19 are in the north central part of the site in the vicinity of the former transformer gutting area. The PCB analytical results are summarized in Table 3-4 and presented on Figure 3-1.

3.3.2.4 TCL VOCs and SVOCs

Subsurface soil samples were collected from 18 test pit locations and analyzed for TCL VOCs and SVOCs. Methylene chloride and acetone, each detected at low concentrations in four of the test pit subsurface soil samples, were also detected in the laboratory method blank. Therefore, the presence of methylene chloride and acetone is likely due to laboratory contamination and is not indicative of actual subsurface soil quality. VOC TICs were detected in five subsurface soil samples at estimated total concentrations ranging from 0.012 ppm (duplicate sample collected at S-28) to 0.036 ppm (S-19).

The highest subsurface soil total SVOC concentration of 3.9 ppm was detected in the sample collected at S-14. No SVOCs were detected in samples from six test pit locations (S-4, S-19, S-26, S-27, S-30, and S-54). SVOC total TIC concentrations ranged from 0.078 ppm (S-27) to 322.5 ppm (S-19) and included compounds such as 4-hydroxy-4-methyl-2-pentanone, hexadecanoic acid, and nonadecane.

The VOC and SVOC concentrations measured in the subsurface soil sample collected at TPC-12A, located near the M. Wallace and Son, Inc. Scrapyard leachfield area (southwest corner of the site), exceed the other subsurface soil sample concentrations. Total VOC and SVOC concentrations were reported at 1,168 ppm and 43.6 ppm, respectively. VOC and SVOC total TIC concentrations were reported at 1,620 and 282.2 ppm, respectively. VOC TICs included 3-methylhexane and unknown ethylmethylbenzene; SVOC TICs included 1,2,4-trimethylbenzene and 1-ethyl-3-methylbenzene. The analytical results from the sample collected at TPC-12A are presented in Table 3-5.

Tables 3-5 and 3-6 summarize the subsurface soil sample VOC and SVOC analytical results. Figure 3-4 illustrates the presence and extent of VOCs and SVOCs, based on the subsurface soil sample analytical results.

3.3.2.5 TAL Inorganic Parameters

Concentrations of inorganic parameters measured in subsurface soil samples collected at the site are summarized in Tables 3-5, 3-7, and 3-7A and on Figure 3-5. Subsurface soil sample (TPMW-7S) was collected along the north fenceline at the location of monitoring well MW-7 as a potential background sample for inorganic parameters. However, the detection of SVOCs in the surface soil sample collected at the adjacent soil sampling location S-3 indicates that soil samples collected from the MW-7 location may not be indicative of true background levels. For this reason, regional background levels consistent with the NYSDEC TAGM entitled, "Determination of Soil Cleanup Objectives and Cleanup Levels" (January 1994) are presented in Table 3-7, where soil background concentrations for inorganic parameters are required. Arsenic (81.8 ppm), cadmium (47.2 ppm), copper (6,780 ppm), and lead (1,010 ppm) were detected in subsurface soil sample TP-8S collected from the northern half of the site at concentrations greater than one order of magnitude above the NYSDEC-recommended cleanup objective/background concentrations. Lead (36,600 ppm) was also detected at a level greater than one order of magnitude above the NYSDEC-recommended cleanup objective in the sample collected from the 0- to 2-foot depth interval at location S-28. Subsurface soil samples from the active scrapyard area (TPC-12A and TP-55S) contained levels of inorganic parameters similar to the NYSDEC-recommended cleanup objective/background levels.

3.3.2.6 EP Toxic Metals

Subsurface soil samples from the 6-24 inch depth interval at test pit locations S-8 and S-28 were submitted to Aquatec for EP toxic metals analysis in September 1994. Table 3-7A presents the results of the EP toxic metals analysis, as well as the regulatory levels for inorganic parameters in the EP toxic extract at or above which a solid waste is considered a hazardous waste [as outlined in 6NYCRR 371.31(e)]. Lead was detected in the extract from subsurface soil sample TP-28 at a concentration of 44,000 J ppb. There were no other detections above the regulatory levels.

3.4 Sediment Investigation Results

Quarry pond sediment samples were collected in January 1993. Quarry pond outlet channel and storm water drainage route sediment samples were collected in November 1992, January 1993, and May 1993. Cobleskill Creek sediment samples were collected in May 1993. Except for the two off-site sediment samples (WS-CC-1 and WS-CC-2), which were collected from the storm water drainage ditch in November 1992, prior to the implementation of the Phase I RI Work Plan, the sediment samples are designated with the prefix "SD."

3.4.1 Quarry Pond Sediment Sampling

In January 1993, sediment samples were collected from 32 locations within the quarry pond (SD-1 through SD-24, SD-27 through SD-34) for PCB analysis. Analyses for TCL VOCs and SVOCs, TAL inorganics, TOC, and percent solids were performed on samples collected at 10 quarry pond locations. Particle size distribution analyses were performed on samples collected from 18 quarry pond sediment locations. The analytical results are discussed below.

3.4.1.1 Polychlorinated Biphenyls

Concentrations of total PCBs in the 32 samples (not including QA/QC samples) collected from the quarry pond ranged from 0.17 ppm (SD-28A) to 63 ppm (SD-23S). All sediment samples contained detectable levels of PCBs. Table 3-8 summarizes the PCB analytical results, and Figure 3-6 illustrates the presence and extent of PCBs measured in the sediment samples collected.

3.4.1.2 TCL VOCs and SVOCs

Six TCL VOCs were detected in sediment samples collected from seven locations within the quarry pond. The six compounds include: acetone, benzene, 2-butanone, carbon disulfide, toluene, and xylenes (total). Sample SD-16S contained five of the six compounds (toluene was not detected) and had a total VOC concentration of 0.45 ppm. The highest total VOC concentration was detected in SD-5S at 0.91 ppm, and the lowest total VOC concentration was reported in SD-18B at 0.007 ppm. VOC TICs were detected in six sediment samples, with total concentrations ranging from 0.02 ppm (SD-24S) to 0.324 ppm (SD-14S). Some of the TICs include: decane, unknown trimethylbenzene, and unknown cycloalkane. The TCL VOC analytical results are summarized in Table 3-9 and are also presented on Figure 3-7.

Thirteen TCL SVOCs were detected in sediment samples from the quarry pond. The highest concentration of SVOCs was 25 ppm for bis(2-ethylhexyl)phthalate detected in sample SD-16S. However, this detection was flagged, noting that the concentration was estimated and that bis(2-ethylhexyl)phthalate was also detected in the method blank. Total SVOC TIC concentrations ranged from 20 ppm (SD-18B) to 732 ppm (SD-16S). Some of the TICs include: hexadecanoic acid, benzo(e)pyrene, and pentacosane. The SVOC analytical results for on-site sediment samples are summarized in Table 3-10. Figure 3-7 illustrates the presence, concentration, and extent of SVOCs in the sediment samples collected from the quarry pond.

3.4.1.3 TAL Inorganic Parameters

The results of the TAL inorganic analysis are summarized in Table 3-11. Figure 3-8 illustrates the presence and extent of inorganic parameters in the sediment samples collected from the quarry pond.

3.4.1.4 Total Organic Carbon, Percent Solids, and Particle Size Distribution Analyses

Concentrations of TOC in sediment samples collected from the quarry pond ranged from 0.4% (SD-19S) to 13.1% (SD-3S).

The analytical results for percent solids in the quarry pond samples ranged from 14% (SD-14S) to 70% (SD-18B). Table 3-8 summarizes the TOC and percent solids analytical results.

The results of the particle size distribution analyses indicate that the sediment within the quarry pond are fine-grained materials. In general, more than 80% (by weight) of the sediment material passed through the Number 200 sieve size, indicating that the sediment is principally comprised of silts and clays. The particle size distribution results for the quarry pond sediment samples are presented in Volume II (Phase I RI Appendix L) of this report.

3.4.2 Storm Water Drainage System Sediment Sampling

On November 10, 1992, two surface sediment samples (WS-CC-1 and WS-CC-2) were collected from the storm water drainage system shown on Figure 2-2. These two samples were analyzed for PCBs, TOC, and percent solids.

Three sediment samples from the quarry pond outlet channel were collected during the January 1993 sediment sampling activities and analyzed for one or more of the following: PCBs, TOC, percent solids, particle size distribution, TCL VOCs, TCL SVOCs, and TAL inorganics.

Surface sediment samples were also collected from eight locations (SD-38 through SD-45), and sediment core samples were collected from four locations (SD-44, SD-46, SD-47, and SD-55) along the storm water drainage system in May 1993. These sediment samples were analyzed for one or more of the following: PCBs, TOC, percent solids, and mercury. The physical descriptions of the storm water drainage system sediment samples collected in May 1993 and the analytical results of the storm water drainage system sediment samples from all three sampling events are discussed below.

3.4.2.1 Physical Description

Physical descriptions, noted during the collection of the May 1993 storm water drainage sediment samples, are summarized in the following table:

Sample I.D.	Sample Description
SD-38A	Light-brown fine-to-medium sand and black silt with a moderate organic odor, visible oil sheen.
SD-39A	Light-brown medium-to-coarse sand and gravel.
SD-40A	Grey-brown to black silt with a moderate organic odor.
SD-41A	Light-brown fine-to-coarse sand and gravel.
SD-42A	Light-brown silt with some fine-to-coarse sand.
SD-43A	Light-brown fine-to-coarse sand, some silt.
SD-44A	Grey-brown medium-to-coarse sand, some silt.
SD-45A	Grey-brown silt with medium-to-coarse sand.
SD-46A	Grey-brown to black silt with a slight organic odor.
SD-47A	0-3" - grey-brown medium-to-coarse sand. 3-8" - grey-brown clay.
SD-55A	Light-brown fine-to-medium sand, trace of silt.
Note: A = Surface sediment core sample.	

Table 2-2 presents further details from the May 1993 sediment sampling activities.

3.4.2.2 Polychlorinated Biphenyls

Concentrations of total PCBs in sediment samples collected from the storm water drainage system ranged from not detected (SD-39A, SD-40A, SD-42A, SD-44A, SD-44B, SD-47A, and SD-55B) to 8.2 ppm at SD-35. Sample analysis from WS-CC-1 and WS-CC-2 indicated PCB concentrations of 2.2 and 4.3 ppm, respectively. However, the results from WS-CC-1 and WS-CC-2 were not validated. Table 3-12 summarizes the PCB results, and Figures 3-6 and 3-9 illustrate the presence and extent of PCBs in the storm water drainage system.

3.4.2.3 Total Organic Carbon

Results of TOC analysis of sediment samples collected from the storm water drainage system range from 0.4% at SD-44B to 13% at WS-CC-2. Samples WS-CC-1 and WS-CC-2 contained 4.6% and 13% TOC, respectively. The TOC analytical results are summarized in Tables 3-8 and 3-12.

3.4.2.4 TCL Volatile and Semi-Volatile Organic Compounds

Surface sediment sample SD-36S was analyzed for TCL VOCs and SVOCs. Acetone (0.013 ppm) was the only VOC detected. Sixteen SVOCs were detected, with the maximum single concentration of 1 ppm detected for fluoranthene. TCL VOC and SVOC results for SD-36S are presented in Tables 3-9 and 3-10, respectively.

3.4.2.5 Mercury

Surface sediment samples SD-39A, SD-41A, SD-43A, and SD-44A were analyzed for mercury. The results indicate that mercury was detected in samples SD-43A and SD-44D at concentrations of 0.02B ppm and 0.03B ppm, respectively. The mercury results for the storm water drainage system sediment samples are summarized in Table 3-13 and presented on Figure 3-10.

3.4.3 Cobleskill Creek Sediment Sampling

On May 25, 1993, sediment core samples were collected from seven Cobleskill Creek locations (SD-48 through SD-52, SD-54, and SD-56) for analysis of PCBs and TOC. The sample locations are shown on Figure 2-2. The physical descriptions and analytical results of the sediment core samples are discussed below.

3.4.3.1 Physical Description

Physical descriptions of the Cobleskill Creek sediment core samples are summarized in the following table:

Sample I.D.	Sample Description
SD-48A	Light-brown silt and fine sandy clay.
SD-49A	0-3" - Light-brown medium-to-coarse sand. 3-6" - Grey clay.
SD-49B	Light-brown medium-to-coarse sand.

Sample I.D.	Sample Description
SD-50A	0-5" - Grey-brown silt. 5-7" - Black silt, slight organic odor.
SD-51A	Light-brown fine-to-coarse sand and gravel.
SD-52A	Light-brown fine-to-medium sand.
SD-52B	Light-brown medium-to-coarse sand, trace of grey clay.
SD-54A	Grey-brown medium-to-coarse sand and gravel.
SD-56A	Light-brown silt and find sand with some plant material, slight organic odor.

Notes:

A = Surface sediment core sample.
B = Sediment core sample collected below the surface core sample.

Table 2-2 further details the sediment core sampling activities.

3.4.3.2 Polychlorinated Biphenyls

PCBs were not detected in eight of the nine sediment core samples collected from Cobleskill Creek (QA/QC samples not included). Sediment sample SD-50A contained PCBs at a concentration of 0.18 ppm. Table 3-12 summarizes the PCB results and Figure 3-9 illustrates the PCB analytical results for each sampling location in Cobleskill Creek.

3.4.3.3 Total Organic Carbon

TOC analysis of sediment core samples collected in Cobleskill Creek ranged from 0.2% at SD-49B and SD-51A to 2.2% at SD-48A. The TOC analytical results are summarized in Table 3-12.

3.5 Surface Water Investigation Results

During the Phase I RI, a total of nine surface water samples were collected from on-site and off-site locations. Five quarry pond samples (SW-1 through SW-5) were analyzed for total and filtered PCBs, as well as TCL VOCs and SVOCs, total and dissolved TAL inorganic parameters, and TSS. The quarry pond surface water sampling locations are shown on Figure 2-1. Four storm water drainage system surface water samples (SW-6 through SW-9) were analyzed for total and filtered PCBs and mercury. Two storm water drainage system surface water samples (WS-CC-1 and WS-CC-2) collected on November 10, 1992 prior to the implementation of the Phase I RI Work Plan were analyzed for total PCBs and TOC. Surface water sampling locations within the storm water drainage system are shown on Figure 2-2. Surface water samples are designated with the prefix "SW."

3.5.1 Quarry Pond Surface Water Sampling

Analytical PCB, TCL VOC and SVOC, TAL inorganic, and TSS results for five surface water samples (SW-1 through SW-5, not including QA/QC samples) collected in the quarry pond are presented below.

3.5.1.1 Polychlorinated Biphenyls

Results of total PCB analysis in surface water samples collected at quarry pond locations SW-1 through SW-5 ranged from 0.267 ppb (SW-3S) to 0.315 ppb (SW-5S). Results of PCB analysis for filtered surface water samples SW-1F through SW-5F ranged from not detected (SW-2SF and SW-3SF) to 0.074 ppb (SW-4SF). Table 3-14 summarizes the results of PCB analysis for the surface water samples; Figure 3-6 illustrates the presence and extent of PCBs at surface water sampling locations in the quarry pond.

3.5.1.2 TCL Volatile and Semi-Volatile Organic Compounds

Results of TCL VOC and SVOC analysis of quarry pond surface water samples collected at locations SW-1 through SW-5 indicate no detections of these target compounds. VOC TICs were detected in two surface water samples with total concentrations of 6 J ppb (SW-6S) and 11 J ppb (SW-2S). SVOC TICs were detected in each of the five surface water samples with estimated concentrations ranging from 2 to 8 ppb. VOC and SVOC TICs include trimethylsilanol and hexadecanoic acid. The sample results are summarized on Table 3-15; Figure 3-7 illustrates the presence and extent of TCL VOC and SVOC at surface water locations in the quarry pond.

3.5.1.3 TAL Inorganic Parameters

Results of analysis for total and filtered TAL inorganics for on-site surface water samples are presented in Table 3-16 and on Figure 3-8. Inorganic parameters detected included calcium, iron, magnesium, manganese, and sodium.

3.5.1.4 Total Suspended Solids

The results of TSS analysis for the on-site surface water samples are summarized in Table 3-17. TSS concentrations ranged from 6.5 ppm in SW-2S to 9.9 ppm in SW-5S. The average concentration for samples collected from locations SW-1 through SW-5 (not including QA/QC samples) was 7.9 ppm.

3.5.2 Storm Water Drainage System Surface Water Sampling

Results of PCB and mercury analysis of the storm water drainage system surface water samples collected at locations SW-6 through SW-9 are presented below. In addition, results for PCB analysis of surface water samples (WS-CC-1 and WS-CC-2) collected on November 10, 1992 are also discussed below.

3.5.2.1 Polychlorinated Biphenyls

Results of PCB analysis of total and filtered surface water samples SW-6 through SW-9 indicated no detection. No PCBs were detected in surface water samples WS-CC-1 and WS-CC-2. The results for WS-CC-1 and WS-CC-2 were not validated because these samples were collected prior to implementation of the Phase I RI Work Plan. Table 3-18 and Figure 3-9 summarize the sample results with detection limits.

3.5.2.2 Mercury

Mercury was detected at a concentration of 0.09 B ppb (the B qualifier denotes a concentration less than the contract required detection limit but greater than the instrument detection limit) in the filtered surface water sample collected at SW-9. Mercury was not detected in the unfiltered sample from SW-9 or in any of the other filtered or unfiltered off-site surface water samples (SW-6 through SW-8). Table 3-19 and Figure 3-10 summarize the surface water sample results and list the detection limits.

3.6 Ground-Water Investigation Results

3.6.1 Geologic Characterization

Information obtained for the geologic characterization of the site included soil and bedrock descriptions from 25 monitoring well/bedrock corehole locations at the site, data on the four existing wells, structural feature evaluation of the bedrock exposed at the quarry pond, and an off-site reconnaissance of geologic features. Figure 3-11 presents the locations of six cross-sections. Six cross-sections (A-A', B-B', C-C', D-D', E-E', and F-F') were generated and are illustrated on Figures 3-12 through 3-17. A bedrock surface contour map was also generated and is presented as Figure 3-18.

In the discussion of the site geologic characterization below, the unconsolidated overburden deposits and the bedrock are described in separate subsections.

3.6.1.1 Overburden Geology

The overburden thickness at the site ranged from approximately 0 feet immediately north of the quarry pond to 30.6 feet east of the quarry pond near the locations of monitoring wells MW-6 and MW-11. The overburden at the site consisted of a dark grayish-brown silt and varying amounts of sand and clay and lesser amounts of gravel. The thickness of this silt unit ranges from 2 feet at corehole C-14 to 16 feet at monitoring well MW-6. At corehole locations C-1, C-2, C-3, C-6, C-11, C-12, C-14, C-16, and C-18, this silt unit was underlain by a dark grayish-brown silty sand with gravel. This unit was encountered just above bedrock. A gray gravel unit was encountered below this sand unit at monitoring well MW-6, as well as coreholes C-2 and C-13, and most likely represents weathered bedrock. The sand unit is 0.6 to 2 feet thick, and the gravel unit was 0.1 to 2.8 feet thick. At monitoring well MW-6 and corehole C-1, a clay unit was encountered which varied in thickness from approximately 16 feet at monitoring well MW-6 to 4 feet at corehole C-1.

3.6.1.2 Bedrock Geology

The bedrock underlying the site consists of sedimentary rocks of the Onondaga Formation. The bedrock cores were described as laminated to medium-bedded, fine to medium-grained, light- to medium-gray, fossiliferous limestone. Bedrock was observed to be slightly to highly weathered during coring, with occasional iron-staining and discoloration. Other features noted included megafossils, light to dark gray chert nodules, pyrite crystals, rhombs, pitting, stylolites, calcite veins (at coreholes C-6, C-9, and C-14), and microcrystalline stringers, which were oriented both horizontally and vertically. Horizontal and vertical fractures were observed and contained fine sand and/or silt within the openings. Horizontal fractures were more abundant, and contained rock fragments and wedges indicating breakage along bedding planes. Horizontal and vertical fractures, as well as weathered zones, are depicted on the cross sections (Figures 3-12 through 3-17).

At corehole C-14, a void within the bedrock was encountered at an approximate depth of 47.5 to 54.9 feet bgl. A brown silty clay with embedded, rounded gravel overlying a gravel (rounded to angular) with sandy silt was encountered within this void.

Elevations of the top of the bedrock ranged from approximately 934 feet in the vicinity of the quarry pond to 993 feet in the northern section of the site. Figure 3-18 illustrates the bedrock surface contours. The elevation to bedrock generally decreases from north to south at the site. The closely-spaced contours observed at the northern and western edges of the quarry pond are a result of the exposed bedrock cliff.

A structural feature evaluation of the exposed bedrock at the quarry pond provided the orientation of site-specific joint sets and bedding planes. Horizontal bedding planes and vertical joints are exposed at the quarry pond, with spacings of approximately 1 to 5 feet for bedding planes and 0.5 to 10 feet for joints.

Stereographic projection of the orientation data indicated two predominant nearly vertical joint sets. The first set is oriented approximately N58W, 88NE (strike 58 degrees west of due north, dip downward to the northeast 88 degrees below horizontal). This set probably represents the site-specific orientation of regional joint Set II, described in Section 1.2.2.3. The second joint set identified at the site is oriented approximately N54E, 87SE. This second set is compatible with the characteristics of regional joint Set III, described in Section 1.2.2.3. Regional joint Set I, described in Section 1.2.2.3, reportedly strikes north-northeast in the Cobleskill area. This regionally predominant joint orientation was not observed at the site. Regional joint Set I may be less well developed in the relatively thick, competent Onondaga Limestone than in other mechanically weaker bedrock strata. Moreover, regional joint sets can be expected to behave heterogeneously on a local scale, such as near the site. Bedding plane orientation was estimated to be approximately N75W, 2SW. This orientation is compatible with the regional bedding orientation reported in the literature, as described in Section 1.2.2.3.

3.6.2 Hydrogeologic Characterization

Data collected for the hydrogeologic characterization consisted of the following:

- Hydraulic conductivity data from slug tests performed in the overburden monitoring wells and packer tests performed in the bedrock monitoring wells/coreholes;
- Nineteen rounds of site-wide ground-water and surface water elevation data obtained as part of the monthly monitoring program during the RI; and
- Ground-water and surface water elevation data obtained in April 1995 during the period of increased pumping rate associated with the combined operation of the permanent 100 gpm water treatment system and the temporary 300 gpm water treatment system upgrade.

The hydraulic conductivity data from slug tests and packer tests are presented in Table 2-4. Slug tests were performed in the three overburden monitoring wells. Packer tests were performed in seven bedrock monitoring wells and 15 coreholes.

Nineteen rounds of ground-water elevation data were obtained from the three overburden monitoring wells and all bedrock monitoring wells/coreholes as part of the monthly monitoring program during the RI. Depth to water measurements of the quarry pond were also collected while obtaining water levels from the monitoring wells/coreholes. Measurements were obtained from three surveyed locations (Takedowns 1 through 3) at the edge of the quarry pond; however, only the measurements from Takedown 2 were usable due to protruding rock at Takedown 1 and Takedown 3. The locations for Takedown 1 through Takedown 3 are shown on Figure 2-1. The monthly ground-water and surface water elevations and the hydrographs illustrating ground-water elevations obtained at monitoring wells and coreholes from August 1993 to January 1995 are presented in Volume V (Phase II RI Appendix F) of this report. The fluctuations of the ground-water elevations throughout the monitored time period were compared to daily precipitation data obtained from the Northeast Regional Climate Center. Daily precipitation data for 1994 to the beginning of May 1995 are presented in Table F-1 in Appendix F.

To confirm a hydraulic connection between the quarry pond surface water and surrounding ground water, ground-water and surface water elevation data were obtained from April 10 to 26, 1995 prior to and during the combined operation of the permanent 100 gpm water treatment system and the temporary 300 gpm water treatment system upgrade. Pressure transducers were installed to continuously measure the ground-water levels in monitoring wells/coreholes MW-5, MW-6, MW-11, C-3(MW-8), C-4, C-5, C-9, C-10, C-13, C-14, and C-16. In addition, manual measurements were obtained at all monitoring well/corehole locations. The surface water level measurements were obtained manually from Takedown 2 and continuously using the existing pressure transducer installed in the quarry pond. Ground-water and surface water elevations obtained during this investigation are presented in Tables G-1 through G-6 included in Volume V (Phase II RI Appendix G) of this report. Hydrographs illustrating ground-water and surface water elevations obtained both manually and automatically with the pressure transducers for the monitored time period (April 10 to 26, 1995) are also presented in Appendix G.

3.6.2.1 Overburden Hydraulic Conductivity and Ground-Water Flow Pattern

Using data obtained from the three monitoring wells screened just above the bedrock, the hydraulic conductivity data for the overburden at the site are summarized as follows:

Monitoring Well	Hydraulic Conductivity Rising Head Test (cm/sec)	Hydraulic Conductivity Falling Head Test (cm/sec)
MW-9	9.5E-05	1.0E-04
MW-10	2.5E-03 4.7E-03	NP
MW-11	8.6E-03	NP
Note: NP = not performed because falling head tests are not valid at wells in which screen intervals straddle the water table.		

Monthly ground-water elevation measurements were obtained beginning in August 1993. The overburden ground-water contour map derived from data obtained on September 17, 1993 is shown on Figure 3-22. Similar water table configurations were observed throughout the overburden ground-water elevation monthly measurement activities.

The general ground-water flow direction in the overburden immediately south of Route 10 and east of the quarry pond, is toward the north-northwest and appears to be influenced by the pumping of the quarry pond. (Prior to the December 1992 installation of the quarry pond water treatment system, which reduced the quarry pond water level, the general ground-water flow direction was likely towards the south-southeast in the direction of regional discharge, Cobleskill Creek, which is located south of the site and flows to the east).

To confirm that a hydraulic connection exists between the quarry pond surface water and the overburden ground-water flow system, ground-water and surface water elevation data were obtained from April 10 to 26, 1995 prior to and during the combined operation of both the permanent 100 gpm water treatment system and the temporary 300 gpm water treatment system upgrade. Ground-water elevation data were obtained from all three overburden monitoring wells, MW-9, MW-10, and MW-11. Ground-water and surface water elevation measurements obtained during this monitored time period (i.e., April 10 - April 26, 1995) are presented in Tables G-1 through G-6 included in Volume V (Phase II RI Appendix G) of this report. Hydrographs illustrating ground-water and surface water elevations obtained both manually (at all overburden wells) and continuously with a pressure transducer (at MW-11) for the monitored time period are also presented in Appendix G. These hydrographs were completed for each overburden monitoring well using similar axis scaling as well as with enlarged scaling to show more detail.

The surface water level of the quarry pond decreased by approximately 4.8 feet from April 18 (when the increased pumping rate began) to April 26, 1995 (when the last continuous water level measurements were taken). Ground-water levels decreased by approximately 0.51, 1.27, and 4.91 feet at overburden monitoring wells MW-9, MW-10, and MW-11, respectively. As the water level in the quarry pond decreased, due to increased pumping rate, a corresponding decrease in ground-water levels at the overburden monitoring wells was observed indicating a definite hydraulic connection between the quarry pond surface water and the overburden ground-water system. The ground-water levels at monitoring well MW-11 decreased by the same amount as the water levels in the quarry pond, which is consistent with the location of this well (i.e., immediately adjacent to the quarry pond). The ground-water levels at monitoring wells MW-9 and MW-10 decreased by lesser amounts than the water levels in the quarry pond, which is consistent with the locations of these wells (i.e., approximately 125 feet and 100 feet from the quarry pond, respectively, where less influence would be expected). Tables G-1 and G-2 (Phase II RI, Appendix G) present the surface water elevations obtained both manually and automatically with the pressure transducer during the monitored time period. Table G-3 presents the ground-water elevation data for the three overburden monitoring wells obtained by manual measurements. Table G-5 presents the ground-water elevation data for monitoring well MW-11 obtained automatically using a pressure transducer.

Figures 3-19 and 3-20 present ground-water elevations and the surface water elevation of the quarry pond on April 18, 1995 (prior to increasing the pumping rate) and on April 26, 1995 (at the end of the monitored time period), respectively. These figures show that overburden ground-water flow is toward the quarry pond both when the quarry pond water level is typical of those observed during monthly RI water level measurements (April 18, 1995) and during the period of lower quarry pond water levels associated with the increased pumping rate (April 26, 1995). Figure 3-21 shows the drawdown of the ground-water levels and the surface water level of the quarry pond between April 18, 1995 and April 26, 1995.

Data from the Northeast Regional Climate Center indicates 0.55 inches of precipitation occurred on April 13, 1995 in the Cobleskill area. The hydrographs (presented in Phase II RI Appendix G) indicate increases in ground-water elevations at overburden monitoring wells MW-9 (0.39 feet), MW-10 (2.88 feet), and MW-11 (0.34 feet) on or near April 13, 1995. These data indicate a correlation of precipitation and an increase in overburden ground-water levels. Another precipitation event of 0.12 inches in the Cobleskill area occurred on April 19, 1995. The hydrographs indicate only slight increases in ground-water levels at overburden monitoring wells MW-9 (0.11 feet) and MW-10 (0.23 feet). Ground-water levels at monitoring wells MW-9 and MW-10 decreased to pre-precipitation levels within approximately 24 hours and then continued to decrease. Ground-water levels continued to decrease at overburden monitoring well MW-11 throughout the precipitation event. Thus, the pumping of the quarry pond appears to be hydraulically controlling the ground-water levels in these overburden monitoring wells, especially immediately adjacent to the quarry pond, even during precipitation/recharge events.

3.6.2.2 Bedrock Hydraulic Conductivity and Ground-Water Flow Pattern

Hydraulic conductivity data from packer tests performed at seven monitoring wells and 15 coreholes indicate hydraulic conductivity values ranging from greater than 2.5E-03 to less than 7.0E-07 centimeters per second (cm/sec). The packer test data indicate that bedrock hydraulic conductivity values are highly variable, with hydraulic conductivity values differing by over 4 orders of magnitude. Hydraulic conductivity values are presented in Table 2-4 and the packer test results are included in Volume II (Phase I RI Appendix H) and Volume V (Phase II RI Appendix C) of this report.

The hydraulic conductivity of the bedrock at the site is likely controlled by the spacing, degree of weathering (solution enlargement), and relative interconnection of fractures, joints, and bedding planes. The least fractured portions of the bedrock correspond to the observed hydraulic conductivity values of 1.0E-06 cm/sec or less. Moderately fractured sections of the bedrock are expected to have hydraulic conductivities in the range of 1.0E-05 to 1.0E-04 cm/sec. Values of 1.0E-03 cm/sec are more highly fractured areas or zones. Within voids or conduits in the bedrock, the hydraulic conductivity is likely greater than 1.0E-03 cm/sec. This interpretation is substantiated by a comparison of packer test data and bedrock core samples obtained during the installation of the bedrock monitoring wells and coreholes.

For the monitoring wells/coreholes at which the entire corehole interval was tested, the following monitoring well and corehole locations had hydraulic conductivity values of 1.0E-06 cm/sec or less: MW-1, MW-3, MW-4, C-5, C-6, C-7, C-11, C-15, and C-18. At corehole C-8, a vertical fracture was encountered from 8 to 12 feet bgl. Packer testing of the entire interval from 8 to 55.5 feet bgl was attempted; however, this test was unsuccessful. The packer assembly was then moved below the vertical fracture to test the interval from 15 to 55.5 feet bgl. The packer test data indicated that the hydraulic conductivity of this interval was less than 6.2E-07 cm/sec. For those wells/coreholes at which the entire corehole interval was tested, the following monitoring well and corehole locations had hydraulic conductivity values ranging from 1.0E-05 to 1.0E-04 cm/sec: MW-2, MW-7, C-9, C-10, C-12, C-13, C-16, and C-19.

Monitoring well MW-5 was packer tested at the following intervals: 20 to 25, 25 to 30, and 30 to 35 feet bgl. The packer test data indicated the interval from 25 to 30 feet bgl had the highest hydraulic conductivity (2.8E-03 cm/sec), while the other intervals had values of 1.0E-06 cm/sec.

Monitoring well MW-6 was also packer tested at discrete intervals. The packer test data indicate that the interval from 31 to 35 feet bgl (top of bedrock) was more permeable (6.3E-04) than the lower intervals (1.0E-06 cm/sec).

Corehole C-14 was packer tested at 5-foot intervals, commencing at 10 feet bgl because of the void observed during drilling procedures. The last interval tested was from 39 to 40 feet bgl, because the subsurface material observed in the void within the bedrock filled into the corehole to approximately 48 feet bgl, leaving no space for the double packer testing apparatus. Packer testing data indicated that the intervals from 10 to 15 and from 35 to 40 feet bgl had hydraulic conductivity values in the 1.0E-03 cm/sec range; the intervals from 25 to 30 and 30 to 35 feet bgl had values in the 1.0E-05 cm/sec range; and the intervals from 15 to 20, 20 to 25, and from 39 to 40 feet bgl had values in the 1.0E-06 cm/sec range. The hydraulic conductivity of the void could be greater than 1.0E-03 cm/sec; however, because this void was filled with sediments, the hydraulic conductivity could be lower.

Ground water beneath the site occurs both in the overburden (as discussed in Section 3.6.2.1) and the Onondaga Limestone bedrock. Regionally and beneath the site, the Onondaga Limestone contains ground water primarily within bedding planes and joints. The structural feature evaluation of the exposed bedrock at the quarry pond verified the site-specific orientation of regional joint sets II and III, described in Section 1.2.2.3. Horizontal bedding plane orientation was estimated to be approximately N75W, 2SW, which is compatible with the regional bedding orientation as described in Section 1.2.2.3. The structural feature evaluation indicated that while ground-water seepage was evident from both joints and bedding plane fractures, most active and inactive seeps on the quarry pond walls appear to be associated with horizontal bedding plane fractures rather than vertical joints. Therefore, horizontal bedding plane fractures are expected to preferentially transmit bedrock ground water.

Generally, bedding planes are the preferred initial routes of horizontal flow, but with passage of time, solutionally enlarged joints and fractures can also preferentially transmit ground water (Ford and Ewers, 1978; Moore, 1973); although conduits developed along bedding plans will predominate in the Onondaga Limestone (Palmer, May 17, 1995). The open fractures observed within the bedrock at the site provide pathways for ground-water flow through an otherwise relatively impermeable media. Major factors affecting ground-water flow through fractured rock include fracture density, orientation, effective aperture width, and the nature of the rock matrix. Fracture density and orientation are important determinants of the degree of interconnectivity of fracture sets. Ground-water flow paths through fractured rock are almost exclusively determined by the interconnectivity of the fractures; therefore, ground-water elevation contour maps with flow lines (perpendicular to the ground-water elevation contours) indicating exact ground-water flow paths and directions may not be representative of actual ground-water flow within the bedrock flow system at the site. These ground-water elevation contour maps can be used to represent the generalized ground-water flow directions, but not the specific pathways which are more tortuous and dependent on the orientation/interconnection of the fractures and joints. As such, Figures 3-19 and 3-20 present the generalized ground-water flow directions based at the bedrock monitoring wells ranged from 6.43 to 7.05, 612 to 2,380 umhos/cm, 3 to 3.7 mg/L, and 56 to 61.3°F, respectively. Ground-water field sampling logs are included in Volume II (Phase I RI Appendix J) of this report. No field measurements were obtained at bedrock monitoring well MW-1, due to insufficient ground-water sample volume.

Section 3.6.3 presents the analytical results of the Phase I RI ground-water sampling event.

2.6.6.2 Phase II RI Ground-Water Sampling

During the September 1994 Phase II RI ground-water sampling, ground-water samples were collected from two Phase I RI corehole/monitoring well locations (C-11 and C-12) as well as from the four Phase II RI corehole/monitoring well locations (C-15, C-16, C-18, and C-19). Samples collected from these six locations were submitted to Aquatec for analysis for TCL VOCs and SVOCs, filtered and unfiltered PCBs, and filtered and unfiltered TAL inorganic parameters. In accordance with the Phase II RI Work Plan, ground-water samples from C-12 were also submitted to Aquatec for volatile aromatic and unsaturated organic compound analysis by USEPA Method 503.1.

Supplemental Phase II RI ground-water sampling was conducted during March and April 1995. During March 1995, ground-water samples were collected from bedrock coreholes C-9 and C-16. Samples for filtered and unfiltered PCB analysis were collected from both coreholes, and samples for filtered and unfiltered analysis of inorganic parameters were collected from corehole C-9. To confirm the results of these analyses, an additional ground-water sample was collected in April 1995 from bedrock corehole C-9 and submitted for unfiltered PCB analysis.

During the September 1994 Phase II RI ground-water sampling activities, pH, conductivity, dissolved oxygen, and temperature obtained at bedrock corehole/monitoring wells ranged from 7.06 to 7.31, 429 to 687 umhos/cm, 4 to 11.1 mg/L, and 54.7°F to 68°F, respectively. During the March and April 1995 ground-water sampling activities, pH, conductivity, dissolved oxygen, and temperature obtained from ground-water samples ranged from 6.21 to 7.93, 120 to 580 umhos/cm, 6.15 to 12.2 mg/L, and 45.1 to 54.1°F, respectively. Ground-water field sampling logs for Phase II RI ground-water investigation activities are included in Volume V (Phase II RI Appendix D) of this report. Section 3.6.3 presents the analytical results of the Phase II RI ground-water sampling.

2.6.7 Residential Well Sampling

During both the Phase I and Phase II RI ground-water investigations, water samples were collected from residential wells adjacent to the site to assist in determining whether ground-water quality at these locations has been impacted by site conditions. Details of the residential well sampling associated with the Phase I RI and Phase II RI ground-water investigations are presented below. The results of the residential well sampling are discussed in Section 3.6.4.

2.6.7.1 Phase I RI Residential Well Sampling

Water samples were collected from five residential wells during July and August 1993. These residential wells are located to the west of the site, between approximately 150 feet and 600 feet from the site boundary. A representative from the NYSDOH and/or a representative from the SCDH accompanied the geologist on each of the sampling events. The residential well water samples were submitted for analyses of PCBs, TCL VOCs and SVOCs, and TAL inorganic parameters.

2.6.7.2 Phase II RI Residential Well Sampling

In September 1994, four of the five residential wells sampled during the Phase I RI ground-water investigation were resampled. The fifth well, locat CONFIDENTIAL, was not sampled because the well was not in use and therefore had no pump in place. A representative from SCDH accompanied the geologist during sampling activities. The residential well water samples were submitted for filtered and unfiltered analyses for both PCBs and TAL inorganics, as well as TCL SVOC analysis, and VOC analysis by USEPA Method 524.2. USEPA Method 524.2, rather than TCL VOC analysis, was instituted in response to a September 6, 1994 request by Mr. Robert Montione of NYSDOH to BB&L on-site sampling personnel.

2.6.8 Separate-Phase Oil Monitoring and Monthly Water Surface Elevation Measurements

The monitoring wells/coreholes that contain separate-phase oil [MW-5, MW-8 (C-3), C-4, C-10, C-13, and C-14] are included in a bi-weekly oil bailing program. The purpose of this program is to monitor the extent and thickness of separate-phase oil (SPO) present on the water table and to remove oil from wells/coreholes in which sufficient oil (a thickness of at least 0.3 feet) is found. Wells/coreholes have been included in this program from the time SPO has been observed in them. The monitoring program began on June 28, 1993 for monitoring wells MW-5 and MW-8(C-3), on August 6, 1993 for coreholes C-10, C-13 and C-14, and on April 4, 1994 for corehole C-4. Initially, the thickness of the oil layer was measured with a bailer, but since September 8, 1993 a Keck oil/water interface probe has been used to measure the depth to the SPO and the depth to water. Separate-phase oil thicknesses are calculated and a dedicated teflon bailer is used to remove the separate-phase oil/water mixture, which is placed into a 55-gallon drum for future off-site disposal. The results of the bi-weekly monitoring activities are reported in the monthly progress reports associated with the RI.

Between August 1993 and March 1995, a total of 19 rounds of monthly ground-water elevation data were collected from all accessible monitoring wells and coreholes. This ground-water surface elevation data was collected in conjunction with the bi-weekly SPO monitoring activities. Depth to water measurements at the quarry pond were collected during the same activities. These data were used to enhance the hydrogeologic characterization of the site.

2.6.9 Confirmation of the Ground Water/Quarry Pond Hydraulic Connection

To confirm a hydraulic connection between the quarry pond surface water and surrounding ground water, ground-water and surface water elevation data were obtained from April 10 to 26, 1995 prior to and during the combined operation of both the permanent 100 gpm water treatment system and the temporary 300 gpm water treatment system upgrade. Pressure transducers were installed to continuously measure the ground-water levels in monitoring wells/coreholes MW-5, MW-6, MW-11, C-3(MW-8), C-4, C-5, C-9, C-10, C-13, C-14, and C-16. In addition, manual measurements were obtained at all monitoring well/corehole locations. Surface water level measurements were also obtained manually from Takedown 2 and continuously using the existing pressure transducer installed in the quarry pond.

2.7 Fish and Wildlife Impact Analysis

BB&L performed an ecological RA in accordance with Steps I through IIB of the NYSDEC 1991 Fish and Wildlife Impact (FWIA) guidance. This ecological RA involved a site visit (on June 30 - July 1, 1995) by a qualified biologist to evaluate the general ecology of the site. In October 1994, biota sampling and analysis activities were conducted in accordance with the NYSDEC-approved Biota SAP. This SAP was presented in a September 16, 1994 letter from NMPC to NYSDEC and approved by NYSDEC in an October 1, 1994 letter to NMPC. Copies of these letters are included in Volume V (Phase II RI Appendix A) of this report.

The biota sampling and analysis activities were conducted to determine whether PCB uptake is occurring in fish found in the storm water drainage system or in Cobleskill Creek downstream of the confluence with the storm water drainage system.

The sampling activities, specified in the Biota SAP, included the collection of a forage fish and edible-size sport fish species from both Cobleskill Creek and the storm water drainage system. The approximate fish sampling locations are presented on Figure 2-2.

Fish sampling activities in the storm water drainage system were completed using a backpack-mounted electrofishing unit. No edible-sized sport fish were collected. The only potentially edible-size fish recovered from the storm water drainage system were a few large white suckers taken from a small pool at the mouth of the storm sewer pipe. At the direction of the NYSDEC, three white suckers from this location were prepared as skin-on fillet samples for laboratory analysis. Three whole-body composite samples of fathead minnows, the most abundant forage species present in the tributary, were retained for laboratory analysis.

Fish sampling activities in Cobleskill Creek were completed by BB&L using a stream-side electrofishing unit. Three edible-size smallmouth bass collected from Cobleskill Creek were prepared as skin-on fillet samples for laboratory analysis. Sufficient numbers of fathead minnows to complete three composite samples were not available in Cobleskill Creek, and after consulting with NYSDEC personnel overseeing the sampling effort, composite samples of the common shiner were collected to provide three forage fish samples.

Prior to packaging the fish samples for shipment to the laboratory, the length and weight of each edible-size fish were recorded on the field log. Field data from the whole body composite samples of forage fish, including the number of individuals in each sample and the total sample weight, were also recorded on the field log. A summary of these field data is presented in Table 2-5.

The individual fish and the whole-body forage fish composite samples were packaged for laboratory analysis in accordance with the procedures described in the Biota SAP. The samples were submitted to Hazelton Environmental Services of Madison, Wisconsin for processing and subsequent analysis of PCBs and percent lipids. The results of the Biota SAP activities are presented in Section 3.7.

A full description of the ecological RA is discussed in Section 4.0 - Fish and Wildlife Impact Analysis.

2.8 Assessment of Air Emissions

BB&L assessed air emissions using florisol/cassette air monitoring data collected during the IRMs conducted at the site between January 7-28, 1993. Results from the air emissions monitoring are discussed in Section 3.7 - Assessment of Air Emissions. The analytical results of the monitoring are presented in Volume II (Phase I RI Appendix K) of this report.

2.9 Human Health Risk Assessment

BB&L performed a Human Health RA to characterize potential risks to human health associated with PCBs and other identified target constituents at the M. Wallace and Son, Inc. Scrapyard site. The Human Health RA was performed in accordance with the USEPA's most current guidance for conducting a baseline RA. The RA provides a qualitative and quantitative evaluation of potential human health risks posed by identified constituents at the site. Section 5.0 of this report presents the Human Health RA.

2.10 Remedial Action Objectives

Remedial Action Objectives (RAOs) are medium-specific goals for protecting human health and the environment. These objectives are established by considering the results of the FWIA, the Human Health RA, and standards, criteria, or guidance (SCGs) consistent with 6NYCRR Part 375. Proposed RAOs for the site are presented in Section 6.0.

on ground-water elevations measured on April 18, 1995 and April 26, 1995, respectively, as interpreted by the ground-water flow modeling software Quicksurf (1994).

To confirm that a hydraulic connection exists between the quarry pond surface water and surrounding site ground water, ground-water and surface water elevation data were obtained from April 10 to 26, 1995 prior to and during the combined operation of both the permanent 100 gpm water treatment system and the temporary 300 gpm water treatment system upgrade. As the water level in the quarry pond decreased due to the increased pumping rate, a corresponding decrease in ground-water levels at most site monitoring wells/coreholes occurred indicating a definite hydraulic connection between the quarry pond surface water and the surrounding site ground water. Ground-water and surface water elevation measurements obtained during this monitored time period (i.e., April 10 to April 26, 1995) are presented in Tables G-1 through G-6 included in Volume V (Phase II RI Appendix G) of this report. Hydrographs illustrating ground-water and surface water elevations obtained both manually (at all bedrock monitoring wells/coreholes) and automatically (at select wells/coreholes) with the pressure transducers for the monitored time period are also presented in Appendix G. These hydrographs were completed for each monitoring well/corehole using similar axis scaling as well as enlarged scaling to show more detail.

The surface water level of the quarry pond decreased by approximately 4.8 feet from April 18 (when the increased pumping rate began) to April 26, 1995 (the end of the monitored period). Tables G-1 and G-2 present the surface water elevations obtained both manually and continuously (with the pressure transducers) during the monitored period. Table G-3 presents the ground-water elevation data at all monitoring wells/coreholes obtained by manual measurements. Tables G-4 through G-6 present the ground-water elevation data for select monitoring wells/coreholes obtained using pressure transducers.

Bedrock monitoring wells/coreholes MW-6, C-3 (MW-8), and C-13 were the most responsive to the increased pumping rate in the quarry pond with ground-water levels decreasing by approximately 4.88, 6.24, and 5.33 feet, respectively. Bedrock coreholes C-4, C-10, C-16, and C-19 were moderately responsive to the increased pumping rate in the quarry pond with ground-water levels decreasing by 2.49, 2.81, 3.36, and 3.98 feet, respectively. Ground-water levels also decreased by approximately one foot or more at the following bedrock monitoring wells/coreholes: MW-2, MW-5, C-5, C-9, C-11, C-12, C-14, and C-15. Decreases in ground-water levels, ranging from 0.44 to 0.9 feet were also observed at bedrock monitoring wells/coreholes C-18, MW-3, and MW-4. Bedrock monitoring wells/coreholes showing little or no response to the increased pumping rate at the quarry pond included MW-1, MW-7, C-6, C-7, and C-8. As illustrated in the hydrographs presented in Volume V (Phase II RI, Appendix G), there was no appreciable difference between the water levels observed at these locations during the implementation of the increased pumping rate at the quarry pond from those observed prior to implementation of the increased pumping rate (while background measurements were obtained).

The more responsive monitoring wells/coreholes (with drawdowns of more than 4 feet) are closest to the quarry pond and have hydraulic conductivity values in the 1.0E-04 to 1.0E-05 cm/sec range. (Note: corehole/monitoring well C-3/MW-8 was not packer-tested; therefore, hydraulic conductivity values are not available for this location). Moderately responsive wells (with drawdowns ranging from greater than 2 feet to 4 feet) have hydraulic conductivity values ranging from 1.0-03 to 1.0-05 cm/sec (C-10, C-16, and C-19). (Note: Packer tests were not performed at corehole C-4). Less moderately responsive monitoring wells/coreholes (with drawdowns of about one foot to 2 feet) have hydraulic conductivity values that range from 1.0E-03 to 1.0E-05 (MW-2, MW-5, C-9, C-12, and C-14) with relatively few hydraulic conductivity values in the 1.0E-06 cm/sec range (C-5, C-11, and C-15). The latter coreholes may be more influenced by proximity to the quarry pond (C-5 and C-11) than by hydraulic conductivity (as a measure of the relative degree of fracture density/interconnection). Monitoring wells/coreholes MW-3, MW-4, and C-18 (whose water levels decreased by 0.9, 0.78, and 0.44 feet, respectively) have hydraulic conductivity values of 1.0E-06 or lower. Those monitoring wells/coreholes which showed litle or no response to the increased pumping of the quarry pond generally have hydraulic conductivity values of 1.0E-06 or less.

All monitoring wells/coreholes that historically contained or currently contain separate-phase oil (MW-5, C-3(MW-8), C-10, C-13, and C-14) experienced a decrease in water levels associated with the increased pumping rate of the quarry pond. This indicates that these areas are hydraulically connected to the quarry pond. Presently, only monitoring wells/coreholes C-3(MW-8), C-4, and C-13 contain measurable thicknesses of separate-phase oil. Separate-phase oil thicknesses remained relatively stable during the additional capacity pumping of the quarry pond at these aforementioned locations.

Figures 3-19 and 3-20 present ground-water elevations and the surface water elevation of the quarry pond on April 18, 1995 (prior to the increased pumping rate) and on April 26, 1995 (at the end of the monitored time period). These figures show that the generalized ground-water flow directions are toward the quarry pond both when the quarry pond water level is typical of those observed during monthly RI water level measurements (April 18, 1995) and during the period of lower quarry pond water levels associated with the increased pumping rate (April 26, 1995).

Figure 3-21 shows the overall decrease in the ground-water levels and the surface water level of the quarry pond over the monitored period. This figure illustrates that the most responsive monitoring wells/coreholes to the implementation of the increased pumping rate at the quarry pond are adjacent to the quarry pond and/or oriented in an east-west direction (i.e., from corehole C-19 to monitoring well

MW-6). This east-west orientation likely represents an area of preferentially higher hydraulic conductivity that is hydraulically connected to the quarry pond. Thus, ground-water flow would be directed toward this east-west oriented area of hydraulic conductivity (which would act as a subsurface drain) with the ultimate ground-water flow direction and subsequent discharge to and into the quarry pond.

Data from the Northeast Regional Climate Center indicates 0.55 inches of precipitation accumulated on April 13, 1995 in the Cobleskill area. The hydrographs indicate increases in ground-water elevations at most bedrock monitoring wells/coreholes (MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, C-3(MW-8), C-4, C-5, C-6, C-8, C-9, C-10, C-11, C-12, C-13, C-14, C-15, C-16, C-18, and C-19) on April 13, 1995. These data indicate a correlation of precipitation and a rise in ground-water levels; therefore, precipitation is a source of ground-water recharge. Although transient increases in ground-water elevations were observed, the hydraulic potentials still indicate the generalized direction of ground-water flow would be toward the east-west area of higher hydraulic conductivity (i.e., from corehole C-19 to monitoring well MW-6) and ultimately the quarry pond.

Another precipitation event occurred on April 19, 1995 with recorded accumulations of 0.12 inches in the Cobleskill area. The hydrographs indicate slight increases in ground-water elevations only at monitoring wells/coreholes MW-2, MW-3, MW-5, MW-6, C-5, C-11, C-16, and C-18. Ground-water elevations decreased to similar elevations observed prior to the April 19 precipitation event and then continued to decrease in response to the pumping in the quarry pond. At corehole C-9, the ground-water elevation increased approximately 5 feet after the April 19, 1995 precipitation event, and ponding was observed around the corehole. This increase may be due to surface water infiltration via the vertical fracture that was observed at this location while test-pitting and drilling. Within two days following this increase ground-water elevations decreased to elevations lower than the initial background elevations (observed prior to commencing the increased pumping rate of the quarry pond).

Following the April 19, 1995 precipitation event, ground-water elevations continued to decrease at the following monitoring wells/coreholes previously affected by the April 13 precipitation event: MW-4, C-3(MW-8), C-4, C-6, C-10, C-12, C-13, C-14, C-15, and C-19. The effect of the pumping of the quarry pond appears to be exerting a dominating influence on the ground-water elevations at these wells even during precipitation/recharge events.

As part of the monthly monitoring program, monthly ground-water elevation data were obtained from bedrock monitoring wells/coreholes beginning in August 1993. Ground-water elevation measurements were obtained from the Phase II RI bedrock coreholes (C-15, C-16, C-18, and C-19) beginning in October 1994. Ground-water elevation data from August 1993 to March 1995 are summarized in Table

F-1 of Volume V (Phase II RI Appendix F) of this report. These data indicate generally higher ground-water elevations in April and May, 1994, and in March 1995. Generally, lower ground-water elevations were observed from September to November 1993 and in October and November 1994. The ground-water flow map derived from data obtained on April 18, 1995 is shown on Figure 3-19. Similar ground-water flow configurations were observed throughout the bedrock ground-water elevation monthly measurement activities. Hydrographs illustrating the ground-water elevations obtained at each monitoring well and corehole from August 1993 to January 1995 are presented in Volume V (Phase II RI Appendix F) of this report.

3.6.3 Ground-Water Analytical Characterization

Ground-water samples were collected in June and July 1993 (Phase I RI) and September 1994, and March and April 1995 (Phase II RI) to evaluate the presence and distribution of chemical constituents in the ground water beneath the site. During the Phase I RI, ground-water samples were collected from six bedrock monitoring wells (MW-1 through MW-4, MW-6, and MW-7), and three overburden monitoring wells (MW-9, MW-10, and MW-11). Phase II RI ground-water samples were collected from bedrock corehole/monitoring wells at the following locations: C-9, C-11, C-12, C-15, C-16, C-18, and C-19.

The analytical results for the ground-water sampling event are discussed below. These data are also presented in the following tables:

- Table 3-20 - Ground-Water Analytical Results For Total PCBs;
- Table 3-21 and 3-21A - Ground-Water Analytical Results For Detected TCL Volatile and Semi-Volatile Organic Compounds; and
- Table 3-22 - Ground-Water Analytical Results For TAL Inorganic Parameters.

3.6.3.1 Polychlorinated Biphenyls

PCBs were not detected in the total (unfiltered) and filtered ground-water samples collected from the Phase I RI monitoring wells (MW-1 through MW-4, MW-6, MW-7, and MW-9 through MW-11). During Phase II RI ground-water sampling, PCBs were detected at 0.72 ppb and 0.1 ppb in the unfiltered ground-water samples collected from bedrock coreholes C-9 and C-16, respectively. Bedrock corehole C-16 was resampled in March 1995. PCBs were not detected in the filtered or unfiltered ground-water samples from this resampling event. With respect to bedrock corehole C-9, the detection of PCBs appears to be related to sediments suspended in the ground water at this corehole that are flushed into the corehole from surface water runoff. During monthly water level monitoring activities, as well as during ground-water elevation monitoring conducted during the April 1995 investigation of the hydraulic connection between the quarry pond and site ground water, corehole C-9 exhibited increased ground-water elevations associated with precipitation events. This observation is consistent with the highly fractured upper bedrock observed in the rock cores recovered from location C-9, as summarized in the boring log (Volume II Phase I RI Appendix G). Corehole C-9 was resampled in April 1995 after a week of dry weather. No PCB aroclors were detected above the Contract Required Detection Limit of 0.05 ppb in this unfiltered sample. PCBs were not detected in the filtered ground-water sample from C-9 or C-16 or in the unfiltered or filtered samples collected at any of the other Phase II RI ground-water sampling locations. Figure 3-23 presents the monitoring well locations and the associated PCB analytical results.

3.6.3.2 TCL Volatile and Semi-Volatile Organic Compounds

Analytical results for TCL VOCs for Phase I RI ground-water samples collected at monitoring wells MW-1 through MW-4, MW-6, MW-7 and MW-9 through MW-11 indicated that chloroform was detected in the ground-water samples collected from bedrock monitoring wells MW-1 and MW-6 at concentrations of 3 J and 4 J ppb, respectively. (Chloroform was detected at a concentration of 31 ppb in the water sample obtained from the hydrant located on Route 10. This water was used during drilling operations.) Trip blank TBB, from the September 1994 Phase II RI ground-water sampling event, had a chloroform concentration of 3 J ppb, although chloroform was not detected in any of the Phase II RI ground-water samples. VOC TICs were detected in the ground-water sample collected at bedrock monitoring well MW-4 at a total of 18 J ppb. VOC TICs were also detected in the ground-water sample collected at bedrock monitoring well MW-6 at a total of 18 J ppb; however, no VOC TICs were detected in the duplicate sample from MW-6.

Six TCL VOCs were detected in the ground-water samples collected from bedrock corehole/monitoring wells C-12 and C-18. Benzene was detected at concentrations of 7 J ppb (C-18) and 1,000 ppb (C-12). Trichloroethene and 1,2-dichloroethene were detected in the ground-water sample from C-18 at concentrations of 93 ppb and 57 ppb, respectively. Toluene, ethylbenzene, and (total) xylenes were detected in the ground-water sample from C-12 at concentrations of 150 ppb, 360 ppb, and 882 ppb, respectively. Analysis of a ground-water sample from C-12 by USEPA Method 503.1 indicated similar concentrations of benzene, toluene, and xylene, as well as detections of benzene compounds. VOC TICs were detected at a concentration of 1,634 NJ ppb in the ground-water sample collected at the bedrock corehole/monitoring well C-12.

Analytical results for TCL SVOCs from ground-water samples collected from monitoring wells MW-1 through MW-4, MW-6, MW-7 and MW-9 through MW-11 indicate that diethylphthalate and di-n-butylphthalate were detected. Diethylphthalate was detected in the ground-water samples collected at bedrock monitoring wells MW-3 and MW-4 at 0.6 J ppb. Di-n-butylphthalate was detected in the ground-water samples collected at bedrock monitoring wells MW-1, MW-3, MW-4, MW-7, and overburden monitoring wells MW-10 and MW-11 at concentrations ranging from 0.6 J ppb to 1 J ppb. Naphthalene, phenol, and 2-methylnaphthalene were detected in the ground-water sample collected from bedrock corehole/monitoring well C-12 at concentrations of 89 ppb, 24 J ppb, and 16 J ppb, respectively. SVOC TICs were detected at all wells and ranged from a total of 3 ppb (MW-7) to 1,692 ppb (C-12).

Figure 3-24 illustrates the analytical results for the TCL VOCs and SVOCs detected in the ground-water samples and the corresponding monitoring well locations.

3.6.3.3 TAL Inorganic Parameters

Analytical Results for the Overburden Monitoring Wells

With the exception of cyanide, silver, and thallium, each of the TAL inorganics was detected in at least one of the ground-water samples collected at overburden monitoring wells MW-9 through MW-11.

The concentrations of the TAL inorganics in the filtered samples were significantly less than the concentrations in the unfiltered (total) samples with the exception of potassium and sodium which were slightly higher in some of the filtered samples. The following TAL inorganics were not detected in the filtered samples, but were detected in the unfiltered samples: antimony, beryllium, cadmium, chromium, cobalt, copper, nickel, selenium, vanadium, and zinc. The higher concentrations and more frequent detections of TAL inorganics in the unfiltered ground-water samples may be attributed to the sample matrix. The inorganic constituents adsorb to the suspended particles in the ground water and the unfiltered ground-water samples were very turbid. The ground water within the overburden monitored beneath the site contains both silts and clays. During well development, the turbidity of the ground water was high, ranging from 145.5 to greater than 200 NTUs at MW-9, from 161.9 to greater than 200 NTUs at MW-10, and greater than 200 NTUs at MW-11. The concentration ranges for the filtered and the unfiltered analytical results from the overburden ground water are compared below:

Inorganic Constituent	**Sample Concentration Ranges (ppb)**	
	Unfiltered	**Filtered**
Aluminum	19,200 - 71,700	ND - 194
Antimony	ND - 50.6	ND
Arsenic	5.1 - 6.2	ND - 3
Barium	343 - 742	106 - 122
Beryllium	1.2 - 4.2	ND
Cadmium	ND - 5.4	ND
Calcium	276,000 - 450,000	142,000 - 168,000
Chromium	30.6 - 100	ND
Cobalt	14.1 - 61.7	ND
Copper	68.4 - 178	ND
Iron	36,100 - 140,000	ND - 1,170
Lead	48.9 - 62.3	ND - 1.4
Magnesium	19,200 - 46,600	7,330 - 13,800
Manganese	1,120 - 5,830	43.6 - 3,350
Mercury	ND - 1.8	ND - 0.2
Nickel	40.3 - 171	ND
Potassium	6,050 - 18,200	870 - 8,820
Selenium	ND - 1	ND
Sodium	22,300 - 191,000	25,900 - 186,000
Vanadium	40.6 - 142	ND
Zinc	161 - 444	ND - 6.4

Notes:

ND = not detected.
Data qualifiers not listed.

Analytical Results for the Bedrock Monitoring Wells/Coreholes

With the exception of cyanide, selenium, and silver, each of the TAL inorganic compounds was detected in at least one of the ground-water samples collected at bedrock coreholes and bedrock monitoring wells associated with the RI ground-water investigation.

Generally, the concentrations in the unfiltered samples were significantly higher than those in the filtered samples. Again, this is attributed to the sample matrix being moderately turbid and the inorganic constituents adsorbing to the suspended solids in the ground water. Many fractures in the bedrock cores contained fine sands and silts. The concentration ranges for the filtered and unfiltered inorganics analytical results for the bedrock ground water are presented below:

Inorganic Constituent	Sample Concentration Ranges (ppb)	
	Unfiltered	Filtered
Aluminum	88.7 - 4,640	ND - 165
Antimony	ND - 58.6	ND - 74.5
Arsenic	ND - 23.2	ND - 8.0
Barium	60.3 - 501	ND - 468
Beryllium	ND - 0.58	ND
Cadmium	ND - 12.8	ND - 0.92
Calcium	108,000 - 396,000	44,900 - 220,000
Chromium	ND - 19.1	ND - 1.0
Cobalt	ND - 21	ND - 12.5
Copper	ND - 185	ND - 5.6
Iron	221 - 45,800	ND - 21,300
Lead	ND - 70.7	ND - 2.6
Magnesium	6,040 - 44,200	4,020 - 43,600
Manganese	56.2 - 2,190	ND - 2,820
Mercury	ND - 0.95	ND - 0.53
Nickel	ND - 35.2	ND - 14.9
Potassium	1,480 - 20,200	1,330 - 26,900
Selenium	ND	ND
Silver	ND - 1.2	ND
Sodium	2,560 - 250,000	2,640 - 245,000
Thallium	ND - 3.2	ND
Vanadium	ND - 15.5	ND - 1.3
Zinc	ND - 265	ND - 31.3
Cyanide	ND	NA

Inorganic Constituent	Sample Concentration Ranges (ppb)	
	Unfiltered	Filtered

Notes:

Data qualifiers not listed.
ND = not detected.
NA = analysis was not performed.

Monitoring well MW-7 was installed as an upgradient bedrock well, and the ground-water sample collected at this well was collected as a background sample. However, the detection of an SVOC in a ground-water sample collected at MW-7 suggest that levels of inorganic constituents detected in MW-7 ground-water samples may not be indicative of true background levels.

Table 3-22 presents a summary of TAL inorganic results for ground water. Figure 3-25 illustrates the presence and extent of TAL inorganic constituents in the ground water, based on the samples collected.

3.6.4 Residential Well Sampling Results

Water samples were collected from five residential wells adjacent to the site to aid in determining whether the site conditions have impacted the ground-water quality at these locations. Water samples, collected in July and August 1993, were submitted for analyses of PCBs, TCL VOCs and SVOCs, and TAL inorganic parameters. Phase II RI residential well water samples collected in September 1994 were submitted for filtered and unfiltered analysis for PCBs and TAL inorganics, VOC analysis by USEPA Method 524.2, and TCL SVOC analysis. The results of the residential well sampling are presented below.

3.6.4.1 Polychlorinated Biphenyls

PCBs were not detected in any of the residential wells sampled during the Phase I RI and Phase II RI ground-water investigation. Table 3-23 presents the analytical results. Figure 3-23 illustrates the analytical results and the residential well locations.

3.6.4.2 TCL Volatile and Semi-Volatile Organic Compounds

Results of the Phase I RI analysis for TCL VOCs and SVOCs include detections of methylene chloride, acetone, and bis(2-ethylhexyl)phthalate. Methylene chloride and bis(2-ethylhexyl)phthalate were also detected in the associated method blanks. Acetone was detected in the method blank associated with the Sutphen well. These detected VOCs and SVOCs may be indicative of laboratory contamination and may not be representative of actual ground-water quality. Acetone was detected in the Phase I RI water

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Phase I or Phase II residential well samples. Table 3-24 presents the analytical results for detected TCL VOCs and SVOCs, and Figure 3-24 illustrates these results.

3.6.4.3 TAL Inorganic Parameters

Results of TAL inorganic analysis are summarized in Table 3-25. Figure 3-25 illustrates the presence of inorganic parameters in the water samples collected from the residential wells. The following TAL inorganic parameters were not detected in any of the residential well samples: arsenic, beryllium, cadmium, cobalt, silver, thallium, and vanadium. The inorganic parameters detected, the range of concentrations, and the number of times detected are presented below:

Inorganic Parameters	Unfiltered Samples				Filtered Samples	
	Phase I RI - Range of Concentrations (ppb)	Phase I RI - Number of Times Detected	Phase II RI - Range of Concentrations (ppb)	Phase II RI - Number of Times Detected	Phase II RI - Range of Concentrations (ppb)	Phase II RI - Number of Times Detected
Aluminum	291 - 423	2/5	ND - 193	3/4	ND - 71.8	2/4
Antimony	ND - 54.1	1/5	ND - 2.0	1/4	ND - 3.4 N	3/4
Barium	63.6 - 407	5/5	64.4 - 424	4/4	58.9 - 375	4/4
Calcium	2,100 - 102,000	5/5	2,450 - 107,000	4/4	2,320 - 104,000	4/4
Chromium	ND	0/5	ND	0/4	ND - 0.92	1/4
Copper	5.2 - 36.3	5/5	0.98 - 9.5	4/4	ND - 4.3	3/4
Cyanide	ND - 3.8	1/5	ND	0/4	NA	NA
Iron	50.7 - 605	5/5	131 - 1,600	4/4	20.1 - 1,120	4/4
Lead	ND - 2.9	1/5	ND - 2.7	2/4	ND	0/4
Magnesium	751 - 16,300	5/5	792 - 17,100	4/4	712 - 17,200	4/4
Manganese	3.4 - 634	4/5	1.8 - 117	4/4	1.9 - 37.8	4/4
Mercury	ND	0/5	ND	0/4	ND - 0.16	1/4
Nickel	ND	0/5	ND - 2.0	3/4	ND - 1.7	3/4

Inorganic Parameters	Unfiltered Samples				Filtered Samples	
	Phase I RI - Range of Concentrations (ppb)	Phase I RI - Number of Times Detected	Phase II RI - Range of Concentrations (ppb)	Phase II RI - Number of Times Detected	Phase II RI - Range of Concentrations (ppb)	Phase II RI - Number of Times Detected
Potassium	760 - 5,450	5/5	998 - 8,600	4/4	1,010 - 7,480	4/4
Selenium	ND - 1.2	1/5	ND	0/4	ND	0/4
Sodium	8,540 - 481,000	5/5	10,800 - 547,000	4/4	11,000 - 470,000	4/4
Zinc	6.4 - 537	5/5	2.7 - 54.5	4/4	2.9 - 25.9	4/4

Notes:

Data qualifiers not listed.
ND = not detected.
NA = not analyzed.

3.6.5 Separate-Phase Oil Monitoring Results

Separate-phase oil was observed on the top of the water table at the following monitoring well/corehole locations: MW-5, MW-8(C-3), C-4, C-10, C-13, and C-14. The separate-phase oil was observed during field activities, as described below.

During the installation of monitoring well MW-5, a slight sheen was observed at an approximate depth of 25 feet bgl. The sheen did not persist, and the well was continued to a depth of 35 feet bgl. After installation of this well, no separate-phase oil was observed while performing packer testing. However, during well development, separate-phase oil was observed after approximately 45 gallons of water had been pumped from the well.

During the installation of MW-8(C-3), a sheen was observed on the core barrel after the 40 to 45-foot core run was drilled. When the rock cores were further observed, oil-like odors were noted in the fractures from approximately 30 to 40 feet. The day after installation of MW-8 (C-3), separate-phase oil was observed on top of the water column at this location.

During installation and packer testing at corehole C-4, a slight discoloration, noted as possibly being oil, was observed. Measurable SPO was first observed on the ground-water surface in April 1994.

During installation and packer testing of corehole C-10, no separate-phase oil was observed. However, during well development, a separate-phase oil was observed after approximately 30 gallons of water had been pumped from the corehole.

During installation and packer testing of corehole C-13, no separate-phase oil was observed. However, three days later, prior to well development, a water level reading was obtained using a water level probe and upon removal of the probe a separate-phase oil was observed.

During packer testing of corehole C-14, a separate-phase oil was observed on top of the water column upon removal (from the corehole) of the packer testing equipment.

The separate-phase oils from monitoring wells MW-5 and MW-8(C-3) were sampled on June 9, 1993 and analyzed for PCBs and oil fingerprinting. The analytical results indicated that the sample from monitoring well MW-5 contained PCBs at a total concentration of 2,230 ppm and consisted of 91% transformer oil. The analytical results indicated that the sample from monitoring well MW-8(C-3) contained PCBs at a total concentration of 1,780 ppm and consisted of 89% transformer oil.

On June 28-29, 1993, separate-phase oil was collected from monitoring wells MW-5 and MW-8(C-3) for analyses of TCL VOCs and SVOCs, TAL inorganic parameters, and specific gravity. Monitoring well MW-8 (C-3) did not contain sufficient volume to complete all analyses; therefore, SVOC analysis and TAL inorganic analysis were not performed. The specific gravity for both separate-phase oils was 0.89 grams per gram (g/g). Methylene chloride was the only VOC detected in the separate-phase oil samples from MW-5 and MW-8(C-3); however, this VOC was also detected in the associated method blanks and is likely indicative of laboratory contamination. Several VOC TICs were also detected in the separate-phase oil samples at total concentrations of 12,850 ppb at MW-5 and 9,120 ppb at MW-8(C-3). These TICs included tricyclo(3.3.1.13,7)decane, unknown cyclic hydrocarbons, and unknown dichlorobenzene. SVOC TICs were detected in the separate-phase oil sample from monitoring well MW-5 at a total concentration of 30,710,000 ppb. The following TAL inorganic parameters were detected in the separate-phase oil collected at monitoring well MW-5: aluminum (73.5 ppm), chromium (1.2 ppm), copper (5 ppm), iron (19 ppm), lead (1.9ppm), manganese (1.2 ppm), mercury (0.05 ppm), and zinc (0.77 ppm).

A separate-phase oil sample was collected from corehole C-10 on August 6, 1993. The sample was analyzed for PCBs. An attempt was made to collect separate-phase oil samples from coreholes C-13 and C-14; however, there was not enough sample volume for either analysis. The PCB analytical result of the oil sample obtained from corehole C-10 was 1,830 ppm.

The monitoring wells/coreholes in which separate-phase oil has been observed are included in a bi-weekly program to monitor and remove the separate-phase oil. The thickness of the oil layer and the amount of separate-phase oil and ground water removed from each monitoring well/corehole are recorded and the oil/water is placed into a 55 gallon drum for future off-site disposal. Table 3-26 presents information regarding measurable oil thicknesses and quantities of oil/water removed from the wells/coreholes. The separate-phase oil thicknesses have shown a high degree of variability in some wells and have been relatively constant over time in others. The range of separate-phase oil thicknesses for each monitoring well/corehole is provided below:

Monitoring Well/Corehole	Range of Separate-Phase Oil Thickness (feet)
MW-5	NM - 2
MW-8 (C-3)	<0.01 - 10.01
C-10	NM - 1.1
C-13	NM - 0.39
C-14	NM - 1.5
C-4	NM - 0.30
Note: NM = SPO thickness on water table not measurable.	

3.7 Biota Investigation Results

During the RI, BB&L biologists collected fish from Cobleskill Creek and the storm water drainage system (also known as the unnamed tributary) on October 11, 1994. Fish collected from these locations were prepared as either skin on-fillet samples (white suckers and small mouth bass) or whole body composite samples (common shiners and fathead minnows) for analysis for PCBs and percent lipids. A total of nine fish tissue samples were analyzed for these parameters with either a "CC" (Cobleskill Creek) or "UT" (Unnamed Tributary) prefix. The results of the PCB and percent lipids analyses for these fish tissue samples are presented in Table 3-27.

The arithmetic mean PCB concentration for the fillet samples for both the white suckers from the storm water drainage system and the smallmouth bass from Cobleskill Creek was 0.1 ppm. The maximum total PCB concentration for fillet samples was 0.19 ppm, detected in white sucker fillet sample UT-WS-01. The arithmetic mean PCB concentrations for forage species were 0.34 ppm for common shiners from Cobleskill Creek (maximum detection of 0.41 ppm) and 1.4 ppm for fathead minnows from the storm water drainage system (maximum detection of 1.7 ppm). The arithmetic mean for percent lipids ranged from 1.37% for smallmouth bass fillet samples to 4.46% for the white body composite fathead minnow samples.

3.8 Assessment of Air Emissions

Air emission assessment activities consisted of the collection of seven air monitoring samples at the site by Chemical Waste Management - Remedial Services Group, over a four-day period between January 7-28, 1993, during IRM activities. The samples were collected using a florosil/cassette and were analyzed by Spotts, Stevens, & McCoy Laboratories of Reading, Pennsylvania for PCBs using NIOSH Method 5503.

Since air sampling results did not indicate detections of PCBs above the quantitation limit, a site perimeter air monitoring plan was not required for subsequent Phase I RI activities. However, air monitoring was conducted for particulates and VOCs in the worker breathing zone during subsequent Phase I RI activities in accordance with the results of the HASP. Air monitoring analysis from the seven samples collected in January 1993 are included in Volume II (Phase I RI Appendix K) of this report.

Section 4

4.0 - Fish and Wildlife Impact Analysis

4.1 General

The NYSDEC Fish and Wildlife Impact Analysis (FWIA) evaluates potential fish and wildlife concerns associated with the remediation of inactive hazardous waste sites. BB&L conducted a NYSDEC FWIA on June 30 and July 1, 1993, in accordance with the Work Plan and the NYSDEC (1994a) FWIA guidelines. The general ecological features of the site and adjacent areas described in this section include:

- Physical characteristics, such as topography and land use;
- Identification of vegetative cover;
- Qualitative assessment of habitat value to wildlife;
- Identification of fish and wildlife species typical of the area;
- Identification of special resources, including surface waters, wetlands, critical habitats, and threatened or endangered species;
- Evaluation of potential pathways for exposure of resources to site-related chemicals; and
- Criteria-specific analysis.

Topographic and regional maps were initially referenced to identify the general physical and ecological features of the site and surrounding area. Information from the NYSDEC Natural Heritage Program (NYSDEC, 1993a) data base was reviewed, and a site visit was also conducted.

4.2 Physical Characteristics: Site Topography and Land Use

The site consists of approximately 6.6 acres of gently sloping, open land in a mixed land use area (Figure 4-1). A 1.3-acre, water-filled limestone quarry is a prominent feature of the site. Approximately 35 percent of the site, exclusive of the quarry, is devoted to buildings, parking areas/roadways, a loading dock, and salvage/scrap processing activities. The former electrical equipment gut area of the site was previously subject to IRMs (i.e., excavation and soil removal) and consists mostly of barren ground.

The site is accessible via Route 10 to the south and West Street to the west. Gravel fill covers the primary access (parking) areas and field office grounds. The Soil Survey for Schoharie County (USDA, 1969) characterizes the native soils in the site vicinity as being of the Mohawk-Honeoye Association. Soils in this group are generally deep, well-drained, and moderately high in lime. The soils map depicting the site area classifies the soils as Schoharie and Hudson silt loams (USDA, 1969).

4.3 Vegetative Covertype/Habitat Value Assessment

A list of vegetative species observed within 0.5-mile of the site or typical of the area is presented in Table 4-1. General vegetative covertypes and habitat values for this area are indicated on Figure 4-2. The qualitative determination of habitat value was based on field observations, research, and professional judgement. Habitat values were assigned using the following classification system.

- No Value: Paved areas, buildings, and parking lots.
- Low to Moderate Value: Areas with gradations of habitat quality from that which marginally supports a minimal number and diversity of low quality species to that which supports a variety of quality species with little or no stress related to human disturbance.
- High Value: Critical habitats for rare species and/or extensive undeveloped habitat supporting a great diversity and abundance of wildlife without functional constraints imposed by human disturbance.

The following assessment of habitat value, vegetative covertype, and associated fish and wildlife species on-site and within 0.5-mile of the site is based on a walkover of the site and adjacent areas completed on June 30-July 1, 1993 and thus reflects a "snapshot" evaluation. No areas of the site were observed to exhibit stressed vegetation or evidence of negative effects on wildlife.

4.4 On-Site Evaluation

The scrap processing operation and water-filled limestone quarry are located within the fenced perimeter of the site. Exclusive of these areas, approximately 50 percent of the site is essentially devoid of vegetation due to human disturbance and/or poor substrate. These areas provide no value to wildlife. The remainder of the site supports some intermittent areas of scrub-type herbaceous vegetation, woody plants, and sparsely growing trees. Depending on the extent of cover, localized habitat pockets provide low to moderate value to wildlife within the site confines.

Most vegetative species observed on-site are weed species typical in upstate New York (e.g., dandelions, Queen Anne's lace, teasel). Staghorn sumac, boxelder, chokecherry, and honeysuckle grow along the eastern fenceline, and the ground surface to canopy layer is vegetated with herbaceous plants such as goldenrod, raspberry, buttercup, thistle, dandelion, and field horsetail. Some volunteer alfalfa and bird's foot trefoil stems are growing in scattered on-site areas in generally poor substrate. A dirt road/trail runs along the northern quarry edge and is fringed with the majority of the larger trees (i.e., sugar maple, American elm, black cherry) growing at the site. The quarry edge is sheer on the northern side, and a fringe of herbaceous vegetation grows within 10-20 feet of this edge. The western edge of the quarry wall is immediately adjacent to the scrap processing area and has only very sparse weeds (e.g., grass, buttercup, clover) growing amidst rock, soil, and debris. To the south, the quarry wall slopes gradually to the water's edge, and a moderate amount of vegetation grows at the top edge of the quarry in this area. The area from the western edge of the quarry south to the Route 10 fenceline is densely vegetated with woody plants and herbaceous species (e.g., honeysuckle, chokecherry, staghorn sumac, wild grape, and crabapple) and provides some of the best on-site habitat for birds and small mammals. The extent of the vegetation and access constraints posed by the fence likely preclude site use by larger mammals (e.g., deer), but rabbits, woodchucks, raccoons, and other small mammals probably utilize this habitat. A wooded residential property adjacent to the eastern fenceline provides some continuous wooded habitat for wildlife species in this area. A majority of the bird species identified on-site (Table 4-2) were observed in this area, including common flicker, American robin, red-eyed vireo, barn swallow, and house finch. Human activity and noise associated with the active scrapyard operations, Route 10 traffic, the quarry pond water treatment system, and the residential apartments to the east, likely discourages use of the quarry pond by aquatic birds (i.e. ducks and gulls).

4.5 Off-Site Evaluation

Off-site areas in the vicinity of the site support a variety of vegetative covertypes that differ according to land use. The area within 0.5-mile of the site supports rural residential properties, commercial businesses, the State University of New York Agricultural & Technical College at Cobleskill (SUNY Cobleskill) campus, agricultural research station, and recreational facility, agricultural fields and farms, a baseball field, bus garage, and transportation routes, including roads and railroad tracks.

Cobleskill Creek flows to the east within approximately 0.5-mile of the site perimeter. The stream is fringed with both natural and cultivated vegetation within 2 miles of the site. The SUNY Cobleskill maintains cultivated grassy lawns and landscaping nearly to the stream edge in places. Natural vegetation growing along Cobleskill Creek includes trees, woody plants, and herbaceous species (Table 4-1). Residential areas also tend to support a mixture of natural vegetation and cultivars. The commercial areas within 0.5-mile of the site are mostly surrounded by paved parking lots and loading docks and do not provide any apparent wildlife habitat value. A few trees, shrubs, and weed species grow sparsely near the commercial establishments. Hedgerows along the field edges support larger trees, shrubs, and dense herbaceous vegetation.

A strip of land between Route 10 and the Delaware and Hudson Railroad tracks (south of the site) is part of the Wallace property holding, but is not defined as part of the site (BBL, 1994). The area is within 0.5-mile of the site and thus is described as an off-site area. This Wallace parcel is not fenced and is used mainly for storage of larger scrap materials and parking. Some small shrubs and weeds grow sparsely in small open areas between the large scrap materials. The vegetation growing in the area between the northern base of the railroad bed and the off-site Wallace parcel is fairly dense, but limited in extent. The areas adjacent to the railroad tracks support some larger shrubs and trees and, since the railroad bed is raised above the ground surface level, surface drainage is such that small pockets of hydrophytic species (i.e., cattails, sedges) are growing. Mature willow trees have become established near the railroad tracks, and the understory consists of low quality weed species such as dandelions, goldenrod, and Queen Anne's Lace. Some birds use the food and cover offered by the marginal vegetative cover in the area between the site and the railroad tracks, including the off-site Wallace parcel, but any wildlife present are necessarily in close proximity (i.e., within approximately 30 feet) to noise and disturbance from both vehicular traffic on Route 10 and trains passing on the railroad tracks. The stress to wildlife associated with these features may impact habitat use as much as the physical and vegetative characteristics of this area. The overall habitat value within 0.5-mile of the site is considered low to moderate.

4.6 Wildlife Species/Habitat Value Summary

4.6.1 Fish Species/Habitat Value Summary

Aquatic habitat within 0.5-mile of the site includes a section of Cobleskill Creek and the storm water drainage system, which is an unnamed tributary to Cobleskill Creek, both of which flow through the SUNY Cobleskill campus. Figure 1-3 illustrates the less than ¼-mile traverse of the open section of the storm water drainage system from its beginning at a culvert to its discharge into Cobleskill Creek. Cobleskill Creek flows in an easterly direction from its confluence with the storm water drainage system to its eventual discharge into Schoharie Creek approximately 15 miles east of Cobleskill.

Resident fish species of the storm water drainage system and Cobleskill Creek were observed during RI fish sampling activities in October 1994. Additionally, in 1984 the NYSDEC completed limited fish survey activities in Cobleskill Creek at a location on the SUNY Cobleskill campus. Other pre-1984 NYSDEC fish collection activities at Cobleskill Creek locations just downstream of the SUNY Cobleskill campus provide additional information describing resident fish fauna of the creek. A list of fish species observed in the storm water drainage system and Cobleskill Creek is presented in Table 4-3.

In general, fish populations in the storm water drainage system are limited by available habitat. This habitat is characterized by a narrow channel 1 to 2 feet in width, with a water column ranging from 6 inches to one foot in depth. A small pool, approximately 4 feet in depth, is present at the storm sewer culvert outlet. Flow regimes in the storm water drainage system are unknown. Under these limiting conditions, year-round resident species (if present) will be restricted to forage fish populations characterized by minnows and other opportunistic, tolerant species (e.g., chubs, suckers).

At the SUNY campus, Cobleskill Creek can be classified as a mid-reach stream offering good aquatic habitat with alternating pool and riffle sections. Results of the survey/collection activities cited above indicate the creek supports a healthy warm water fishery.

4.6.2 Wildlife Species/Habitat Value Summary

A list of wildlife species observed within 0.5-mile or typical of the area is presented in Table 4-2. No threatened/endangered wildlife species or critical habitats have been documented in the general vicinity of the site by NYSDEC (1993a). In general, the wildlife species inhabiting or using the site are likely to consist of common species typical of upstate New York. Eastern cottontail rabbits and woodchucks have been observed within the site boundaries, and the on-site habitat probably supports limited numbers of other small mammals (e.g., raccoons, squirrels, rodents). Since the perimeter of the upper parcel is fenced, it is not readily accessible to larger mammals, such as white-tailed deer, which are present in less disturbed areas near the site, especially to the north. Birds are the most prolific group of wildlife at the site.

Based on the vegetative characteristics of the site and general land use in the surrounding area, the site offers low to moderate value as wildlife habitat. The degree of man-made physical disturbance on-site, proximity to transportation routes, and lack of continuous quality habitat in nearby adjacent areas restrict the diversity of wildlife species and extent of wildlife use. Results of the qualitative assessment of the value of the site habitat and that of the surrounding area are summarized on Figure 4-2.

4.7 Identification of Significant Natural Resources

According to the NYSDEC guidance for performing the FWIA, significant natural resources are considered to be those surface waters, wetlands, and rare species/critical habitats within a 2-mile radius of the site and along Cobleskill Creek downstream for approximately 9 miles from the Route 7 bridge at the entrance to the SUNY Cobleskill campus.

4.7.1 Surface Waters

The main surface water in the site vicinity is Cobleskill Creek, a tributary to the Schoharie Creek in the Mohawk-Hudson River drainage basin. The NYSDEC best usage classification for Cobleskill Creek is "Class C" (NYSDEC, 1993b). The water-filled limestone quarry located on-site is a fresh water pond and does not have a NYSDEC (1993b) best usage classification. The pond is in close proximity to the scrap processing activities and does not generally support fish and wildlife resources. The outflow from the quarry pond has been treated since the IRM program was initiated in 1992 (BBL, 1993). West Creek and several other tributaries to Cobleskill Creek are identified on Figure 4-1. The bottom substrate of these streams generally consists of cobbles, gravel, and silt. Cobleskill Creek has the most developed stream channel, which ranges from 8-60 feet in width at observed reaches; however, water depths were as low as 12 inches near Warnerville, leaving much of the stream bed dry at the time of the site visit. Few deep pools and only minor riffle areas were noted in Cobleskill Creek in the vicinity of the site. Cobleskill Creek supports fishing, canoeing, and other recreational activities, contingent on water levels, while the tributaries are smaller and probably intermittent in flow regimen.

4.7.2 Wetlands

No regulated wetlands are located within a 2-mile radius of the site. A small isolated wetland is located north of the site near Lawyersville (Figure 4-1). Wetlands associated with Cobleskill Creek consist of streamside habitat, and the extent of hydrophytic vegetation depends on fluctuating stream water levels.

4.7.3 Threatened/Endangered Species/Critical Habitats

Information provided by the NYSDEC Significant Habitat Unit and Natural Heritage Program (NYSDEC, 1993b) indicates that no endangered, threatened, or special concern wildlife species, rare plants, animals, natural communities, or significant habitats are located in the site vicinity. No threatened or endangered plants or animals were observed during site investigations.

4.8 Current and Future Potential Use of Fish and Wildlife Resources by Humans

Current human use of fish and wildlife resources in the site vicinity probably includes hunting of small game and deer, hiking, wildlife observation, and fishing along Cobleskill Creek. The current potential uses of fish and wildlife resources by humans in the site vicinity are likely to remain consistent in the future. Resource uses, and agricultural and forestry practices in the site vicinity are not likely to be affected by activities or conditions at the site.

4.9 Potential Exposure Pathway Analysis

With respect to ecological impact, the principal chemical of concern at the site is PCBs, due to the known tendency for PCBs to bioaccumulate. PCBs are known for their low water solubilities, affinity for soil and sediment, and propensity to accumulate in the fatty tissues of organisms. Wildlife exposure to PCBs which may be present in on-site soils is expected to be low due to the poor quality of habitat resulting from human disturbance and poor substrate; therefore, further evalution of on-site soils as an exposure pathway for wildlife is not required. As shown in Table 4-4, the exposure pathway analysis for various media and receptors indicates that surface waters and sediments present the greatest potential for exposure to PCBs associated with the site. In surface waters, PCBs are generally adsorbed to sediments and other organic matter. Although adsorption and sedimentation can sequester PCBs in the environment, the desorption of PCBs from organic matter can result in low-level water column concentrations. The presence of low levels of PCBs in Cobleskill Creek sediments however, presents the potential for adverse ecological impacts to occur to aquatic biota in Cobleskill Creek. This potential is evaluated in the next subsection.

4.10 Criteria-Specific Analysis

Based on the exposure pathway analysis, potential for exposure of fish and wildlife to PCBs in Cobleskill Creek sediments is evaluated in this section. This is accomplished by comparing observed sediment and fish tissue PCB concentrations to criteria that represent acceptable exposure levels. The criteria-specific analysis focuses on PCBs due to the known bioaccumulative properties of PCBs and the potential for exposure. According to the NYSDEC Guidance (1994a), the criteria-specific analysis requires use of numerical criteria for chemical constituents associated with specific media (e.g., sediments) or biota (e.g., fish). If chemical concentrations in media/biota samples are below criteria, impact on the resource is considered minimal and no further analysis are required (NYSDEC, 1994a). The results of the sediment and fish criteria-specific analyses performed for the site are presented below.

4.10.1 Sediment Criteria

NYSDEC sediment criteria are developed by applying the USEPA equilibrium partitioning model (NYSDEC, 1991) to calculate sediment criteria based on NYSDEC Ambient Water Quality Criteria/Guidance Value (AWQC/GV) surface water concentrations. This approach assumes that sediment pore water chemical concentrations are equivalent to water column concentrations, an assumption which USEPA (1993) says is "untenable". As such, the NYSDEC sediment criteria should not be viewed as an accurate prediction of potential impact, but they may be useful as screening criteria. The NYSDEC sediment criterion for the protection of piscivorous wildlife of 1.38 ug PCBs/g organic carbon (OC) is based on the NYSDEC AWQC of 0.001 ug/l. The AWQC is based on bioaccumulation (i.e., protection of consumers of aquatic organisms) rather than direct toxicity to the aquatic organisms themselves. The NYSDEC sediment criterion for the protection of benthic aquatic life is 19.3 ug PCBs/g OC, based on the USEPA AWQC of 0.014 ug/l (USEPA, 1980).

Sediment investigations completed during the Phase I RI included sample collection in the storm water drainage system (i.e., the unnamed tributary) and Cobleskill Creek. Results for the storm water drainage system investigation showed PCBs present in sediments at concentrations ranging from not detected to 4.3 mg/kg (WS-CC-2). Of the nine sediment samples collected in Cobleskill Creek, PCBs were detected in only one sample (SD-50A). PCBs were detected in this sample at a concentration of 0.18 ppm.

To evaluate the potential for PCBs to adversely impact aquatic resources in the vicinity of the site, the FWIA component of the Phase I RI Report (BB&L, 1994) included a criteria-specific evaluation of the Cobleskill Creek sediment investigation results. In this assessment, the only detected PCB concentration in Cobleskill Creek sediment samples was compared with a site-specific PCB criterion which was calculated using the NYSDEC sediment criterion of 1.38 ug/g OC and site-specific OC data. The single PCB concentration of 0.18 mg/kg in Cobleskill Creek sediments exceeded the 0.01 mg/kg site-specific sediment criterion for sediments.

As suggested by the NYSDEC (August 29, 1995 letter), the sediment criterion for the protection of benthic aquatic life (19.3 µg/g OC) is the appropriate reference criterion for storm water drainage system sediment samples. Using site-specific OC data and the NYSDEC sediment criterion for the protection of benthic aquatic life, the site-specific sediment criterion is 0.43 mg/kg. PCBs were present in storm water drainage system sediment samples WS-CC-1, WS-CC-2, and SD-46A at levels exceeding the 0.43 mg/kg site-specific sediment criterion for the protection of benthic aquatic life. As stated previously, the sediment criterion for the protection of aquatic life is based on the USEPA AWQC of 0.014 µg/l (USEPA, 1980). The basis for the AWQC value is the protection of piscivorous wildlife rather than the protection of benthic aquatic life per se. Hence, occurrence of sediment PCB concentrations greater than the NYSDEC sediment criterion does not imply that benthic aquatic life in the storm water drainage system sediments will be adversely impacted.

Because the sediment criterion for protection of wildlife (and the AWQS from which it is derived) is based on bioaccumulation, the NYSDEC considered the exceedences of the sediment criteria to warrant additional sampling to determine if bioaccumulation was occurring in the field. As a result, fish tissue residue sampling was performed in the storm water drainage system and Cobleskill Creek. Results of the biota investigation are presented in Section 3.7 of this RI Report. The following discussion includes a criteria-specific analysis of the PCB fish tissue data generated during the biota investigation.

4.10.2 Fish Tissue Criteria

To assess the potential for site-related impacts on resident sport fish and forage fish populations present in the storm water drainage system and also in Cobleskill Creek downstream of the confluence with the storm water drainage system, PCB concentrations in sport fish fillet samples and forage fish whole-body composite samples are compared with criteria for PCBs in fish tissues. If PCB levels are below criteria, impact on the resource is considered minimal and additional analyses are not required.

The most relevant fish tissue criterion is the U.S. Food and Drug Administration (USFDA) tolerance level for PCBs in edible portions of fish, which is 2 mg/kg (USFDA, 1984). The USFDA tolerance level is also used by the NYSDEC/NYSDOH to determine when to issue fish consumption advisories in New York State (NYS) waters.

Analytical results of the fish sampling effort are summarized in Table 3-28. PCB concentrations in fillet samples of white suckers and smallmouth bass may be directly compared to the NYSDEC/NYSDOH PCB criterion of 2 mg/kg. The concentration of PCBs detected in all of the fillet samples were less than this criterion. PCB concentrations in storm water drainage system white sucker fillets ranged from non-detect to a maximum of 0.19 mg/kg, with an arithmetic mean concentration of 0.10 mg/kg. Concentrations in Cobleskill Creek smallmouth bass fillets ranged from 0.06 to 0.15 mg/kg, with an arithmetic mean concentration of 0.10 mg/kg. Under current NYSDEC data evaluation protocols for issuing water body-specific fish consumption advisories (NYSDOH, 1995), PCB concentrations in sport fish from the storm water drainage system and Cobleskill Creek would not provide any basis for issuing a fish consumption advisory.

Although PCB concentrations in whole body composite samples are not directly comparable to the FDA value for edible portions of fish, the forage fish data will also be compared to the NYSDEC/NYSDOH fish tissue criterion of 2 mg/kg. PCB concentrations in storm water drainage system fathead minnow composites ranged from 1.1 to 1.7 mg/kg with an arithmetic mean concentration of 1.4 mg/kg. PCB concentrations in Cobleskill Creek common shiner composites ranged from 0.29 to 0.41 mg/kg, with an arithmetic mean concentration of 0.34 mg/kg. Similar to the sport fish data, PCB concentrations in all forage fish samples are below the NYSDEC/NYSDOH criterion of 2 mg/kg. The biota sampling data was reported to the NYSDEC/NYSDOL in a letter dated February 13, 1995.

In terms of hypothetical ecological risk associated with the observed PCB levels in fish, the most likely ecological receptors that may be exposed to PCBs are piscivorous wildlife. The toxicity threshold for sublethal effects in piscivorous wildlife of 0.6 mg/kg (USEPA, 1980) was used by the NYSDEC to derive a fish flesh criterion of 0.1 mg/kg for the protection of piscivorous wildlife in the Niagara River (Newell *et al.*, 1987). Methods employed to derive this NYSDEC criterion include use of a conservative application factor (0.2) to adjust the 0.6 mg/kg toxicity threshold value to a no observed effect level (NOEL), and the assumption that piscivorous wildlife would obtain 100 percent of their diet exclusively from PCB contaminated fish.

This assumption is unrealistic for Cobleskill Creek because both fish and sediment data obtained during the RI indicate that PCB impacts to Cobleskill Creek biota are localized and because it is highly unlikely that resident piscivorous wildlife (if any) obtain 100 percent of their diet from this localized area. PCBs were not detected in eight of nine sediment samples. The only detectable PCB concentration (0.18 mg/kg) was found at the sampling location closest to the stormwater drainage system confluence with Cobleskill Creek. PCBs were not detected in any of the samples collected downstream of this location. The spatial distribution of PCB concentrations in resident fish populations can be expected to correlate closely to sediment PCB concentrations. As such, it is unlikely that fish residing in the downstream sampled reaches of Cobleskill Creek will exhibit detectable PCB concentrations. Furthermore, it would be unrealistic to assume that resident piscivorous wildlife (if any) could obtain 100 percent of their diet from the area of localized PCB impact on Cobleskill Creek.

These site-specific conditions combine to limit the relevance of using the NYSDEC criterion to evaluate potential ecological risks associated with wildlife consumption of fish. For this site, the more relevant evaluation criteria is the piscivorous wildlife toxicity threshold value of 0.6 mg/kg. All of the fish tissue samples prepared from the forage and sport species collected from Cobleskill Creek had PCB concentrations less than the threshold value of 0.6 mg/kg, indicating that the ecological risks associated with wildlife consumption of these fish are insignificant.

With respect to the storm water drainage system, PCB levels in each of the three whole body composite fathead minnow samples (ranging from 1.1 to 1.7 mg/kg) exceeded the NYSDEC fish flesh criterion for the protection of piscivorous wildlife of 0.1 mg/kg, as well as the piscivorous wildlife toxicity threshold value of 0.6 mg/kg. However, the potential ecological risks associated with the PCB concentrations detected in the fish collected from the storm water drainage system are considered insignificant because this system offers limited habitat for piscivorous wildlife due to:

- Lack of cover (no shrubs or dense grasses) along the banks:

- Heavy car and foot traffic in the area; and

- Limited quantities and small size of forage fish.

Thus, because the storm water drainage system is not likely to attract piscivorous wildlife and the forage fish observed to be present do not provide a significant food source, the ecological risks associated with wildlife consumption of these fish are considered insignificant.

4.11 Conclusions

The sediment and fish tissue residue PCB data resulting from RI sampling indicate no obvious impacts to the fish and wildlife resources of Cobleskill Creek or the storm water drainage system based on the following:

- PCBs were not detected in eight of the nine sediment samples collected from Cobleskill Creek; the only detectable PCB concentration from Cobleskill Creek sediments (0.18 mg/kg) exceeds the site-specific PCB sediment criterion for the protection of wildlife from bioaccumulation. Exceedence of this NYSDEC sediment criterion is not indicative of impact on wildlife because the PCB concentrations in the samples prepared from both sport and forage fish collected in Cobleskill Creek were less than the USEPA 0.6 mg/kg threshold for sublethal effects in piscivorous wildlife. As explained in the FWIA (Section 4.10.2), this threshold value is the most relevant criterion available for evaluating ecological risks associated with wildlife consumption of these fish. Site-specific conditions combine to limit the relevance of using the NYSDEC fish flesh criterion of 0.1 mg/kg for the protection of piscivorous wildlife. PCB concentrations in the samples prepared from both forage and sport fish species collected from Cobleskill Creek were less than the piscivorous wildlife toxicity threshold value of 0.6 mg/kg indicating that the ecological risks associated with wildlife consumption of these fish populations are insignificant.

- PCB concentrations in the storm water drainage system forage fish samples were above the NYSDEC fish flesh criterion for the protection of piscivorous wildlife of 0.1 mg/kg and the USEPA's 0.6 mg/kg threshold for sublethal effects in piscivorous wildlife; however, as explained in Section 4.10.2, the storm water drainage system provides only a limited habitat for piscivorous wildlife. Exceedence of the NYSDEC sediment criterion (for the protection of benthic aquatic life) in the storm water drainage system is not indicative of an impact on benthos, because the criterion is actually based on PCB toxicity to piscivorous wildlife rather than benthos; and

- PCB concentrations in all fish samples (forage fish and sport fish species) analyzed as part of the RI were less than the NYSDEC/NYSDOH fish tissue PCB criterion for the protection of human health (2 mg/kg).

Section 5

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

5.1 Introduction

The baseline human health risk assessment (RA) evaluates the potential risks to human health associated with the identified chemical constituents currently present at the M. Wallace and Son, Inc. Scrapyard in Cobleskill, New York. This assessment has been conducted in accordance with the most recent USEPA guidance including:

- USEPA Risk Assessment Guidance for Superfund: Vol. I - Human Health Evaluation Manual (Part A) (USEPA, 1989); and

- USEPA Human Health Evaluation Manual Supplemental Guidance: "Standard Default Exposure Factors" (USEPA, 1991a).

Additional information was obtained from the following sources:

- USEPA Integrated Risk Information System (IRIS) Database (USEPA, 1994a);
- Health Effects Summary Tables (HEAST); FY-1994 (USEPA, 1994b); and
- USEPA Exposure Factors Handbook (USEPA, 1990).
- Dermal Exposure Assessment: Principles and Applications (USEPA, 1992)

The baseline RA consists of four steps including: (1) identifying the site-related chemicals of interest to which people could be potentially exposed at the site; (2) determining potential exposure pathways and quantifying the magnitude of exposure; (3) compiling information about chemical toxicity; and (4) quantifying cancer and non-cancer risks posed to the potentially exposed receptors.

The risks estimated in this RA are not predictors of disease outcome. They will be used by risk managers to aid in evaluating remedial alternatives for the site that will limit potential risks to human health and the environment.

5.2 Data Evaluation

This section of the RA identifies those chemical constituents present at the site which will be evaluated further in the RA. All available analytical data generated during the Phase I and Phase II RI investigations were reviewed taking into consideration the analytical methods used, quantitation limits, data qualifiers, and quality assurance/quality control (QA/QC) samples. Chemicals of interest were determined for on- and off-site surface soils, on- and off-site surface water, on- and off-site sediments, residential well water, ground water, and smallmouth bass fillets. Figures 2-1 and 2-2 depict the surface soil, surface water, sediment, ground water, and residential well water sampling locations.

For each medium, constituents present in at least 5 percent (1 in 20) of the samples were selected as chemicals of interest (USEPA, 1989). Essential nutrients such as sodium, potassium, and calcium were excluded as chemicals of interest (USEPA, 1989).

For the purpose of data presentation, on-site areas include both the fenced portion of the site and the active scrapyard area that lie within the property boundary line shown on Figure 2-1. Off-site sampling locations (including surface soil locations north of the property, and sediment and surface water locations in the storm water drainage system and Cobleskill Creek) are those outside of the property boundary.

5.2.1 Surface Soil

Surface soil samples were collected from sixty-six on- and off-site locations. Surface soil samples collected in May 1993 from on-site test pit locations S-1 through S-35 were tested for PCBs, SVOCs, and inorganics. Twenty-one additional on-site surface soil samples were collected throughout the active scrapyard area between August and September 1993 at locations SS-36 through SS-57 for PCB testing. Samples SS-40 through SS-50 were collected off-site outside the northern fence boundary. In September 1994, samples SS-60 and SS-61 were collected from the lower portion of the site and samples SS-62 through SS-68 were collected for PCB analysis from on-site locations outside the fence near the eastern boundary.

PCBs were detected in almost all of the surface soil samples collected. PCB concentrations for the entire site ranged from non-detect to 164 ppm. PCB concentrations in the active scrapyard range from 0.035 ppm to 15 ppm. PCBs were not detected in off-site soils collected outside the northern fence, and concentrations ranged from non-detect to 0.23 ppm at on-site locations outside the fence near the eastern boundary. In addition, to PCBs, 20 SVOCs and 22 inorganics were detected in samples collected from on-site locations.

Chemicals of interest in on-site surface soil and surface soil outside the fence are summarized in Tables 5-1 and 5-2, respectively. Per USEPA (1989) guidance, five SVOCs (phenol, 2-methylphenol, 4-methylphenol, 1,2,4-trichlorobenzene, and acenaphthylene) and two inorganics (thallium and cyanide) were eliminated as chemicals of interest because they were detected in fewer than five percent of the samples.

5.2.2 Surface Water

Unfiltered and filtered on-site surface water samples SW-1S through SW-5S and SW-1SF through SW-5SF were tested for VOCs and SVOCs, PCBs, and inorganics. PCB concentrations ranged from 0.267 ppb to 0.315 ppb in unfiltered samples and from non-detect to 0.074 ppb in filtered samples. VOCs and SVOCs were not detected in surface water during the RI investigations.

Off-site surface water samples included unfiltered samples SW-6S through SW-9S and filtered samples SW-6SF through SW-9SF collected on May 24 and 26, 1993 from the storm water drainage system. These off-site surface water samples were analyzed for PCBs and mercury. PCBs were not detected in any of these samples. Mercury was detected in one filtered sample (SW-6SF) at a concentration of 0.09 ppb. It should be noted that the detected concentration of mercury was equal to the instrument detection limit and there was no mercury detected in the unfiltered sample at the same location.

Chemicals of interest in on-site and off-site surface water are summarized in Tables 5-3 and 5-4, respectively.

5.2.3 Sediment

Sediment samples were collected from thirty-two on-site and twenty-three off-site locations. On-site samples were collected on January 25-28, 1993 from 32 locations (SD-1 through SD-24, SD-27 through SD-37) and were analyzed for PCBs. PCBs were detected in all 32 samples, with concentrations ranging from 0.17 mg/kg to 63 mg/kg. In addition, three samples (SD-35, through SD-37) were collected from the quarry pond outlet for PCB analysis on this date. These samples were considered with on-site samples due to proximity to the site, and they are considered representative of site conditions. Seven on-site sediment samples (SD-3S, SD-5S, SD-14S, SD-16S, SD-18S, SD-24S, SD-36S) were also analyzed for VOCs and SVOCs and inorganics. PCBs, five VOCs, 18 SVOCs, and 21 inorganics were identified in on-site sediment.

Off-site sediment samples from Cobleskill Creek were collected on May 25, 1993 from seven locations (SD-48 through SD-52, SD-54, and SD-56) for analysis of PCBs. PCBs were detected in only one of the ten creek samples (SD-50) at a concentration of 0.18 mg/kg. Off-site sediment samples (SD-38 through SD-47, and SD-55) were collected on May 25-26, 1993 from the storm water drainage system (also known as the unnamed tributary to Cobleskill Creek) for PCB analysis. Two additional off-site sediment samples (WS-CC-1 and WS-CC-2) were collected on November 10, 1992 from the storm water drainage system for PCB analysis.

PCBs were detected in 11 of the 18 storm water drainage system samples at concentrations ranging from non-detect to 8.2 ppm. Four of the storm water drainage system sediment samples were tested for mercury (SD-39, SD-41, SD-43, and SD-44) with detections of 0.02 ppm and 0.03 ppm in sample SD-43 and SD-44D, respectively.

Chemicals of interest for on-site and off-site sediment are summarized in Tables 5-5 and Table 5-6 respectively.

5.2.4 Ground Water

Filtered and unfiltered samples were collected from 12 bedrock monitoring wells and three overburden monitoring wells. Filtered and unfiltered samples were collected from six bedrock monitoring wells (MW-1 through MW-4, MW-6, and MW-7), three overburden monitoring wells (MW-9 through MW-11) during the Phase I RI investigation. Additional filtered and unfiltered samples were collected during September 1994 from bedrock monitoring wells C-11, C-12, C-15, C-16, C-18, and C-19. All ground water samples collected during the Phase I RI investigation and during September 1994 Phase II RI investigation were analyzed for PCBs, VOCs and SVOCs, and inorganics.

In March 1995, bedrock monitoring well C-9 was sampled and C-16 was resampled. Filtered and unfiltered samples collected from C-9 were analyzed for PCBs and metals, while samples collected from C-16 were analyzed only for PCBs. Monitoring well C-9 was re-sampled in April and the samples were analyzed for unfiltered PCBs (Section 2.6.6.2 describes these supplemental sampling activities). PCBs were detected in the unfiltered sample collected from C-16 in September 1994, and in the unfiltered sample collected from C-9 in March 1995. In addition to PCBs, VOCs, five SVOCs, and 22 inorganics were detected during the RI ground-water investigation.

Analytical results for VOCs indicate the presence of 1,2-dichloroethene at 57 ppb, trichloroethene at 93 ppb, and benzene at 7 ppb in the ground-water sample collected from C-18. Benzene (1,000 ppb) was also detected in the ground-water sample collected from C-12, along with toluene (150 ppb), ethylbenzene (360 ppb), and total xylene (880 ppb). A second series of tests were performed on a ground water sample from C-12 to further characterize volatile organic constituents in the ground water at this location. This second test revealed the presence of benzene (810 ppb), n-butyl benzene (32 ppb), ethylbenzene (65 ppb), naphthalene (56 ppb), toluene (95 ppb), 1,2,4-trimethylbenzene (270 ppb), 1,3,5-trimethylbenzene (40 ppb), and total xylenes (720 ppb). Although chloroform was detected in MW-1S and MW-6S, it was also detected in the water sample collected from a municipal water supply used during drilling operations.

Analytical results for SVOCs indicate the presence of diethylphthalate and di-n-butylphthalate at concentrations equal to or below 1 ppb, phenol (24 ppb), naphthalene (89 ppb), and 2-methylnapthalene (16 ppb) were detected exclusively in the ground-water sample collected from C-12.

Chemicals of interest for groundwater are summarized in Table 5-7.

5.2.5 Fish

The detection of PCBs in one sediment sample from Cobleskill Creek led to the sampling and analysis of fish in Cobleskill Creek and the storm water drainage system to assess the presence and/or bioaccumulation of PCBs in fish tissue. Smallmouth bass were the only species of game fish caught. Other species caught such as white sucker and common shiner are not typically sought for human consumption. Therefore, smallmouth bass samples were used to estimate exposure in this assessment. Total PCBs in skin-on smallmouth bass fillets ranged from 0.056 ppm to 0.15 ppm in the three samples collected.

5.2.6 Residential Well Water

Water samples were collected from five residential wells west of the site. Phase I RI samples were collected in July and August of 1993, and Phase II RI samples were collected in September 1994. Samples were tested for PCBs, VOCs and SVOCs, and inorganics. PCBs were not detected in any of the samples.

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The chemicals detected in these wells are summarized in Table 5-8.

5.3 Exposure Assessment

The exposure assessment evaluates the movement of chemicals at the site, identifies the pathways by which human receptors may be potentially exposed, and quantifies potential exposures of interest.

5.3.1 Exposure Setting

As described in Section 1.0 of this report, the M. Wallace and Son, Inc. Scrapyard encompasses an area of approximately 6.6 acres. The site is located at the intersection of Route 10 and West Street in the Village of Cobleskill, Schoharie County, New York. The location of the site is shown on Figure 1-1. The site is bordered by a high school athletic field to the north, several apartment buildings to the east, Route 10 to the south, and West Street to the west. For purposes of the RA, the Wallace Site can be separated into two distinct areas as follows:

- The active scrapyard area (including the area south of Route 10) consisting of a concrete and metal building, a wood-frame barn, and scrap storage bins and piles; and

- The fenced portion of the site, including the area formerly used for scrap metal stockpiles, an "electrical equipment gut area" where electrical equipment was dismantled, a quarry pond formed in a former limestone quarry, and a building that houses the quarry pond water treatment system.

This distinction between on-site areas is necessary for exposure assessment purposes because the active scrapyard area is accessible to the public, whereas access to the fenced portion of the site is limited primarily to water treatment system workers.

5.3.2 Environmental Fate and Transport

Chemicals are transported and transformed in the environment by many mechanisms. Chemical fate in soils may include biodegradation, abiotic degradation, soil adsorption and mobility, bioconcentration in terrestrial organisms, and volatilization. Chemical fate in surface water may include hydrolysis, photolysis, biodegradation, sediment adsorption, and bioconcentration in aquatic organisms. Atmospheric fate may include direct photolysis, reaction with hydroxyl radical or ozone, adsorption to particulate matter, and deposition. Chemical persistence and mobility in the environment depends on a combination of site-specific factors such as geologic and hydrologic conditions, vegetative cover, and pavement; environmental factors such as meteorological conditions; and chemical-specific factors such as volatility, biodegrability, and water solubility.

5.3.2.1 General Chemical Fate and Transport

VOCs generally are water soluble, and have a low affinity for soil organic matter. As a result, VOCs are mobile in the environment, and are subject to biodegradation in soil and water, volatilization from soil and water, and migration downward through the soil profile with infiltrating precipitation (Howard, 1989). SVOCs typically have lower water solubilities and adsorb to soil particles and organic matter. SVOCs may also be subject to volatilization from soil and water, but to a much lesser extent than VOCs.

PCBs have low water solubilities and adhere to organic matter in soil and sediment. As a result, PCBs are generally persistent in the environment (ATSDR, 1993). In surface and ground water, adsorption onto sediment and other organic matter is the controlling factor in the transport of PCBs. PCBs are thermodynamically very stable compounds, and environmental and metabolic degradation is slow relative to other compounds (Erickson, 1986). PCBs have been shown to undergo some volatilization, but volatilization is limited by adsorption to soil.

Metals are most commonly found in solid form and tend to be far less mobile than VOCs, SVOCs, and PCBs. Metals do not degrade, but are subject to environmental cycling (Adriano, 1986; Alloway, 1990). Depending on localized soil conditions, metals can form soluble species that can be transported within the soil profile; however, the insoluble species tend to predominate (Adriano, 1986; Alloway, 1990).

5.3.2.2 Site-Specific Fate and Transport

Surface soils located in the active scrapyard area are partially covered with loose gravel, and are bare in some places. No significant vegetation covers surface soils in the active scrapyard area. SVOCs and PCBs may volatilize from surface soil to some degree, however, soils in the fenced portion of the site are covered by grasses and other vegetation, which may serve to inhibit volatilization. Infiltration of precipitation through soil is likely, and may cause constituents to be transported down to ground water. Once in ground water, constituents may migrate with ground water flow. Data presented in Table 5-7 indicate that PCBs, VOCs, SVOCs, and inorganics have been detected in on-site ground water.

Constituents in surface soils may also undergo biodegradation or abiotic degradation, such as photolysis or hydrolysis. Particulate phase chemicals may be transported by wind uplift. Additionally, site activities such as vehicle movement over dry soil may facilitate dispersion of airborne dust particles. Vegetation and heavy gravel may serve to inhibit airborne dust dispersion.

Transport of soils via storm runoff and erosion may result in chemical release to on-site surface water. PCBs and metals have been detected in the quarry pond, and are likely to adsorb to sediments. In accordance with the NYSDEC's requirements, the water treatment system is maintained to prevent discharge of surface water containing PCBs in excess of 65 parts per trillion into the downstream storm water drainage system.

5.3.3 Exposure Pathways

A complete exposure pathway consists of a chemical release from a source, an exposure point where human contact may occur, and a route of exposure (oral, dermal, or inhalation) through which a chemical may be taken into the body. The likelihood of human exposure to constituents which have been released into the environment is highly variable, and depends on site-specific factors such as the location of the site, nearby populations and sensitive sub-populations, current and reasonably foreseeable future site uses, relative attractiveness of the site, and other factors which affect the use of the site. A baseline RA conducted in accordance with USEPA Risk Assessment Guidance (USEPA, 1989) considers current exposure scenarios, and hypothetical exposures which may occur according to foreseeable future site uses.

Exposure scenarios are developed for each combination of receptor and exposure pathway to describe patterns of exposure on and off-site. Exposure scenarios presented in this section of the RA were developed using the most likely receptor groups and conservative exposure factors chosen based on site-specific information and USEPA recommended default values.

Chemical constituents have been detected in on-site and off-site soils, surface water, sediment, ground water at the M. Wallace Site and ground water in nearby residential wells. The receptors deemed most likely exposed to these media and the associated routes of exposure evaluated in this RA are:

1. Oral, dermal, and inhalation exposure to surface soils in the active scrapyard area by on-site scrapyard operators;

2. Oral, dermal, and inhalation exposure to surface soils from both the active scrapyard area and the fenced portion of the site by quarry pond water treatment system workers;

3. Dermal exposure to on-site (quarry pond) surface water and sediments by quarry pond water treatment system workers;

4. Oral, dermal, and inhalation exposure to on-site surface soil by trespassers;

5. Oral and dermal exposure to on-site (quarry pond and drainage ditch) surface water and sediments by trespassers;

6. Dermal exposure to drainage ditch water and sediments by off-site recreationists;

7. Oral and dermal exposure to sediments in Cobleskill Creek by off-site recreationists;

8. Ingestion of fish by off-site recreationists;

9. Oral, dermal, and inhalation exposure to off-site surface soils by off-site residents; and

10. Oral, dermal, and inhalation exposure to ground water during hypothetical future use by residents.

5.3.3.1 Current Hypothetical On-Site Receptors

Current Hypothetical On-Site Workers

On-site work activities are limited primarily to the active scrapyard area. On-site workers who operate the scrapyard work in this area. Routine scrapyard operations do not require workers to visit the upper portion of the site, which is surrounded by a chain-link fence. Therefore workers who operate the scrapyard do not have open access to the fenced portion of the site or the quarry pond.

The fenced portion of the site is currently inactive. The only regular visitors to this area of the site are the on-site workers who maintain the quarry pond water treatment system. The water treatment system is primarily a self-maintaining system, and requires only infrequent maintenance visits. Therefore, two separate on-site workers will be evaluated in the RA: 1) an on-site scrapyard operator who regularly works in the active scrapyard area; and 2) an on-site quarry pond water treatment system worker who works primarily in the water treatment system building, and also has access to the fenced portion of the site.

On-site workers are assumed to be 70 kilogram adults who work on-site eight hours a day, for 25 years. These are USEPA recommended default values for a commercial/industrial worker (USEPA, 1991a). The on-site scrapyard operator is assumed to work in the active scrapyard area on a daily basis (250 days per year), and the quarry pond water treatment system worker is assumed to work on-site two days per month.

The on-site scrapyard operator and the on-site quarry pond water treatment system worker are assumed to be exposed to surface soils via incidental ingestion, dermal contact, and inhalation. On-site workers are assumed to be dressed in a manner that facilitates moderate physical activity, and are assumed to be exposed to surface soils through their hands, forearms, and face.

Although the quarry pond water treatment system workers are obliged to follow a health and safety plan and wear gloves when working on-site, the worker is assumed to be exposed to surface water and sediments in the quarry pond via dermal contact in this assessment as a worse-case scenario. The quarry pond water treatment system worker may be exposed to on-site surface water and sediment during activities such as repairing or replacing a pump or pipeline, or bailing activities at the edge of the quarry, and is assumed to be exposed through the hands and forearms. Workers involved in these activities are likely to practice safety procedures, and would probably avoid surface water/sediment contact by mouth. Therefore, incidental ingestion of surface water and sediment by quarry pond water treatment system workers will not be evaluated in this RA.

The exposure factors for on-site workers are given in Tables 5-9 and 5-10.

Current Hypothetical On-Site Trespassers

Young trespassers may be attracted to the site by the presence of the quarry pond, exposed pipe, and other features. Although most of the site is surrounded by an eight foot chain link fence, nearby residents or students from nearby schools could climb the fence and trespass on the property. Therefore, an older child (seven to eighteen years of age) who trespasses on-site is evaluated in the quantitative RA. The site would not likely attract older trespassers because access is restricted, and the site is not particularly attractive for recreational activities. Children younger than seven years of age are not likely to trespass on the site because access would be very difficult for a small child.

The trespasser is assumed to be a 44 kilogram older child/adolescent who trespasses on-site one day per week during the months of June, July, and August, for a total of 12 days per year. This exposure frequency assumes that the trespasser will climb the fence and play on-site and swim in the quarry pond during only the summer months.

The trespasser is assumed to be exposed to surface soils via incidental ingestion, dermal contact, and inhalation. Dermal exposure to soil through the face, hands, arms, legs, and feet is considered. The trespasser is also assumed to be exposed to on-site surface water and sediments via incidental ingestion and dermal contact while swimming in the quarry pond and playing in the drainage ditch. Dermal exposure to surface water is assumed to occur via the whole body, while exposure to sediment is assumed to occur through the feet, lower legs, hands, and forearms.

The exposure factors used to assess risks for trespassers are given in Table 5-11.

5.3.3.2 Current Hypothetical Off-Site Receptors

Current Hypothetical Off-Site Recreationists

Cobleskill Creek is classified as a Class C waterway suitable for fishing, canoeing, and other recreational activities. Therefore, an off-site recreationist who visits Cobleskill Creek is evaluated quantitatively in the RA.

The hypothetical off-site recreationist is assumed to be an 44 kilogram older child (USEPA, 1990), age seven to eighteen, who visits Cobleskill Creek one day per week during the months of May through September, for a total of 20 days per year. These receptors are assumed to be exposed to Cobleskill Creek sediments via incidental ingestion and dermal contact while fishing, wading, and/or canoeing. Dermal contact through the feet, lower legs, hands, and forearms is assumed. Off-site recreationists may also be exposed to constituents which have accumulated in fish tissue via fish consumption.

Site-related constituents were detected in the storm water drainage system that discharges to Cobleskill Creek. It is possible that recreationists may contact the drainage system inadvertently while visiting the creek. However, it is not likely that the drainage system would be used for recreational purposes because the ditch flows through commercial areas, and Cobleskill Creek is located nearby. Therefore, the recreationist is assumed to be exposed to the drainage system two days per month for the months of May through September for a total of 10 days per year. Recreationists who contact the drainage system are assumed to be inadvertently exposed to surface water and sediments through the hands and forearms.

Table 5-12 summarizes the exposure factors used to quantify risks for off-site recreationists.

Current Hypothetical Off-Site Residents

Site-related constituents were detected in off-site soils along the northern edge of the site and on-site soils located outside the fence along the eastern edge of the site. The receptors with the highest exposure to off-site soils are nearby residents. Residential exposure is assumed to encompass the exposure potentially incurred by a student who plays in the athletic field. Exposure is assumed to occur via ingestion, dermal contact, and inhalation.

Per USEPA (1991) guidance, residential exposure is assessed over a total period of 30 years, with 6 years of exposure evaluated as a young child (age 1-6 years), and 24 years of exposure evaluated as an adult. Exposure is assumed to occur five days per week for six months of the year as a child less than six years of age, and two days per week for five months of the year as an older child and an adult. The residential soil exposure frequencies and durations are likely soil exposure scenarios based on Hawley (1985). Twenty-five percent of the total skin surface area is assumed to be available for dermal contact (USEPA, 1992).

Table 5-13 summarizes exposure factors used to evaluate risks for off-site residents.

Current Hypothetical Ground Water Use

On-site ground water is not currently used as a potable water source. As discussed in Section 5.2.6, sampling results from the five nearest residential wells (located west of the site) indicate that five organic compounds were detected in off-site residential wells. However, these off-site wells are not located downgradient of the site, and there is some question as to the source of these compounds. Furthermore, these compounds were detected in only one of five samples. Based on these considerations, constituents in the nearby residential wells are not likely to be site-related, and hence, are not evaluated as such in this assessment.

5.3.3.3 Hypothetical Future Exposure

The M. Wallace and Son Scrapyard, Inc. is currently an active salvage business, and is likely to remain so in the foreseeable future. The current receptors evaluated in this RA (i.e. on-site workers, trespassers, recreationists, and off-site residents), represent the receptor groups most likely to contact site-impacted media. Furthermore, concentrations of chemical constituents in soils, surface water, sediment, and ground water are likely to be reduced over time through processes such as biodegradation, abiotic degradation, leaching, and erosion loss. Therefore, risks to the current on-site workers, trespassers, recreationists, and off-site residents who are evaluated in combination with current constituent concentrations represent the highest exposure that is likely to occur at or near the site.

Hypothetical Future Ground-Water Use

The general direction of ground-water flow is toward the quarry pond due to pumping action at the quarry pond water treatment pumphouse. However, due to the complicated hydrogeologic conditions, the potential for ground water migration exists. Residences to the east of the site are supplied by public water. The public water supply does not extend west of West Street or south of SUNY Cobleskill, and businesses and residences to the west of West Street and south of SUNY Cobleskill are supplied by private water supply wells.

Although on-site ground water is not currently used as a potable water source and is not likely to be used as such in the near future (considering the extent of the public water supply), future hypothetical potable use of ground water by a resident is evaluated in this RA as a worst-case scenario. Although concentrations in ground water are likely to be reduced over time, current ground water concentrations are used in this scenario to provide a conservative estimate of risks.

Residents are assumed to be exposed via ingestion, dermal contact while bathing, and inhalation during showering. Per USEPA (1991a) guidance, the hypothetical resident is assumed to be exposed to ground water 350 days per year, over a period of thirty years. The resident is assumed to drink two liters of water per day, and to be exposed dermally to ground water through the whole body while showering.

A summary of the hypothetical future resident ground-water exposure scenario is given in Table 5-14.

5.3.4 Exposure Point Concentrations

An exposure point concentration is the concentration of a chemical of interest at a location where human exposure may occur. This value can be calculated on the basis of existing analytical data or through the use of predictive modeling. The exposure point concentrations used in this assessment are calculated based on the available analytical data (Section 3 of this report) and conservative modelling techniques for exposure scenarios involving soils, sediments, surface water and ground water.

USEPA places emphasis on determining "Reasonable Maximum Exposure" (RME) and considers the upper 95 percent confidence limit on the arithmetic mean concentration (CL) to be appropriate for determining RME. The upper 95 percent CL for each chemical of interest in each medium was calculated as follows:

$$CL = mean + (t \times (s \,/\, n^{1/2}))$$

Where:

mean = arithmetic mean concentration;
t = t-value from the Student's distribution with n-1 degrees of freedom (alpha = 0.025 in each tail);
S = standard deviation; and
n = number of samples used in the calculation

Arithmetic mean concentrations were determined by averaging all detected concentrations along with one-half of the sample quantitation limit (SQL) for samples in which the compound was not detected. For duplicate samples, the highest detected concentration (or one-half the higher SQL for non-detects) was used in calculating the arithmetic mean for a given chemical. In accordance with USEPA (1989) guidance, the unusually high SQLs for SVOCs in surface soil samples SS-6, SS-11, SS-19 through SS-21, on-site sediment sample SS-16S, and residential CONFIDENTIAL ere left out of the calculations for the arithmetic mean.

Per USEPA (1989) guidance, the RME concentration is either the upper 95 percent CL or the maximum observed concentration, whichever value is lower. If the number of samples collected for a particular medium is small (i.e. off-site sediment samples tested for mercury), or sample quantitation limits are high (i.e. some surface soil samples), the upper 95 percent CL may be greater than the maximum detected concentration. Exposure point concentrations for constituents detected in surface soil, surface water, sediment, and ground water are discussed below.

5.3.4.1 Surface Soil

Exposure point concentrations were developed separately for soils in the active scrapyard area, soils in the entire site, and soils outside the fence. Exposure point concentrations for chemicals of interest in on-site surface soil and surface soils outside the fence are provided in Tables 5-15 and 5-16.

5.3.4.2 Surface Water

Exposure point concentrations were developed for on- and off-site surface water separately. Exposure point concentrations for on-site surface water are based on samples collected from the quarry pond, and exposure point concentrations for off-site surface water are based on samples collected from the drainage ditch.

Filtered samples reflect dissolved-phase constituents only, while unfiltered samples reflect both dissolved- and particulate-phase constituents. Dissolved-phase concentrations in filtered samples are more likely representative of concentrations to which people swimming and fishing in surface water would be exposed. However, in response to conservative requirements of NYSDEC/NYSDOH, unfiltered samples are used to develop surface water exposure point concentrations in this assessment.

On-site and off-site surface water exposure point concentrations are given in Tables 5-17 and 5-18.

5.3.4.3 Sediment

Exposure point concentrations were developed for on- and off-site sediment separately. Exposure point concentrations for on-site sediment were calculated based on samples collected from the quarry pond and the quarry pond outlet channel. Off-site sediment exposure point concentrations for drainage ditch and Cobleskill Creek sediments were calculated separately. It is unlikely that a recreationist swimming, fishing, or wading would contact sediments at a depth of greater than six inches. Therefore, samples collected from a depth of 0 to 6 inches were used to develop exposure point concentrations.

Exposure point concentrations for chemicals of interest in on- and off-site surface sediments are provided in Tables 5-19 and 5-20, respectively.

5.3.4.4 Ground Water

Both overburden and bedrock monitoring wells were installed on-site. However, due to the fractured nature of the bedrock, and the presence of fissures and voids detected during drilling operations, migration of chemicals from the overburden ground water into the bedrock aquifer seems likely. For this reason, overburden and bedrock ground-water samples were considered together in the calculations of the ground-water exposure point concentration. It should be noted, however, that the overburden is not sufficiently productive to support residential wells. Bedrock well concentrations are likely more representative of hypothetical drinking water concentrations.

As with surface water, unfiltered samples are used to develop exposure point concentrations. Although dissolved-phase concentrations are more likely representative of exposure for someone drinking or bathing in ground water, unfiltered samples are used at the request of regulatory agencies to provide more conservative exposure point concentrations.

Table 5-21 summarizes the exposure point concentrations for compounds detected in ground water, and the samples used to develop them.

5.3.4.5 Fish

Total PCBs in skin-on smallmouth bass fillets ranged from 0.056 ppm to 0.15 ppm in the three samples collected. Table 5-16 summarizes smallmouth bass analytical data.

5.3.4.6 Residential Well Water

As discussed in Sections 5.2.6 and 5.3.3.2, five organic and several inorganic compounds were detected in off-site residential wells. However, due to the location of the wells and the flow of ground water, there is some question as to the source of these compounds. Therefore, risks associated with the use of off-site residential well water will not be evaluated, and residential well water RME concentrations are not calculated. A summary of residential well water analytical data is provided in Table 5-22.

5.3.4.7 Air

Exposure point concentrations for vapor- and particulate-phase compounds released from soils are estimated according to USEPA (1991b). A detailed description of this modeling technique is given in Volume V (Phase II RI Appendix H) of this report.

Exposure point concentrations for VOCs released from ground water during showering under the hypothetical resident potable use of ground-water scenario, were modeled as discussed in Volume V (Phase II RI Appendix I) of this report.

5.3.5 Human Intakes

Human intakes over a period of chronic (long-term) exposure are calculated for each combination of chemical, receptor, and pathway of exposure. Intakes are expressed in units of mg/kg-day, and are calculated from the exposure point concentration for each chemical using variables which account for contact rates, exposure frequency, exposure duration, body weights, absorption factors, and averaging time. Variables (exposure factors) used in this assessment are based on USEPA recommended default values (USEPA, 1990, 1991a, 1991b, 1992) and site-specific values. Sections 5.3.3.1 through 5.3.3.3 discuss body weights, exposure frequencies, exposure durations and skin surface area for each receptor. Other exposure factors which are specific to routes of exposure (e.g., incidental soil ingestion rate, showering time, etc.) are given in Tables 5-9 through 5-14.

5.3.5.1 Incidental Ingestion of Soils and Sediments

Intake via surface soil and sediment ingestion is quantified using the following equation recommended by USEPA (1989):

Where:

$$Intake\ (mg/kg\text{-}day) = \frac{CS \times CF \times IR \times EF \times ED}{BW \times AT}$$

CS = chemical concentration in soil (mg/kg);
CF = conversion factor (10^{-6} mg/kg);
IR = ingestion rate (mg/day);
EF = exposure frequency (days/year);
ED = exposure duration (years);
BW = body weight (kg); and
AT = averaging time set equal to lifespan for carcinogens, and exposure duration for non-carcinogens (days).

For residential receptors, intake is calculated on the basis of both child and adult receptors to account for differences in exposure patterns, where:

$$Intake = \frac{CS \times CF}{AT} \times \left(\frac{IRc \times EDc \times EFc}{BWc} + \frac{IRa \times EDa \times EFa}{BWa}\right)$$

Where:

IRa and IRc = adult and child ingestion rates, respectively;
EDa and EDc = adult and child exposure durations;
EFc and EFa = adult and child exposure frequency;
BWa and BWc = adult and child body weights; and
Other variables are as defined previously.

A summary of the variables used in this calculation are given in Tables 5-9 through 5-13.

5.3.5.2 Dermal Contact with Soil and Sediment

The quantification of dermal absorption is a controversial subject within the scientific community and USEPA. Within USEPA, there are inter-regional policies on how dermal exposure should be quantified. Since this assessment is being conducted in accordance with USEPA guidance, and the site is located within USEPA Region II, we have followed USEPA Region II policy regarding the quantification of dermal exposure. USEPA Region II evaluates only three compounds for dermal exposure to surface soil and sediment, and these are cadmium, dioxin, and PCBs (USEPA, 1994c). Of these chemicals, only cadmium and PCBs have been observed in soils and sediments associated with the site.

Dermal exposure to cadmium and PCBs in soils and sediments were calculated as follows:

$$Intake\ (mg/kg\text{-}day) = \frac{CS \times SA \times AF \times ABS \times CF \times EF \times ED}{BW \times AT}$$

Where:

CS = concentration in soil or sediment (mg/kg);
SA = skin surface area contacted (cm^2/event);
AF = soil-to-skin adherence factor (mg/cm^2);
ABS = absorption factor (chemical-specific);
CF = conversion factor (10^{-6} kg/mg);
EF = exposure frequency (events/year);
ED = exposure duration (years);
BW = body weight (kg); and
AT = averaging time set equal to lifespan for carcinogens, and exposure duration for non-carcinogens (days).

Intakes for residential receptors were calculated on the basis of both child and adult values in a manner similar to that discussed for ingestion (Section 5.3.5.1).

A summary of the values used in this calculation is provided in Tables 5-9 through 5-13.

5.3.5.3 Inhalation Exposure to Vapor- and Particulate-Phase Compounds

As previously discussed, all four receptor groups may be exposed to vapor- and particulate-phase chemicals originating from surface soil. Off-site residents may be exposed to vapors originating from ground water while showering.

Toxicity criteria used to evaluate inhalation exposure to vapors and dusts (i.e. RfCs and unit risk factors) are reported as concentration in air (i.e. mg/m^3). Conversion of these concentrations to a corresponding inhaled dose is possible, but is not recommended (USEPA, 1994a). For this reason, intake for dust and vapor inhalation exposure is not calculated. Instead, dust and vapor air concentrations are multiplied by an exposure fraction which represents the time to which each receptor would be exposed.

A summary of the values used in this calculation are provided in Tables 5-9 through 5-14.

5.3.5.4 Ingestion of Surface Water

As previously discussed, hypothetical ingestion of surface water by trespassers and off-site recreationists while swimming is evaluated in this assessment. Surface water ingestion is quantified using the following equation developed by USEPA (1989):

$$Intake\ (mg/kg\text{-}day) = \frac{CW \times CR \times ET \times EF \times ED}{BW \times AT}$$

Where:

CW = chemical concentration in water (mg/l);
CR = contact rate (l/hour);
ET = exposure time (hours);
EF = exposure frequency (events/year);
ED = exposure duration (years);
BW = body weight (kg); and
AT = averaging time, set equal to lifespan for carcinogens and exposure duration for non-carcinogens (days).

A summary of the values used in this calculation are provided in Table 5-11.

5.3.5.5 Ingestion of Ground Water

Hypothetical future ingestion of ground water by residents is evaluated in this assessment. Ground water ingestion is quantified using the following equation developed by USEPA (1989):

$$Intake\ (mg/kg\text{-}day) = \frac{CW \times IR \times EF \times ED}{BW \times AT}$$

Where:

CW = concentration in water (mg/l);
IR = ingestion rate (l/day);
EF = exposure frequency (days/year);
ED = exposure duration (years);
BW = body weight (kg); and
AT = averaging time set equal to lifespan for carcinogens, and exposure duration for non-carcinogens (days).

A summary of the values used in this calculation is provided in Table 5-14.

5.3.5.6 Dermal Contact with Surface and Ground Water

As previously discussed, dermal contact with surface water and ground water is evaluated in this assessment. Trespassers and recreationists are assumed to contact surface water while swimming, and residents are assumed to contact ground water while bathing. Dermal intake is quantified using the following equation developed by USEPA (1992):

$$Intake\ (mg/kg\text{-}day) = \frac{DA \times SA \times EF \times ED}{BW \times AT}$$

Where:

DA = dermally absorbed dose per event (mg/cm^2-event);
SA = skin surface area (cm^2);
EF = exposure frequency (events/year);
ED = exposure duration (years);
BW = body weight (kg); and
AT = averaging time, set equal to lifespan for carcinogens, and exposure duration for non-carcinogens (days).

Dermal intake is calculated using a value called the dermally absorbed dose per event. The dermally absorbed dose per event (DA) was calculated separately for each chemical of interest in surface water and ground water. A detailed discussion of the approach used to derive the DA values is provided in

Volume V (Phase II RI Appendix J) of this report. As discussed in Appendix J, inorganics do not exhibit octanol-water partitioning, therefore DA values are not calculated for inorganics. As a result, recreationist exposure to off-site surface water cannot be evaluated quantitatively because mercury is the only constituent of interest in off-site surface water. Skin surface areas used in this assessment are estimations provided by USEPA (1992).

A summary of values for all exposure variables used in this calculation is provided in Tables 5-10, 5-11, 5-12, and 5-14.

5.3.5.7 Ingestion of Fish

PCB concentrations in smallmouth bass fillets ranged from 0.056 ppm to 0.15 ppm. These concentrations are well below the FDA limit of 2 ppm for PCBs in fish and shellfish. Based on these considerations, ingestion of fish caught in Cobleskill Creek is not of concern with respect to human health.

5.4 Toxicity Assessment

The purpose of toxicity assessment is two-fold. Toxicity assessments identify the potential health effects associated with route-specific exposure to a given chemical by reviewing relevant human and animal studies. If sufficient data are available these effects are quantified following analysis of dose-response information. USEPA toxicity assessments and the resultant toxicity criteria are used in the human health RA to evaluate both the carcinogenic and non-carcinogenic risks associated with each chemical of interest and route of exposure.

USEPA toxicity criteria used in this assessment include: chronic reference doses (RfDs) (non-carcinogenic effects, oral exposure); chronic reference concentrations (RfCs) (non-carcinogenic effects, inhalation exposure); carcinogenic slope factors (carcinogenic effects, oral exposure); and carcinogenic unit risk factors (carcinogenic effects, inhalation exposure).

The chronic RfD or RfC is ideally based on studies where either animal or human populations were exposed to a given chemical by a given route of exposure for the major portion of the lifespan (referred to as a chronic study). RfDs are reported as doses in milligrams of chemical per kilogram of body weight per day (mg/kg-day). RfCs are reported as concentrations in milligrams of chemical per cubic meter of air (mg/m^3). RfDs and RfCs represent thresholds for toxicity. They are derived such that human lifetime exposure to a given chemical at a dose at or below the RfD or RfC should not result in adverse health effects, even for the most sensitive members of the population. The RfDs are used with the non-carcinogen exposure doses calculated as described in Sections 5.3.5.1 through 5.3.5.7. The inhalation RfCs are used directly with air concentrations to estimate inhalation non-cancer risks.

Carcinogenic slope factors and unit risk factors are route-specific values derived only for chemicals that have been shown to cause an increased incidence of tumors in either human or animal studies. Slope factors and unit risk factors are upper 95 percent confidence limits on lifetime risk, and are determined by low-dose extrapolation of data from human or animal studies. Slope factors are reported as risk per dose (mg/kg-day)$^{-1}$. Inhalation unit risk factors are reported in units of risk per concentration (ug/m^3)$^{-1}$. The SFs are used with the non-carcinogen exposure doses calculated as described in Sections 5.3.5.1 through 5.3.5.7. The inhalation URFs are used directly with air concentrations to estimate inhalation cancer risks.

The available USEPA RfDs, RfCs, unit risks, and slope factors used in this assessment are presented in Tables 5-24 and 5-25.

Due to the lack of scientific studies to quantify dermal toxicity and carcinogenic potential for a vast majority of the chemicals of interest, no toxicity criteria for dermal exposure are currently available. In the absence of dermal reference toxicity criteria, USEPA (1989) suggests that in some cases it may be possible to modify an oral reference toxicity value (RfD or slope factor) to reflect dermal absorption. This requires that both oral and dermal exposure result in the same toxic endpoints, and that quantitative estimates for both oral and dermal absorption of the chemical are available. This information is generally not available for most constituents. Per common practice, this assessment uses unmodified oral toxicity values to evaluate potential risks associated with dermal exposure.

As discussed above and in Section 5.3.5.3, inhalation exposure doses are not calculated in this assessment. Inhalation exposure is evaluated in this assessment by comparing air concentrations directly to inhalation reference toxicity values (RfCs and URFs). In the absence of inhalation reference toxicity values, RfCs can be converted from units of mg/kg-day to mg/m^3, and URFs can be converted from (mg/kg-day)$^{-1}$ to (ug/m^3)$^{-1}$ by making assumptions about body weight and inhalation rate. However, USEPA does not recommend this approach. Nevertheless, because inhalation toxicity values are currently not available for PCBs, the presence of PCBs is of significant concern in this investigation, and because it is common practice to convert the oral slope factor for PCBs for use in inhalation risk estimation, the oral slope factor is converted to an inhalation unit risk factor in this assessment.

5.5 Risk Characterization

5.5.1 Risk Summary

The estimated exposure doses and potential carcinogenic and non-carcinogenic risks associated with exposure to chemicals in surface soil, surface water, sediment, and groundwater are presented in Volume V (Phase II RI Appendix D) of this report.

5.5.1.1 Non-carcinogenic Risk

The hazard index approach is used to characterize the overall potential for non-carcinogenic effects associated with exposure to multiple chemicals. This approach assumes that subthreshold chronic exposures to multiple chemicals are additive. The hazard index is calculated as follows:

$$HI = E_1 Rf_1 + E_2 Rf_2 + \ldots . E_i \, Rf_i$$

Where:

E_i = Exposure dose or concentration for the ith chemical
Rf_i = RfD of RfC for the ith chemical
E/Rf_i = Hazard Quotient
HI = Hazard Index.

The calculation of a hazard index in excess of 1.0 indicates the potential for adverse effects on human health. A summary of hazard indices calculated in this assessment is presented in Table 5-26. As Table 5-26 indicates, the hazard indices for all current hypothetical receptors are less than 1.0. The hazard index for hypothetical future exposure to ground water is 2E+01. This risk is exclusively due to the ingestion of metals, particularly antimony, arsenic, barium, cadmium, chromium, and manganese. The hazard index would be less than 1.0 if these metals were eliminated from this assessment.

5.5.1.2 Carcinogenic Risk

Carcinogenic risk is expressed as a probability of developing cancer as a result of lifetime exposure. For a given chemical and route of exposure, carcinogenic risk is calculated as follows:

Risk = exposure concentration x URF, or
Risk = exposure intake x SF

Where:

SF = slope factor $(mg/kg\text{-}day)^{-1}$
URF = unit risk factor $(ug/m^3)^{-1}$

For exposure to multiple carcinogens, USEPA assumes that the total risk is equivalent to the sum of individual risks. USEPA's acceptable upper bound limit for total carcinogenic risk is one in one million (10^{-6}) to less than one in ten thousand (10^{-4}) (USEPA, 1991c). Risks within or below this range are considered to be de minimis.

A summary of the excess lifetime cancer risks for receptor populations is presented in Table 5-27. As Table 5-27 indicates, the excess lifetime cancer risks for all current hypothetical receptors are within or below the USEPA's acceptable cancer risk range of 10^{-4} to 10^{-6}. The excess lifetime cancer risk for the off-site resident hypothetically exposed to surface soil is 3×10^{-7}. The excess lifetime cancer risk for the off-site recreationist is 8×10^{-8}.

The excess lifetime cancer risk for the on-site scrapyard operator is 6×10^{-5}. This is due exclusively to the presence of PCBs in on-site surface soil.

The excess lifetime cancer risk for the on-site quarry pond water treatment system worker is 2×10^{-5}. This is due primarily to the presence of PCBs in surface soil and quarry pond sediments. Arsenic, beryllium, benzo(a)pyrene, and benzo(g,h,i) perylene also contribute to risks via incidental ingestion of soil.

The excess lifetime cancer risk for the on-site trespasser is 1×10^{-5}. This is due primarily to the presence of PCBs in on-site surface soil, quarry pond water, and quarry pond and drainage ditch sediments. Benzo(a)pyrene and arsenic in on-site surface soil and arsenic and beryllium in quarry pond water also contribute significantly to ingestion risks.

The only excess lifetime cancer risk that exceeds USEPA's range of acceptable cancer risks is the risk to hypothetical future residents due to potable use of on-site ground water. The resident excess lifetime cancer risk is due primarily to the presence of PCBs, arsenic, antimony, and beryllium in ground water. Benzene and chloroform also contribute to the off-site resident ingestion and inhalation exposure cancer risk.

5.5.2 Uncertainty

There are several sources of uncertainty in the risk calculation. These include uncertainties associated with exposure scenarios, exposure point concentrations, and reference toxicity criteria.

This RA has been prepared following a conservative approach in accordance with the most recent USEPA guidance. The exposure scenarios used in this assessment are "standard" scenarios commonly used in baseline Superfund RAs. Although scenarios used here were tailored to the extent possible to reflect site-specific conditions, actual exposures could deviate from those calculated due to differences in exposure frequencies, contact rates, absorption efficiencies (dermal exposure), exposure duration, body weight, and lifespan. Most notably, estimates of dermal exposure should be viewed as tentative at best.

Another issue concerning uncertainty associated with ground water risk is related to the use of unfiltered samples to develop ground water exposure point concentrations. Regulatory agencies require the use of unfiltered samples in the estimation of risks to account for the possibility that ground water users may not filter water prior to drinking it. However, many ground water users do filter their water before drinking it, and furthermore, particulate-phase compounds present in unfiltered ground water are likely to settle out and are not likely to move off-site with ground water. Therefore, the use of unfiltered samples likely overestimates risks, particularly for inorganics.

The exposure point concentrations for soil, sediment, surface water, and ground water used in this assessment are upper 95 percent confidence limits derived from analytical sampling data. The ground-water exposure point concentrations are the maximum detected concentration. Although the data used have met QA standards, they provide information on chemicals present at the site at a specific point in time. Concentrations to which a receptor may be exposed over a lifetime could vary from these values. Concentrations of chemicals in various media are likely to be reduced over time as they are degraded, diluted, and are transported elsewhere.

The reference toxicity criteria used in this assessment are the most current values approved by USEPA. Reference toxicity criteria are not available for all of the chemicals to which one could be exposed at the site, nor for all the routes of exposure. In particular, the use of oral toxicity criteria in the estimation of dermal toxicity, and the conversion of oral toxicity criteria to inhalation toxicity criteria for PCBs should be viewed with a great deal of uncertainty.

At each step in the RA process, conservative estimates are made which likely overestimate the potential for exposure. The compounding effect of using conservative exposure scenarios, exposure point concentrations, and toxicity values is that the resulting risk estimate is highly conservative. As a result, risks associated with this site are unlikely to be higher, and are probably lower than the risks presented in this assessment.

5.6 Conclusions

The baseline human health RA was performed to evaluate the potential health risks posed by constituents detected during the RI conducted at the M. Wallace and Son, Inc. Scrapyard in Cobleskill, New York. The purpose of the RA is to assess potential risks to human health based on current site information.

Chemicals of interest were identified in on- site surface soil, surface soil outside the fence, on- and off-site surface water, on-site and off-site sediments, fish from Cobleskill Creek, and ground water beneath the site. Off-site surface water and off-site sediments were considered separately for the drainage ditch and Cobleskill Creek. PCBs, several SVOCs, and metals were identified as chemicals of interest in on-site surface soil. PCBs and several VOCs and SVOCs and metals were identified as chemicals of interest in on-site quarry pond water. PCBs, several VOCs and SVOCs and metals were identified as chemicals of interest in quarry pond sediments. Both PCBs and mercury were identified as chemicals of interest in drainage system sediments. PCBs were the only chemical of interest identified for Cobleskill Creek sediments, fish from Cobleskill Creek, and surface soil located outside the fence. PCBs, several VOCs and SVOCs, and metals were identified as chemicals of interest in on-site ground water.

The second component, exposure assessment, is a multi-step process that involves identification of the potential human receptors that might be exposed to site-related constituents, the exposure pathways by which receptors are exposed, and quantification of the magnitude of exposure. A brief discussion of issues pertaining to environmental fate and transport of chemicals on-site is provided as the first step of this process.

The third component, toxicity assessment, identifies the USEPA toxicity criteria that are used to quantify potential impacts on human health. The fourth component, risk characterization, estimates risk associated with each exposure pathway using the information presented in the three previous components of the RA.

Cancer and non-cancer risks estimates are generated and compared to USEPA target risk ranges. The estimated potential cancer risks are referred to as "excess lifetime cancer risks", and the estimated non-cancer risks are referred to as "hazard indices". USEPA considers a hazard index of 1.0 to represent maximum acceptable non-cancer risk. A hazard index of 1.0 or less indicates that risks are not significant. The range of acceptable excess lifetime cancer risk is 1×10^{-4} to 1×10^{-6}. Risks that fall within or below this range are considered to be acceptable. A summary of the risk estimates are shown below:

Receptor	Hazard Index	Excess Lifetime Cancer Risk
On-Site Scrapyard Operator	2E-01	6E-05
On-Site Quarry Pond Water Treatment System Workers	9E-02	2E-05
On-Site Trespasser	2E-01	1E-05
Off-Site Recreationist	8E-04	8E-08
Off-Site Resident (Hypothetical Current Soil Exposure)	1E-03	3E-07
Resident (Hypothetical Future Ground Water Use)	2E+01	1E-03

Risk estimates for all current hypothetical receptor groups are below USEPA's acceptable upper limit for non-carcinogenic risks, and are within USEPA's acceptable target risk range for carcinogenic risk. The principal contributors to these risks are PCBs and metals in on-site surface soil and on-site sediments. These risk estimates suggest that no significant human health risks currently exist at the site.

Risk estimates for hypothetical future ground water use suggest that both cancer and non-cancer risks would be unacceptable if untreated on-site ground water were used as a potable water supply. However, based on current site uses, and the extent of the public water supply, potable use of on-site ground water in its current condition is unlikely.

Section 6

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

6.0 - Remedial Action Objectives

6.1 General

Remedial action objectives (RAOs) are medium-specific goals for protecting human health and the environment. These objectives are, in general, developed by considering the results of the FWIA and the Human Health RA, and/or the Standards, Criteria, or Guidelines (SCGs) to be identified for the site during the FS process. This section briefly summarizes the results of the FWIA and the Human Health RA and identifies the proposed RAOs for soil, sediment, and ground water.

6.2 RA Summary

A two-component baseline RA was conducted in conjunction with the RI. These components consisted of a baseline FWIA and a Human Health RA. The objective of the baseline RA was to assess potential risks to ecological and human receptors that may result from exposure to chemicals of interest detected in environmental media under existing conditions. The results of each component of the baseline RA are briefly presented below.

6.2.1 FWIA

The criteria-specific sediment analysis [performed as part of the FWIA and summarized in Section 4.10.1 of this report] indicated that the PCB concentration observed in one Cobleskill Creek sediment sample exceeded the site-specific sediment criteria for the protection of wildlife from bioaccumulation. PCBs were not detected in any of the other Cobleskill Creek sediment samples. The PCB levels in all of the fish samples prepared from fish collected from Cobleskill Creek were below the USEPA's 0.6 ppm (in the diet) threshold for sublethal effects in piscivorous wildlife. As discussed in Section 4.10.2, this threshold value is the most relevant criterion available for evaluating ecological risks to wildlife receptors that may be exposed to PCBs via fish consumption. The criteria-specific fish tissue analysis presented in Section 4.10.2 also indicates that the PCB concentrations in the fish samples were all less than the NYSDEC/NYSDOH human health criterion of 2 mg/kg.

PCBs were detected in 3 of the 15 storm water drainage system sediment samples at concentrations greater than the site-specific sediment criteria for the protection of benthic aquatic life from chronic toxicity. These criteria were developed by applying the USEPA equilibrium partitioning model to USEPA ambient water quality criteria, as described in the NYSDEC publication entitled, "Technical Guide for Screening Contaminated Sediments," November 1993. Only the forage fish collected in the storm water drainage system had PCB concentrations above the 0.6 ppm threshold; however, as explained in Section 4.10.2, the storm water drainage system provides only a limited habitat for piscivorous wildlife.

These results from the FWIA indicate that there has been no obvious impact to the fish and wildlife resources in these areas due to the presence of PCBs in these sediments.

6.2.2 Human Health RA

The Human Health RA performed as part of the RI indicated no unacceptable risks for potential human receptors that might be exposed to site-related constituents. The estimated cancer and non-cancer risk for future hypothetical exposure to ground water (used as a potable water supply) was elevated primarily due to the presence of PCBs, arsenic, antimony, and beryllium in ground water at the site.

Risk estimates for hypothetical future ground water use suggest that both cancer and non-cancer risks would be unacceptable if untreated on-site ground water were used as a potable water supply. However, based on current site use and the extent of the public water supply, potable use of on-site ground water in its current condition is unlikely.

6.3 Proposed RAOs

The proposed RAOs identified for soil, sediment, and ground water are presented in the following subsections.

6.3.1 Soil

No unacceptable human health risks were estimated to occur as a result of exposure to site-related chemicals of interest present in soils. Therefore, proposed RAOs for site soils focus on protection of the environment.

In the active scrapyard area, surface soils are generally covered with a layer of packed gravel. This layer of gravel may limit the migration of chemicals of interest in the surface soils (i.e., the top 6 inches of soil beneath the gravel). Over the majority of the site, the surface soils are exposed or covered with varying amounts of herbaceous vegetation or trees. The potential exists for migration of the chemicals of interest present in surface soil via the following mechanisms:

- Infiltration of water through the surface soil may cause the chemicals of interest to leach and impact subsurface soils and ground water; and

- Transport of surface soils via storm water runoff may cause the chemicals of interest in the surface soils to impact downgradient locations.

PCBs were detected in surface soils within the upper section of the site, as well as at location S-28 and in the active scrapyard area, at concentrations that exceed the NYSDEC/NYSDOH cleanup goals (reference NYSDEC TAGM 4046: "Determination of Soil Cleanup Objectives and Cleanup Levels," January 1994). Because these chemicals in the surface soils may impact subsurface soils and/or downgradient locations, the RAO for surface soils is to mitigate the migration of PCBs at concentrations greater than 1 ppm in surface soils. At locations in the upper section of the site, as well as at location S-28, inorganic and SVOC constituents of interest were also detected in surface soil samples at concentrations exceeding the NYSDEC/NYSDOH cleanup goals presented in the NYSDEC TAGM 4046. However, the RAO of mitigating the migration of PCBs in these areas will also address the possible migration of the SVOC and inorganic constituents of interest which may be co-located in these surface soils.

With respect to subsurface soils, PCBs were detected in two of the subsurface soil samples (TP-13S and TP-19S) collected within the upper section of the site at concentrations that may impact ground-water quality (i.e., result in PCB concentrations in ground water that are in excess of the NYSDEC Class GA ground-water quality standard of 0.1 ppb). Therefore, a proposed RAO for subsurface soils is to reduce the concentration of PCBs in the subsurface soils to 10 ppm (reference NYSDEC TAGM 4046: "Determination of Soil Cleanup Objectives and Cleanup Levels," January 1994). Another proposed RAO for subsurface soils is to reduce the total concentration of the eight metals listed in 6 NYCRR 371.3 (arsenic, barium, chromium, cadmium, lead, mercury, selenium, and silver) to below the 1,000 ppm threshold outlined by Mr. Daniel Lightsey, P.E., of the NYSDEC (June 3, 1994 letter to Mr. James F. Morgan of NMPC). Total concentrations of greater than 1,000 ppm for these eight metals were detected in the subsurface soil samples collected at locations S-8 and S-28 and the EP Toxic metal result for lead in the subsurface soil sample collected at S-28 was above the regulatory level.

Based on these proposed RAOs, the estimated areas of surface and subsurface soil to be addressed during the FS process are defined as follows:

- Surface soils to be addressed (impacted surface soils) include the top 6 inches of soil (beneath any gravel layer) within the upper section of the site and in the active scrapyard area. The estimated area of impacted surface soil is shown on Figure 6-1.

- Subsurface soils to be addressed are those that contain PCBs at concentrations greater than or equal to 10 ppm, as well as those that contain the eight metals listed in 6 NYCRR 371.3 at total concentrations greater than 1,000 ppm. Subsurface soil samples that contained PCBs at concentrations greater than or equal to 10 ppm were limited to two samples collected from the upper section of the site (TP-13S and TP-19S). TP-8 and TP-28 were the only subsurface soil samples containing the eight listed metals at concentrations greater than 1,000 ppm. Based on the analytical results obtained during the RI, the estimated areal extent of subsurface soils containing PCBs at concentrations greater than 10 ppm or the eight listed metals as total concentrations greater than 1,000 ppm is shown on Figure 6-1, and the vertical extent is estimated to extend to a depth of 4 feet below ground surface. The actual limits of impacted subsurface soil may vary depending upon verification sampling, which would be conducted during implementation of subsurface soil removal activities (if any) associated with the recommended remedial action.

6.3.2 Sediment

No unacceptable human health risks were estimated to occur as a result of exposure to site-related chemicals of interest in on- or off-site sediments. With respect to potential ecological impacts, PCBs were determined to be the principal chemical of interest. However, the criteria-specific fish tissue analysis presented in Section 4.10.2 indicated that there has been no obvious impact to fish and wildlife resources in either Cobleskill Creek or the storm water drainage system due to the presence of PCBs in these sediments.

Although the results of the FWIA indicate that there has been no obvious impact to the fish and wildlife resources due to the presence of PCBs in some sediment within the storm water drainage system, NMPC proposes to address the section of the quarry pond outlet channel and the portion of the storm water drainage system where PCBs were detected at the highest concentrations. The locations within the quarry pond outlet channel and the storm water drainage system are: SD-35S (8.2 ppm), SD-36S (4.2 ppm), WS-CC-1 (2.2 ppm), and WS-CC-2 (4.3 ppm). Samples SD-35S and SD-36S were collected within the quarry pond outlet channel between the quarry pond and the Delaware and Hudson Railroad (see Figure 6-1). Samples WS-CC-1 and WS-CC-2 were collected downstream, in an area of sediment deposition (see Figure 6-2).

The proposed RAO for sediments is to protect fish and wildlife by mitigating the potential for PCBs to impact the fish and wildlife resources of Cobleskill Creek. Removal of sediments from those depositional areas mentioned above is consistent with this RAO.

6.3.3 Ground Water

Ground water at the site is currently not used as a potable water source. The residents to the east and south of the site obtain water from a municipal water supply. Analytical results for ground-water samples collected at the five residential wells to the west of the site indicate that no site-related chemicals of concern are present at these locations. However, SPO has been observed on top of the water table at the following monitoring well/corehole locations: MW-5, MW-8 (C-3), C-4, C-10, C-13, and C-14. The PCB analytical results of the SPO samples obtained from coreholes C-3 (MW-8) and C-10 were 1,780 ppm and 1,830 ppm, respectively. The proposed RAOs for ground water include the following:

- Remove the SPO that has been identified on the ground-water surface at the site; and
- Mitigate the potential for migration of the SPO beyond the areas where it has been observed.

Section 7

7.0 - Summary and Conclusion

Based upon the activities performed and the analytical data collected during the RI activities, a list of each media studied and the highlights of the findings is provided below followed by a summary of the FWIA and the Human Health RA:

Media	Findings
Surface Soil	PCBs at concentrations greater than 1 ppm were detected in the surface soil samples collected from the upper section of the site and from the active scrapyard area. The highest PCB concentration was 164 ppm in the sample collected at S-4 in the upper (northern) portion of the site. Detections of PCBs were below 1 ppm from sampling locations outside the fence to the north and east.
	The following inorganic parameters were detected at levels of one order of magnitude greater than NYSDEC-recommended cleanup objectives in samples collected from sampling location S-28 and from the upper section of the site. • Cadmium (maximum concentration of 68.8 ppm); • Copper (maximum concentration of 4,740 ppm); • Lead (maximum concentration of 9,700 ppm); and • Zinc (maximum concentration of 6,750 ppm).
	The EP Toxic metal result for lead in the sample collected at S-28 was 7,320 J ppb. This was the only concentration detected above regulatory levels.
	The highest total SVOC concentration was 129.1 ppm in the sample collected at S-2. The SVOCs detected were primarily PAHs.
Subsurface Soil	PCBs were not detected in 14 of the 40 subsurface soil samples and were detected at concentrations less than 1 ppm in 20 of the samples. PCBs were detected in two samples (TP-13S and TP-19S) from the upper section of the site at concentrations above 10 ppm.
	Arsenic, cadmium, copper, and lead were detected at levels of one order of magnitude greater than the NYSDEC-recommended cleanup objectives in the sample collected from the 0- to 2-foot depth interval at location S-8. Lead was detected at a level of one order of magnitude greater than the NYSDEC-recommended cleanup objective in the sample collected from the 0- to 2-foot depth interval at location S-28.
	Subsurface soil samples were collected from locations S-8 and S-28 for EP Toxic metals analysis based on total concentrations greater than 1,000 ppm for the eight metals listed in 6 NYCRR 371.3. The EP Toxic metal result for lead in the subsurface soil sample collected at S-28 was 44,000 J ppb. This was the only concentration detected above regulatory levels.
	The highest total SVOC concentration detected (excluding samples collected from the M. Wallace and Son, Inc. Scrapyard leachfield area) was 3.9 ppm in the sample collected at S-14. These SVOCs detected were primarily PAHs.

Media	Findings
Subsurface Soil (Cont'd)	Total VOC and SVOC concentrations for sample TPC-12A, located near the M. Wallace and Son, Inc. Scrapyard leachfield area (southwest corner of the site) were reported at 1,168 ppm and 46 ppm, respectively.
Quarry Pond Sediment	PCB concentrations ranged from 0.17 ppm to 63 ppm.
Cobleskill Creek - Sediment	PCBs were not detected in 8 of the 9 sediment samples collected from Cobleskill Creek. PCBs were detected in sample SD-50A at 0.18 ppm.
Quarry Pond Outlet Channel and Storm Water Drainage System - Sediment	PCBs were detected above 1 ppm in four of the 18 sediment samples (SD-35S, SD-36S, WS-CC-1, and WS-CC-2) collected from the quarry pond outlet channel and the storm water drainage system.
Quarry Pond Surface Water	PCBs were detected in unfiltered quarry pond surface water samples at concentrations ranging from 0.267 ppb to 0.315 ppb; PCBs were detected in three filtered samples ranging from 0.067 ppb to 0.074 ppb. In accordance with the NYSDEC's requirements, the quarry pond water treatment system has been maintained since December 1992 to prevent the discharge of surface water containing PCBs in excess of 0.065 ppb into the storm water drainage system.
Storm Water Drainage System - Surface Water	PCBs were not detected in any of the surface water samples collected from the storm water drainage system.
Ground Water	PCBs were detected at concentrations of 0.72 ppb and 0.10 ppb in the unfiltered ground-water samples collected from bedrock coreholes C-9 and C-16, respectively, during the Phase II RI ground-water investigation. The PCB detection in C-9 appeared to be related to sediments that were flushed into the corehole from surface water runoff. Each PCB aroclor was not detected above the Contract Required Detection Limit of 0.05 ppb in subsequent ground-water samples collected at coreholes C-9 and C-16. PCBs were not detected in any of the other ground-water samples collected during the RI.
	TCL VOCs were detected in ground-water samples collected from bedrock coreholes/monitoring wells C-12 and C-18, located near the M. Wallace and Son, Inc. Scrapyard leachfield area (southwest corner of the site). The ground-water sample collected from C-12 contained 2,392 ppb of VOCs, including 1,000 ppb benzene, 882 ppb xylene, 150 ppb toluene, and 360 ppb ethylbenzene; C-18 contained 157 ppb of VOCs, including 57 ppb 1,2-dichloroethene, 93 ppb trichloroethene, and 7 J ppb benzene. These compounds were not detected in any of the other ground-water samples collected during the RI.
	The general ground-water flow direction in the overburden and bedrock is towards the quarry pond. The quarry pond water treatment system lowers the quarry pond water surface elevation, thereby inducing flow from the overburden and bedrock ground-water systems into the quarry pond.
	Separate-phase oil was observed on at least one occasion on the top of the water table at the following monitoring well/corehole locations: MW-5, MW-8 (C-3), C-4, C-10, C-13, and C-14.

Media	Findings
Ground Water (Cont'd)	Bedrock coring activities revealed the presence of multiple horizontal and vertical fractures, as well as bedrock voids. Hydraulic conductivity within the bedrock varies by four orders of magnitude, according to RI packer test data.
Residential Wells	PCBs were not detected in any of the residential wells sampled during the RI.

In addition to the data summarized above regarding the presence and extent of chemical constituents and the characterization of hydrogeologic relationships at the site, a FWIA and the Human Health RA were completed to provide insight into the potential environmental and human health risks associated with the chemical constituents at the site.

The results of the FWIA indicate no obvious impacts to the fish and wildlife resources of the storm water drainage system or Cobleskill Creek. PCBs were detected at a concentration of 0.18 mg/kg in one of the nine sediment samples collected from Cobleskill Creek. Because this was above the 0.01 mg/kg site-specific PCB sediment quality criteria determined by the NYSDEC methodology, fish sampling and analysis activities were completed. The purpose of these activities was to assess the potential for site-related impacts on resident sport fish and forage fish populations present in the storm water drainage system and also in Cobleskill Creek, downstream of the confluence with the storm water drainage system. The criteria-specific fish tissue analysis presented in Section 4.10.2 indicated the following:

- The PCB concentrations in the fish samples were all less than the NYSDEC/NYSDOH hunan health criterion of 2 mg/kg; and

- There has been no obvious impact to fish and wildlife resources in either Cobleskill Creek or the storm water drainage system due to the presence of PCBs in these sediments.

The results of the baseline Human Health RA indicate that the risk estimates for on-site workers or trespassers and off-site residents and recreationists exposed to chemical constituents detected during the RI are within the USEPA's acceptable range for both carcinogenic and non-carcinogenic risks. Risk estimates for hypothetical future ground water use suggest that both cancer and non-cancer risks would be unacceptable if untreated on-site ground water were used as a potable water supply. However, based on current site use and the extent of the public water supply, potable use of on-site ground water in its current condition is unlikely.

References

1. Adriano, D.C. 1986. Trace Elements in the Terrestrial Environment. Springer-Verlag, New York, NY
2. Alloway, B.J. 1990. Heavy Metals in Soil. Blackie and Son Ltd., Somer, N.J.
3. Andelman, J.B. 1985. Inhalation Exposure in the Home to Volatile Organic Contaminants of Drinking Water. Sci. Total Environ. 47: 443-460.
4. Andelman, J.B. 1985b. Human Exposures to Volatile Halogenated Organic Chemicals in Indoor and Outdoor Air. Environ. H. Persp. 62: 313-318.
5. ATSDR, "Toxicological, Profile for Polycyclic Aromatic Hydrocarbons," U.S. Public Health Service (Oak Ridge, TN: Oak Ridge National Laboratory), 1990.
6. ATSDR, "Toxicological Profile for Selected PCBs (Aroclors -1260, -1254, -1248, -1242, -1232, -1221, and -1016)," U.S. Public Health Service, (Oak Ridge, TN: Oak Ridge National Laboratory), 1993.
7. Berdan, Jean M., The Ground-Water Resources of Schoharie County, New York: 1950.
8. BB&L, 1992. Letter to Daniel Lightsey, New York State Department of Environmental Conservation, from David J. Ulm, Blasland, Bouck & Lee, Inc., December 17, 1992.
9. BB&L, January 1994, Phase I Remedial Investigation Report. Prepared on Behalf of Niagara Mohawk, Syracuse, New York. January, 1994.
10. Bouwer and Rice, 1976. "A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers," U.S.D.A., Phoenix, Arizona, 1976.
11. Chase, Irving H., "Cobleskill's Limestone Quarries," in Stone Fort Days, ed. The Schoharie County Historical Society, Schoharie, N.Y., October 5 and 6, 1985, pp 20-21.
12. Erickson, 1986. Analytical Chemistry of PCBs. Lewis Publishers. Chelsea, Michigan.
13. Fisher, David W., Isachsen, Yngvar W., Rickard, Lawrence V., New York State Museum and Science Service, Map and Chart Series No. 15, Hudson-Mohawk Sheet, March 1970.
14. Ford and Ewers, 1978. "The Development of Limestone Cave Systems in the Dimensions of Length and Depth." Canadian Journal of Earth Sciencies, v. 15, p. 1783-1798.
15. Hawley, J.K., 1985. Assessment of Health Risks from Exposure to Contaminated Soils. Risk Analysis 5(4): 289-302.
16. Houlsby, A.C., "Routine Interpretation of the Ludgeon Water-Test," Quarterly Journal of Engineering Geology, Volume 9, pp 303-31, 1976.
17. Howard, 1989. Handbook of Environmental Fate and Exposure Data for Organic Chemicals. Volume I - Large Production and Priority Pollutants. Lewis Publishers, Inc., Chelsea, Michigan.
18. Kastning, Ernst, Cavern Development in the Helderberg Plateau in Upper New York State, University of Connecticut, Storrs, Connecticut, 1975.
19. Mackay, D., Shiu, W.Y., and Ma, C.K., 1992a. Illustrated Handbook of Physical-Chemical Properties and Environmental Fate for Organic Chemicals - Monoaromatic Hydrocarbons, Chlorobenzenes, and PCBs. Lewis Publishers, Inc., Chelsea, Michigan.

20. Mackay, D., Shui, W.Y., and Ma, C.K., 1992b. Illustrated Handbook of Physical-Chemical Properties and Environmental Fate for Organic Chemicals - Polynuclear Aromatic Hydrocarbons, Polychlorinated Dioxins, and Dibenzofurans. Lewis Publishers, Inc., Chelsea Michigan.

21. McKone, T.E. 1988. Household Exposure Models. Proc. Conf. on Toxicology. Dayton, OH. Nov. 1-3, 1988.

22. McKone, T.E. and J.P. Knezovitch. 1989. Assessing Tap-Water Contributions to Inhalation Exposure for Volatile Organic Chemicals. UCRL-100878. DE89 012369. Univ. of California. Livermore, CA.

23. Moore, 1973. "Hydraulics of Sheetlike Solution Cavities. "Ground Water, v. 11, no. 4, p. 9-11.

24. Mylroie, John E., Speleogenesis and Karst Geomorphology of the Helderberg Plateau, Schoharie County, New York, Rensselaer Polytechnic Institute, Troy, New York, May 1977.

25. Newell et al. 1987. Niagara River Biota Contamination Project: Fish Flesh Criteria for Piscivorous Wildlife. NYSDEC Technical Report 87-3, July, 1987.

26. NYSDEC, 1991. New York Department of Environmental Conservation, DRAFT Cleanup Policy and Guidelines, Volume II - Appendix, Appendix D: Clean-Up Criteria for Aquatic Sediments. Cleanup Standards Task Force.

27. NYSDEC, 1991a. New York State Department of Environmental Conservation, Draft Cleanup Policy and Guidelines, Volume 1, Appendix D, Albany, NY, October 1991.

28. NYSDEC, 1991b. New York State Department of Environmental Conservation, Division of Water Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values, November 15, 1991.

29. NYSDEC, 1992. Letter from Mr. Walter Loveridge, New York State Department of Environmental Conservation, to Mr. James F. Morgan, Niagara Mohawk Power Corporation, October 19, 1992.

30. NYSDEC, 1993a. New York State Department of Environmental Conservation, Natural Heritage Program, Wildlife Resources Center, Latham, NY (Correspondence from Mr. Burrell Buffington, July 12, 1993).

31. NYSDEC, 1993b. New York State Department of Environmental Conservation, Division of Water, Surface Water Classifications, Albany, NY.

32. NYSDEC, 1993c. New York State Department of Environmental Conservation, Division of Fish and Wildlife. Technical Guidance for Screening Contaminated Sediments, November 1993.

33. NYSDEC, 1993d. Letter from Mr. Daniel Lightsey, P.E., New York State Department of Environmental Conservation, to Mr. James F. Morgan, Niagara Mohawk Power Corporation, January 22, 1993.

34. NYSDEC, 1994a. New York State Department of Environmental Conservation, Division of Fish and Wildlife, "Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites Guidelines", 1994.

35. NYSDEC, 1994b. Letter from Daniel Lightsey, NYSDEC, to James F. Morgan, NMPC. Subject: Comments on the Phase II RI Work Plan (June 3, 1994).

36. NYSDEC, 1995. Fax and personal communication with D. Kay Sanford, NYSDEC Aquatic Biologist. Subject: Prior NYSDEC survey and sampling efforts in Cobleskill Creek in vicinity of SUNY Cobleskill Campus (March 10, 1995).

37. NYSDOH, 1995. Personal communication with Tony Forti, NYSDOH Toxicologist. Subject: NYSDOH protocol/policy for issuing water-body-specific fish consumption advisories for NYS waters (March 22, 1995).

38. NMPC, 1994. Letter from James F. Morgan, Niagara Mohawk Power Corporation to Daniel Lightsey, NYSDEC. Subject: Proposed Biota Sampling Plan for the unnamed tributary and Cobleskill Creek (September 16, 1994).

39. O'Brien & Gere Engineers, Inc. Site Investigation, M. Wallace and Son, Inc. Scrapyard, Cobleskill, New York, June 1990.

40. Palmer N. Arthur, Department of Earth Sciences, State University of New York at Oneonta, Personal Communication with Nancy E. Gensky, Blasland, Bouck & Lee, Inc., Syracuse, New York, August 26, 1993.

41. Palmer, 1995. Arthur N. Palmer, Ph.D., Oneonta, New York, May 17, 1995. Personal communication with Nancy E. Gensky.

42. Shacklette, Hansford T. and Boerngen, Josephine G., "Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States," United States Government Printing Office, Washington: 1984.

43. Thibodeaux, L. 1979. Chemodynamics-Environmental Movement of Chemicals in Air, Water, and Soil. John Wiley & Sons.

44. United States Bureau of Reclamation, Earth Manual, Second Edition, Department of the Interior, Denver, Colorado, pp. 573-578, 1974.

45. U.S. Department of Agriculture, Soil Survey-Schoharie County, New York, September 1969.

46. USEPA, 1980. Ambient water quality criteria for polychlorinated biphenyls. U.S. Environmental Protection Agency Rep. 440/5-80-068. 211 pp.

47. USEPA, 1989. Risk Assessment Guidance for Superfund, Vol. I-Human Health Evaluation Manual. EPA/540/1-89/001. OERR, Washington, D.C. December 1989.

48. USEPA, 1990. Exposure Factors Handbook. EPA/600/8-89/043. Office of Health and Environmental Assessment, Washington, D.C.

49. USEPA, 1991. Proposed Technical Basis for Establishing Sediment Quality Criteria for Nonionic Organic Chemicals Using Equilibrium Partitioning. US Environmental Protection Agency, Office of Science ande Technology, Health and Ecological Criteria Division, Washington, D.C. 20460.

50. USEPA, 1991a. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors." OSWER Directive 9285.6-03. March 25, 1991.

51. USEPA, 1991b. Risk Assessment Guidance for Superfund: Volume 1 - Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals). NTIS PB-963333. December 1991.

52. USEPA, 1991c. Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions. OSWER Directive 9355.0-30. April 22, 1991.

53. USEPA, 1991d. Interim Guidance for Dermal Exposure Assessment. EPA/600/8-91/011A. March 1991.

54. USEPA, 1992. Dermal Exposure Assessment: Principals and Applications. Interim Report. EPA/600/8-91/011B. Office of Health and Environmental Assessment. Washington, D.C. January 1992.

55. USEPA, 1993. Technical Basis for Deriving Sediment Quality Criteria for Nonionic Organic Contaminants for the Protection of Benthic Organisms by Using Equilibrium Partitioning, EPA-822-R-93-011. September 1993.

56. USEPA, 1994a. Health Effects Assessment Summary Tables (FY-1994), OERR 9200.6-303 (94-1). Washington, D.C. March 1994.

57. USEPA, 1994b. Integrated Risk Information System (IRIS) data base, on-line.

58. USEPA, 1994c. Personal communication between Mr. Larry Tanenbaum to Michele Anatra-Cordone of Blasland, Bouck & Lee, Inc.

59. USEPA, 1994d. Soil Screening Guidance. EPA/540/R-94/101. December, 1994.

60. USFDA, 1984. Polychlorinated biphenyls (PCBs) in fish and shellfish; Reduction of tolerances; Final Decision. Fed. Register <u>49</u>(100): 21514-21520.

61. U.S. Geological Survey, <u>7.5 Minute Topographic Quadrangles: Cobleskill 1980</u>; Richmondville, New York 1982.

62. Van Diver, Bradford B., <u>Roadside Geology of New York</u>, Missoula: Mountain Press Publishing Company, 1985

Tables

TABLE 2-1

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

RI SOIL INVESTIGATION
HEADSPACE SCREENING SUMMARY

Test Pit Location	Sample Depth (feet)	PID Measurement (ppm)
S-1	Surface (0-6")	0
	0-2	0
	2-4	0
S-2	Surface (0-6")	0
	0-1.5	0
S-3	Surface (0-6")	0
	0-2	0
	2-4	1
S-4	Surface (0-6")	0
	0-2	0.5
	2-4	0
S-5	Surface (0-6")	0.4
	0-2.5	0
S-6	Surface (0-6")	1.5
	0-1.5	0.5
S-7	Surface (0-6")	0
	0-2	0
S-8	Surface (0-6")	0.6
	0-2	1.5
	2-4	0.5
S-9	Surface (0-6")	0
	0-2	7
S-10	Surface (0-6")	0
	0-2	5.5
	2-3.5	1
S-11	Surface (0-6")	0.6
	0-3	0
S-12	Surface (0-6")	0
	0-1.5	0
S-13	Surface (0-6")	0
	0-2	2
	2-4	0
	4-5	0
S-14	Surface (0-6")	0
	0-2	110
	2-4	47
	4-6	30
	6-8	23
S-15	Surface (0-6")	0
	0-2	153
	2-4	63
S-16	Surface (0-6")	0
	0-2.7	38

TABLE 2-1

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

RI SOIL INVESTIGATION
HEADSPACE SCREENING SUMMARY

Test Pit Location	Sample Depth (feet)	PID Measurement (ppm)
S-17	Surface (0-6") 0-2.5	0.7 5
S-18	Surface (0-6") 0-2 2-4	0 0 0
S-19	Surface (0-6") 0-2 2-4 4-6	0 2 6 4
S-20	Surface (0-6") 0-2 2-4 4-6	0.4 0 0 0
S-21	Surface (0-6") 0-2	2 0
S-22	Surface (0-6") 0-2	0.5 0
S-23	Surface (0-6") 0-2 2-4	0 0 0
S-24	Surface (0-6") 0-2 2-4 4-6	0 0 0 0
S-25	Surface (0-6") 0-2	0 0
S-26	Surface (0-6") 0-2 2-4 4-6	0 0 0 0
S-27	Surface (0-6") 0-2	0 0
S-28	Surface (0-6") 0-2 2-4	0 4 1
S-29	Surface (0-6") 0-2 2-3	0 0 0
S-30	Surface (0-6") 0-2 2-4 4-6 6-8	2.2 0 0 0 0

TABLE 2-1

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

RI SOIL INVESTIGATION
HEADSPACE SCREENING SUMMARY

Test Pit Location	Sample Depth (feet)	PID Measurement (ppm)
S-31	Surface (0-6")	0
	0-2	8.5*
	2-4	0
	4-6	0
	6-8	0
S-32	Surface (0-6")	0
S-33	Surface (0-6")	4
S-34	Surface (0-6")	0
	0-2	0
	2-4	0
S-35	Surface (0-6")	1
S-52	0-2	0.2
	2-3	0.3
S-53	0-2	1.0
	2-4	0.7
	4-6	1.3
S-54	0-2	0.1
	2-4	1.6
	4-6	0.5
S-55	0-2	4.1
	2-4	4.3
	4-6	1.8
	6-8	1.5

Notes:

1. * = no odor; PID measurement may be due to natural organic material.
2. PID = photoionization detector.
3. ppm = parts per million.

TABLE 2-2

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

RI SEDIMENT INVESTIGATION
SEDIMENT SAMPLE DESCRIPTION SUMMARY

Sample I.D.	Date	Time	Location	Water Depth (ft)	Sediment Penetrated (ft)	Sediment Recovered (ft)	Sample Segment (in)	Sample Description
SD-56A	5/25/93	10:00	Cobleskill Creek	0	0.5	0.5	0-6	Light brown silt and fine sand with some plant material, slight organic odor
SD-54A	5/25/93	10:40	Cobleskill Creek	0.2	1.2	0.7	0-8	Grey-brown medium-to-coarse sand and gravel
SD-52A	5/25/93	11:15	Cobleskill Creek	1.7	1.4	1.3	0-6	Light-brown fine-to-medium sand
SD-52B	5/25/93	11:15	Cobleskill Creek	1.7	1.4	1.3	6-15	Light-brown medium-to-coarse sand, trace of grey clay
SD-50A	5/25/93	11:30	Cobleskill Creek	0	0.7	0.6	0-7	0-5" - grey-brown silt 5-7" - black silt, slight organic odor
SD-49A	5/25/93	11:45	Cobleskill Creek	2.5	1.5	1.1	0-6	0-3" - Light-brown medium-to-coarse sand 3-6" - grey clay
SD-49B	5/25/93	11:45	Cobleskill Creek	2.5	1.5	1.1	6-13	Light-brown medium-to-coarse sand
SD-48A	5/25/93	12:00	Cobleskill Creek	1.8	0.7	0.6	0-7	Light-brown silt and fine sandy clay
SD-51A	5/25/93	14:00	Cobleskill Creek	0.5	0.5	0.5	0-6	Light-brown fine-to-coarse sand and gravel
SD-46A	5/25/93	17:40	Storm Water Drainage System	0.7	0.8	0.7	0-8	Grey-brown to black silt with a slight organic odor
SD-55A	5/25/93	18:00	Storm Water Drainage System	0.2	1.0	1.0	0-6	Light-brown fine-to-medium sand, trace of silt
SD-55B	5/25/93	18:00	Storm Water Drainage System	0.2	1.0	1.0	6-12	Light-brown medium-to-coarse sand
SD-44A	5/25/93	18:10	Storm Water Drainage System	0.5	1.2	1.1	0-6	Grey-brown medium-to-coarse sand, some silt
SD-44B	5/25/93	18:10	Storm Water Drainage System	0.5	1.2	1.1	6-13	Light-brown fine sand, some medium sand, and some clay
SD-47A	5/25/93	18:20	Storm Water Drainage System	2.1	0.9	0.7	0-8	0-3" - grey-brown medium-to-coarse sand 3-8" - grey-brown clay
SD-45A	5/26/93	11:00	Storm Water Drainage System	0.5	surface sample	0.3	0-4	Grey-brown silt with medium-to-coarse sand
SD-43A	5/26/93	11:15	Storm Water Drainage System	1.2	surface sample	0.5	0-6	Light-brown fine-to-coarse sand, some silt
SD-42A	5/26/93	11:45	Storm Water Drainage System	1.0	surface sample	0.5	0-6	Light-brown silt with some fine-to-coarse sand

TABLE 2-2

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

RI SEDIMENT INVESTIGATION
SEDIMENT SAMPLE DESCRIPTION SUMMARY

Sample I.D.	Date	Time	Location	Water Depth (ft)	Sediment Penetrated (ft)	Sediment Recovered (ft)	Sample Segment (in)	Sample Description
SD-41A	5/26/93	12:00	Storm Water Drainage System	0.3	surface sample	0.5	0-6	Light-brown fine-to-coarse sand and gravel
SD-40A	5/26/93	12:30	Storm Water Drainage System	1.8	surface sample	0.5	0-6	Grey-brown to black silt with a moderate organic odor
SD-39A	5/26/93	13:30	Storm Water Drainage System	0.3	surface sample	0.5	0-6	Light-brown medium-to-coarse sand and gravel
SD-38A	5/26/93	13:45	Storm Water Drainage System	0.3	surface sample	0.5	0-6	Light-brown fine-to-medium sand and black silt with a moderate organic odor, visible oil sheen

TABLE 2-3

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

RI SURFACE WATER INVESTIGATION
SURFACE WATER FIELD MEASUREMENTS SUMMARY

Sample I.D.	Date	Time	Location	Water Depth (ft)	Water Temp (°C)	pH	Specific Conductivity (mS/cm)	D.O. (mg/L)
On-Site Surface Water Samples								
SW-1	5/26/93	17:00	Quarry Pond	4.5	17	6.06	0.567	15.2
SW-2	5/26/93	17:20	Quarry Pond	4.5	15	6.80	0.555	16.4
SW-3	5/26/93	17:40	Quarry Pond	5.0	17	6.30	0.485	15.6
SW-4	5/26/93	18:00	Quarry Pond	4.5	16	6.70	0.550	16.0
SW-5	5/26/93	18:20	Quarry Pond	4.0	16	6.65	0.546	15.7
Off-Site Surface Water Samples								
SW-6	5/24/93	17:45	Catch Basin	0.3	17	7.92	0.630	6.2
SW-7	5/24/93	16:45	Catch Basin	0.5	17	7.92	0.665	6.2
SW-8	5/24/93	15:45	Catch Basin	1.0	17	8.00	0.562	6.8
SW-9	5/24/93	14:45	Open Ditch	0.5	18	8.61	0.513	6.6

Notes:

1. D.O. = dissolved oxygen.
2. mS/cm = millisiemens per centimeter.
3. mg/L = milligrams per liter.

TABLE 2-4

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

RI GROUND-WATER INVESTIGATION
HYDRAULIC CONDUCTIVITY TEST RESULTS SUMMARY

Well/ Corehole	Packer Test/ Test Interval Feet Below Ground Level	Hydraulic Conductivity Estimated from Packer Test (cm/sec)	Type of Flow	Comments/Notes	Slug Test/Type	Hydraulic Conductivity Estimated from Slug Analysis (cm/sec)
MW-1	Y 22.6 - 35.4 ft.	2.4E-06	Laminar	For all pressures, the volume measurement on the water meter totalizer gauge (total intaks) did not increase or change significantly.	N	NA
MW-2	Y 15.5 - 24.7 ft.	3.5E-04	Dilation of rock fractures		N	NA
MW-3	Y 17.5 - 34.1 ft.	<2.3E-06	Void filling		N	NA
MW-4	Y 19.6 - 33.6 ft.	<2.8E-06	Void filling		N	NA
MW-5	Y 20 - 25 ft.	<4.1E-06	Possible dilation and/or void filling		N	NA
	25 - 30 ft.	2.6E-03		At the 25- to 30-foot interval, formation too permeable to pressurize.		
	30 - 35 ft.	<3.5E-06	Void filling			
MW-6	Y 31 - 50 ft.	6.3E-04		From 31 to 50 feet, the tested interval was too permeable to achieve target pressure.	N	NA
	35 - 50 ft.	<1.2E-06	Dilation			
	40 - 50 ft.	1.0E-06	Laminar			
	45 - 50 ft.	<2.6E-06	Void filling			
MW-7	Y 7.0 - 45.5 ft.	1.5E-05	Laminar		N	NA
MW-8 (C-3)	N	NA	NA		N	NA
MW-9	N	NA	NA		Y Rising and falling head tests	9.5E-05 1.0E-04
MW-10	N	NA	NA		Y Two rising head tests	4.7E-03 2.5E-03
MW-11	N	NA	NA		Y Rising head test	8.6E-03
C-1	N	NA	NA		N	NA
C-2	N	NA	NA		N	NA
C-3 (MW-8)	N	NA	NA		N	NA
C-4	Y 26.8 - 45 ft.	Test inconclusive		Test interrupted due to possible presence of oil in quarry pond.	N	NA

TABLE 2-4

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

RI GROUND-WATER INVESTIGATION
HYDRAULIC CONDUCTIVITY TEST RESULTS SUMMARY

Well/ Corehole	Packer Test/ Test Interval Feet Below Ground Level	Hydraulic Conductivity Estimated from Packer Test (cm/sec)	Type of Flow	Comments/Notes	Slug Test/Type	Hydraulic Conductivity Estimated from Slug Analysis (cm/sec)
C-5	Y 29.6 - 39.5 ft.	<1.4E-06	No flow observed	For all pressures, the volume measurement on the water meter totalizer gauge (total intake) did not increase or change significantly.	N	NA
C-6	Y 10.4 - 50.5 ft.	<7.0E-07	No flow observed	For all pressures, the volume measurement on the water meter totalizer gauge (total intake) did not increase or change significantly.	N	NA
C-7	Y 11.5 - 50.5 ft.	5.0E-06	Dilation of rock fractures		N	NA
C-8	Y 8 - 55.5 ft.	5.5E-04	Laminar	Initially the packer was set to 8.0 feet below land surface. The test was started and the total intake for 5 minutes was 81.3 gallons. Water was coming up through the ground surrounding the casing. The packer assembly was then moved below the vertical fracture encountered from 8 to 12 feet.	N	NA
	15 - 55.5 ft.	<8.2E-07	Laminar	For all pressures, the volume measurement on the water meter totalizer gauge (total intake) did not increase or change significantly.		
C-9	Y 7 - 49.7 ft.	1.7E-04	Laminar		N	NA
C-10	Y 8 - 40.5 ft.	4.3E-05	Laminar		N	NA
C-11	Y 12 - 40 ft.	6.6E-06	Dilation of rock fractures		N	NA
C-12	Y 10 - 34.9 ft.	1.1E-04	Laminar		N	NA
C-13	Y 9.3 - 39.8 ft.	1.8E-05	Laminar		N	NA

TABLE 2-4

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

RI GROUND-WATER INVESTIGATION
HYDRAULIC CONDUCTIVITY TEST RESULTS SUMMARY

Well/ Corehole	Packer Test/ Test Interval Feet Below Ground Level	Hydraulic Conductivity Estimated from Packer Test (cm/sec)	Type of Flow	Comments/Notes	Slug Test/Type	Hydraulic Conductivity Estimated from Slug Analysis (cm/sec)
C-14	Y 10 - 15 ft.	6.1E-03	Laminar		N	NA
	15 - 20 ft.	<5.3E-06	No flow observed	For all pressures, the volume measurement on the water meter totalizer gauge (total intake) did not increase or change significantly.		
	20 - 25 ft.	<5.7E-06	Dilation of rock fractures			
	25 - 30 ft.	8.1E-05	Laminar			
	30 - 35 ft.	5.5E-05	Laminar			
	35 - 40 ft.	2.5E-03	Laminar			
	39 - 44 ft.	<3.9E-06	Dilation of rock fracture			
C-15	Y 25.2 - 65 ft.	6.1E-06	Laminar		N	NA
C-16	Y 12 - 60 ft.	2.4E-05	Wash out of fracture filling materials		N	NA
C-18	Y 13 - 49.5 ft.	2.9E-06	Dilation and void filling		N	NA
C-19	Y 16.5 - 55 ft.	3.8E-05	Laminar		N	NA

Notes:

1. NA - Not applicable.
2. Y = yes, indicating that the test was performed.
3. N = no, indicating that the test was not performed.

Table 2-5

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Biota Investigation
Field Data for Resident Fish, Cobleskill Creek and Storm Water Drainage System (Unnamed Tributary)

Sample ID	Total Length (cm)	Number in Sample	Total Live Weight (g)
Cobleskill Creek			
Smallmouth Bass			
CC-SB-1	19.5	NA	115
CC-SB-2	24.5	NA	230
CC-SB-3	20.5	NA	95
Common Shiner			
CC-CS-1	NA	3	33.5
CC-CS-2	NA	3	37.5
CC-CS-3	NA	3	29.4
Storm Water Drainage System (Unnamed Tributary)			
White Sucker			
UT-WS-1	21.5	NA	115
UT-WS-2	23	NA	140
UT-WS-3	23	NA	140
Fathead Minnow			
UT-FM-1	NA	4	11.5
UT-FM-2	NA	6	11.7
UT-FM-3	NA	14	18.6

Note:

1. Samples were collected by Blasland, Bouck & Lee, Inc., in October 1994.
2. NA = Not applicable.
3. Smallmouth bass and white sucker samples were prepared as skin-on fillet samples
4. Common shiner and fathead minnow samples were prepared as whole-body composite samples.

Table 3-1

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for Total PCBs

Sample I.D.	Total PCB Concentration (ppm)
SS-1S	0.95 NJ
SS-2S	18.9 D
SS-3S	38.3 D
SS-4S	164
SS-5S	0.04
SS-6S	0.65
SS-7S	38.1 D
SS-8S	23.1 D
SS-9S	5.9 NJ
SS-10S	4.4 NJ
SS-11S	3.3 NJ
SS-12S	6.3 NJ
SS-13S	57.4D
SS-14S	28 D
SS-15S	28.5 D
SS-16S	7.6
SS-17S	0.24 NJ
SS-18S	2.0
SS-19S	38.2 D
SS-20S	5.1 NJ
SS-21S	31.1
SS-22S	0.48
SS-23S	52.1
SS-24S	35.4
SS-25S	1.4
SS-25S Dup.	1.5
SS-26S	1.3
SS-27S	0.34
SS-28S	115.9

Table 3-1
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for Total PCBs

Sample I.D.	Total PCB Concentration (ppm)
SS-29S	<0.04
SS-30S	0.04
SS-31S	<0.04
SS-32S	0.05
SS-33S	<0.04
SS-33S Dup.	<0.04
SS-34S	0.04
SS-35S	0.35
SS-36S	3.4
SS-37S	3.3
SS-37S Dup.	3.1
SS-38S	26.0
SS-39S	15.0
SS-40S	<0.02
SS-41S	<0.02
SS-42S	0.07
SS-43S	0.03 J
SS-44S	0.02 J
SS-45S	0.02 J
SS-45S Dup.	0.01 J
SS-46S	<0.021
SS-47S	0.04 J
SS-48S	0.03 J
SS-49S	0.01 J
SS-50S	<0.022
SS-51S	0.04
SS-52S	19.0
SS-53S	2.02

Table 3-1
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for Total PCBs

Sample I.D.	Total PCB Concentration (ppm)
SS-54S	10.3
SS-55S	11.6
SS-56S	2.8 J
SS-57S	1.6 J
SS-60	1.1
SS-61	0.57
SS-62	0.03 J
SS-62D	0.03 J
SS-63	0.02
SS-64	0.02 J
SS-65	0.23
SS-66	0.04 J
SS-67	0.06
SS-68	0.02 J
NYSDEC-Recommended Soil Cleanup Objective	1.0

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. during May, August, and September 1993 (Phase I RI) and September 1994 (Phase II RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. Concentrations reported in parts per million (ppm) or milligrams per kilogram (mg/kg).
4. Sample designations include the following: SS = surface soil sample; S = discrete samples, and Dup = duplicate sample.
5. < = each aroclor analyzed was not detected at the concentration presented.
6. J = estimated value.
7. NJ = tentatively identified at an estimated concentration.
8. D = diluted surface soil sample analyzed.
9. NYSDEC-recommended soil cleanup objective is based on the NYSDEC Technical and Administrative Guidance Memorandum: "Determination of Soil Cleanup Objectives and Cleanup Levels" (January 1994). Concentrations above this cleanup objective are highlighted on this table.

Table 3-2

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for Detected TCL Semi-Volatile Organic Compounds

Semi-Volatile Organic Compounds	Soil Samples and Analytical Results (ppm)						
	SS-1S	SS-2S	SS-3S	SS-4S	SS-5S	SS-6S	SS-7S
Phenol	<0.44	<3.5	<2.9	<4.3	<0.44	<8.1	<0.77
2-Methylphenol	<0.44	<3.5	<2.9	<4.3	<0.44	<8.1	<0.77
4-Methylphenol	<0.44	<3.5	<2.9	<4.3	<0.44	<8.1	<0.77
1,2,4-Trichlorobenzene	<0.44	<3.5	<2.9	<4.3	<0.44	<8.1	<0.77
Naphthalene	0.19 J	1.5 J	<2.9	<4.3	<0.44	<8.1	<0.77
2-Methylnaphthalene	0.07 J	0.57 J	<2.9	<4.3	<0.44	<8.1	<0.77
Acenaphthylene	<0.44	<3.5	<2.9	<4.3	<0.44	<8.1	<0.77
Acenaphthene	0.53	4	<2.9	<4.3	<0.44	<8.1	0.15 J
Dibenzofuran	0.24 J	1.6 J	<2.9	<4.3	<0.44	<8.1	0.044 J
Fluorene	0.38 J	2.8 J	<2.9	<4.3	0.023 J	<8.1	0.12 J
Pentachlorophenol	<1.1	<8.4	<7	<10	<1.1	<20	<1.9
Phenanthrene	2.3	18	0.29 J	1.6 J	0.22 J	<8.1	0.73 J
Anthracene	0.68	4.7	<2.9	0.29 J	<0.44	<8.1	0.14 J
Carbazole	0.4 J	3.3 J	<2.9	<4.3	<0.44	<8.1	0.085 J
Di-n-Butylphthalate	<0.44	<3.5	<2.9	<4.3	<0.44	<8.1	<0.77
Fluoranthene	2.3	22	0.6 J	1.8 J	0.19 J	0.52 J	0.99
Pyrene	2	20	0.89 J	2.4 J	0.17 J	0.89 J	0.97
Benzo(a)anthracene	1.3	10	0.99 J	2.4 J	0.09 J	<8.1	0.76 J
Chrysene	1.3	10	1.1 J	2.5 J	0.1 J	<8.1	0.77 J
bis(2-ethylhexyl)phthalate	<0.44	<3.5	<2.9	<4.3	<0.44	<8.1	<0.77
Benzo(b)fluoranthene	1.2	7.5	1.7 J	3.3 J	0.086 J	<8.1	0.77 J
Benzo(k)fluoranthene	0.93	6.4	0.64 J	2.3 J	0.064 J	<8.1	0.51 J
Benzo(a)pyrene	1.1	7.5	1.2 J	2.7 J	0.074 J	<8.1	0.58 J
Indeno (1,2,3-cd) Pyrene	0.43 J	4.1	0.93 J	2.2 J	<0.44	<8.1	0.36 J
Dibenzo(a,h)anthracene	0.19 J	2.1 J	<2.9	1 J	<0.44	<8.1	0.22 J
Benzo(g,h,i)perylene	0.24 J	3 J	0.78 J	1.5 J	0.096 J	<8.1	0.24 J
Total TICs	10.6 JX	69 JX	141 JX	88.5 JX	15.9 JX	52.6 JX	24.6 JX

Table 3-2
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for Detected TCL Semi-Volatile Organic Compounds

Semi-Volatile Organic Compounds	Soil Samples and Analytical Results (ppm)				
	SS-8S	SS-9S	SS-10S	SS-11S	SS-12S
Phenol	0.29 J	<0.76	<0.76	<7.6	<3.9
2-Methylphenol	0.092 J	<0.76	<0.76	<7.6	<3.9
4-Methylphenol	0.38 J	<0.76	<0.76	<7.6	<3.9
1,2,4-Trichlorobenzene	<1.6	<0.76	<0.76	<7.6	<3.9
Naphthalene	0.29 J	<0.76	<0.76	<7.6	1.1 J
2-Methylnaphthalene	<1.6	<0.76	<0.76	<7.6	0.36 J
Acenaphthylene	<1.6	<0.76	<0.76	<7.6	<3.9
Acenaphthene	0.2 J	<0.76	<0.76	<7.6	2.5 J
Dibenzofuran	<1.6	<0.76	<0.76	<7.6	1.2 J
Fluorene	0.17 J	<0.76	<0.76	<7.6	1.8 J
Pentachlorophenol	<4	<1.8	<1.8	<18	<9.4
Phenanthrene	1.7	0.13 J	0.3 J	0.72 J	19
Anthracene	0.49 J	<0.76	0.045 J	<7.6	4.5
Carbazole	0.43 J	<0.76	0.045 J	<7.6	2.4 J
Di-n-Butylphthalate	<1.6	<0.76	<0.76	<7.6	<3.9
Fluoranthene	4.1	0.33 J	0.7 J	2.4 J	22
Pyrene	3.8	0.26 J	0.75 J	2 J	18
Benzo(a)anthracene	2.6	0.16 J	0.3 J	1.5 J	8.3
Chrysene	2.3	0.17 J	0.33 J	1.4 J	7.5
bis(2-ethylhexyl)phthalate	<1.6	4.5 B	<0.76	<7.6	<3.9
Benzo(b)fluoranthene	1.9	0.21 J	0.29 J	1.8 J	5.4
Benzo(k)fluoranthene	1.9	0.17 J	0.23 J	1.5 J	5.8
Benzo(a)pyrene	2.1	0.18 J	0.25 J	1.4 J	6.2
Indeno (1,2,3-cd) Pyrene	0.97 J	0.18 J	0.19 J	1.7 J	3.1 J
Dibenzo(a,h)anthracene	0.43 J	0.081 J	0.098 J	0.61 J	1.2 J
Benzo(g,h,i)perylene	0.49 J	0.17 J	0.16 J	0.96 J	1.4 J
Total TICs	32.6 JX	10.1 JX	13.5 JX	45.8 JX	39 JX

Table 3-2
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for Detected TCL Semi-Volatile Organic Compounds

Semi-Volatile Organic Compounds	Soil Samples and Analytical Results (ppm)				
	SS-13S	SS-14S	SS-15S	SS-16S	SS-17S
Phenol	<3.9	<1.5	<3.7	<3.8	<0.44
2-Methylphenol	<3.9	<1.5	<3.7	<3.8	<0.44
4-Methylphenol	<3.9	<1.5	<3.7	<3.8	<0.44
1,2,4-Trichlorobenzene	<3.9	<1.5	<3.7	<3.8	<0.44
Naphthalene	<3.9	<1.5	<3.7	<3.8	<0.44
2-Methylnaphthalene	<3.9	<1.5	<3.7	<3.8	0.029 J
Acenaphthylene	<3.9	<1.5	<3.7	<3.8	0.033 J
Acenaphthene	<3.9	<1.5	<3.7	<3.8	0.022 J
Dibenzofuran	<3.9	<1.5	<3.7	<3.8	<0.44
Fluorene	<3.9	<1.5	<3.7	<3.8	0.061 J
Pentachlorophenol	<9.4	<3.7	<8.9	<9.2	<1.1
Phenanthrene	0.6 J	0.34 J	0.97 J	0.57 J	0.72
Anthracene	<3.9	0.079 J	0.21 J	<3.8	0.096 J
Carbazole	<3.9	<1.5	0.21 J	<3.8	0.044 J
Di-n-Butylphthalate	<0.39	<1.5	<3.7	<3.8	<0.44
Fluoranthene	1.5 J	0.75 J	2.4 J	0.91 J	0.84
Pyrene	1.3 J	0.61 J	1.9 J	0.73 J	0.92
Benzo(a)anthracene	0.61 J	0.27 J	1 J	0.26 J	0.44 J
Chrysene	0.57 J	0.26 J	0.98 J	0.22 J	0.49
bis(2-ethylhexyl)phthalate	<3.9	<1.5	<3.7	<3.8	<0.44
Benzo(b)fluoranthene	0.57 J	0.28 J	0.94 J	0.26 J	0.37 J
Benzo(k)fluoranthene	0.43 J	0.23 J	0.77 J	0.19 J	0.28 J
Benzo(a)pyrene	0.43 J	0.22 J	0.81 J	0.2 J	0.35 J
Indeno(1,2,3-cd)pyrene	0.33 J	0.19 J	0.48 J	<3.8	0.18 J
Dibenzo(a,h)anthracene	<3.9	0.091 J	<3.7	<3.8	0.093 J
Benzo(g,h,i)perylene	0.26 J	0.11 J	0.24 J	<3.8	0.15 J
Total TICs	36.1 JX	20.2 JX	37.8 JX	11.4 JX	20.5 JX

Table 3-2
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for Detected TCL Semi-Volatile Organic Compounds

Semi-Volatile Organic Compounds	Soil Samples and Analytical Results (ppm)					
	SS-18S	SS-19S	SS-20S	SS-21S	SS-22S	SS-23S
Phenol	<0.37	<13	<12	<29	<0.4	<0.4
2-Methylphenol	<0.37	<13	<12	<29	<0.4	<0.4
4-Methylphenol	<0.37	<13	<12	<29	<0.4	<0.4
1,2,4-Trichlorobenzene	<0.37	<13	<12	<29	<0.4	<0.4
Naphthalene	<0.37	<13	<12	<29	<0.4	<0.4
2-Methylnaphthalene	<0.37	<13	<12	<29	<0.4	<0.4
Acenaphthylene	<0.37	<13	<12	<29	<0.4	<0.4
Acenaphthene	<0.37	<13	<12	<29	<0.4	<0.4
Dibenzofuran	<0.37	<13	<12	<29	<0.4	<0.4
Fluorene	<0.37	<13	<12	<29	<0.4	<0.4
Pentachlorophenol	<0.91	<31	<30	<71	<0.96	<0.98
Phenanthrene	0.15 J	<13	<12	<29	0.044 J	0.12 J
Anthracene	0.035 J	<13	<12	<29	<0.4	<0.4
Carbazole	0.025 J	<13	<12	<29	<0.4	<0.4
Di-n-Butylphthalate	<0.37	<13	<12	<29	0.11 BJ	<0.4
Fluoranthene	0.27 J	<13	<12	<29	0.06 J	0.17 J
Pyrene	0.25 J	0.68 J	<12	<29	0.079 J	0.13 J
Benzo(a)anthracene	0.12 J	<13	<12	<29	<0.4	0.092 J
Chrysene	0.12 J	<13	<12	<29	<0.4	0.1 J
bis(2-ethylhexyl)phthalate	<0.37	<13	<12	<29	<0.4	0.13 BJ
Benzo(b)fluoranthene	0.1 J	<13	<12	<29	<0.4	0.12 J
Benzo(k)fluoranthene	0.093 J	<13	<12	<29	<0.4	0.057 J
Benzo(a)pyrene	0.12 J	<13	<12	<29	<0.4	0.072 J
Indeno(1,2,3-cd)pyrene	0.053 J	<13	<12	<29	<0.4	0.081 J
Dibenzo(a,h)anthracene	0.022 J	<13	<12	<29	<0.4	0.042 J
Benzo(g,h,i)perylene	0.11 J	<13	<12	<29	<0.4	0.064 J
Total TICs	7 JX	184.7 JX	64.7 JX	555 JX	11.3 JX	56.0 JX

Table 3-2
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for Detected TCL Semi-Volatile Organic Compounds

Semi-Volatile Organic Compounds	Soil Samples and Analytical Results (ppm)				
	SS-24S	SS-25S	SS-25SD	SS-26S	SS-27S
Phenol	<0.76	<0.41	<0.41	<0.39	<0.39
2-Methylphenol	<0.76	<0.41	<0.41	<0.39	<0.39
4-Methylphenol	<0.76	<0.41	<0.41	<0.39	<0.39
1,2,4-Trichlorobenzene	0.057 J	<0.41	<0.41	<0.39	<0.39
Naphthalene	0.043 J	<0.41	<0.41	0.02 J	<0.39
2-Methylnaphthalene	<0.76	<0.41	<0.41	<0.39	<0.39
Acenaphthylene	<0.76	<0.41	<0.41	<0.39	<0.39
Acenaphthene	<0.76	<0.41	<0.41	<0.39	<0.39
Dibenzofuran	<0.76	<0.41	<0.41	<0.39	<0.39
Fluorene	<0.76	<0.41	<0.41	<0.39	<0.39
Pentachlorophenol	<1.8	<0.98	<0.98	<0.95	<0.95
Phenanthrene	0.21 J	0.047 J	0.051 J	0.12 J	0.096 J
Anthracene	<0.76	<0.41	<0.41	<0.39	<0.39
Carbazole	<0.76	<0.41	<0.41	<0.39	<0.39
Di-n-Butylphthalate	<0.76	<0.41	0.04 BJ	0.11 BJ	0.15 J
Fluoranthene	0.35 J	0.07 J	0.079 J	0.21 J	0.12 J
Pyrene	0.23 J	0.072 J	0.09 J	0.14 J	0.13 J
Benzo(a)anthracene	0.19 J	<0.41	<0.41	0.1 J	0.049 J
Chrysene	0.23 J	<0.41	<0.41	0.075 J	0.07 J
bis(2-ethylhexyl)phthalate	0.49 BJ	<0.41	<0.41	0.077 BJ	0.084 J
Benzo(b)fluoranthene	0.36 J	<0.41	<0.41	0.11 J	0.058 J
Benzo(k)fluoranthene	0.16 J	<0.41	<0.41	0.071 J	0.061 J
Benzo(a)pyrene	0.17 J	<0.41	<0.41	0.058 J	0.045 J
Indeno(1,2,3-cd)pyrene	0.2 J	<0.41	<0.41	<0.39	<0.39
Dibenzo(a,h)anthracene	0.13 J	<0.41	<0.41	<0.39	<0.39
Benzo(g,h,i)perylene	0.18 J	0.14 J	<0.41	<0.39	<0.39
Total TICs	22.6 JX	12.7 JX	14.1 JX	8.1 JX	24.7 JX

Table 3-2
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for Detected TCL Semi-Volatile Organic Compounds

Semi-Volatile Organic Compounds	Soil Samples and Analytical Results (ppm)				
	SS-28S	SS-29S	SS-30S	SS-31S	SS-32S
Phenol	<2.5	<0.39	<0.38	<0.4	<0.42
2-Methylphenol	<2.5	<0.39	<0.38	<0.4	<0.42
4-Methylphenol	<2.5	<0.39	<0.38	<0.4	<0.42
1,2,4-Trichlorobenzene	<2.5	<0.39	<0.38	<0.4	<0.42
Naphthalene	<2.5	<0.39	<0.38	<0.4	<0.42
2-Methylnaphthalene	<2.5	<0.39	<0.38	<0.4	0.022 J
Acenaphthylene	<2.5	<0.39	<0.38	<0.4	0.03 J
Acenaphthene	<2.5	<0.39	<0.38	<0.4	<0.42
Dibenzofuran	<2.5	<0.39	<0.38	<0.4	<0.42
Fluorene	<2.5	<0.39	<0.38	<0.4	0.037 J
Pentachlorophenol	<6	<0.94	<0.93	<0.98	<1
Phenanthrene	<2.5	0.058 J	0.1 J	0.082 J	0.46
Anthracene	<2.5	<0.39	<0.38	<0.4	0.029 J
Carbazole	<2.5	<0.39	<0.38	<0.4	0.051 J
Di-n-Butylphthalate	<2.5	0.05 J	0.058 J	<0.4	<0.42
Fluoranthene	0.95 J	0.062 J	0.12 J	0.1 J	0.6
Pyrene	1.2 J	0.069 J	0.13 J	0.11 J	0.56
Benzo(a)anthracene	0.69 J	<0.39	0.051 J	0.041 J	0.23 J
Chrysene	0.82 J	0.044 J	0.07 J	0.058 J	0.31 J
bis(2-ethylhexyl)phthalate	2.1 J	<0.39	<0.38	0.031 J	<0.42
Benzo(b)fluoranthene	0.82 J	<0.39	0.068 J	0.088 J	0.39 J
Benzo(k)fluoranthene	0.71 J	<0.39	0.05 J	<0.4	0.17 J
Benzo(a)pyrene	0.66 J	<0.39	0.057 J	0.043 J	0.28 J
Indeno(1,2,3-cd)pyrene	0.44 J	<0.39	<0.38	0.026 J	0.15 J
Dibenzo(a,h)anthracene	<2.5	<0.39	<0.38	<0.4	0.092 J
Benzo(g,h,i)perylene	<2.5	<0.39	<0.38	0.025 J	0.12 J
Total TICs	69.6 JX	24.9 JX	26.7 JX	21.9 JX	35.3 JX

Table 3-2
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for Detected TCL Semi-Volatile Organic Compounds

Semi-Volatile Organic Compounds	Soil Samples and Analytical Results (ppm)				NYSDEC-Recommended Soil Cleanup Objective (ppm)
	SS-33S	SS-33SD	SS-34S	SS-35S	
Phenol	<0.4	<0.38	<0.4	<0.37	0.03*
2-Methylphenol	<0.4	<0.38	<0.4	<0.37	0.10*
4-Methylphenol	<0.4	<0.38	<0.4	<0.37	0.9
1,2,4-Trichlorobenzene	<0.4	<0.38	<0.4	<0.37	3.4
Naphthalene	<0.4	<0.38	<0.4	0.047 J	13.0
2-Methylnaphthalene	<0.4	<0.38	<0.4	0.054 J	36.4
Acenaphthylene	<0.4	<0.38	<0.4	0.23 J	41
Acenaphthene	<0.4	<0.38	<0.4	0.038 J	50
Dibenzofuran	<0.4	<0.38	<0.4	0.039 J	6.2
Fluorene	<0.4	<0.38	<0.4	0.15 J	50
Pentachlorophenol	<0.96	<0.92	<0.96	<0.91	1.0*
Phenanthrene	0.036 J	0.027 J	0.066 J	1.7	50
Anthracene	<0.4	<0.38	<0.4	0.15 J	50
Carbazole	<0.4	<0.38	<0.4	0.14 J	N/A
Di-n-Butylphthalate	<0.4	<0.38	<0.4	<0.37	8.1
Fluoranthene	0.049 J	0.037 J	0.12 J	3	50
Pyrene	0.052 J	0.038 J	0.11 J	2.6	50
Benzo(a)anthracene	0.024 J	<0.38	0.047 J	1.6	0.224*
Chrysene	0.035 J	0.027 J	0.065 J	1	0.4
bis(2-ethylhexyl)pthalate	<0.4	<0.038	0.04 J	<0.37	50
Benzo(b)fluoranthene	<0.4	<0.38	0.087 J	1.9	1.1
Benzo(k)fluoranthene	<0.4	<0.38	0.034 J	0.71	1.1
Benzo(a)pyrene	<0.4	<0.38	0.044 J	0.87	0.061*
Indeno(1,2,3-cd)pyrene	<0.4	<0.38	0.028 J	0.86	3.2
Dibenzo(a,h)anthracene	<0.4	<0.38	<0.4	0.32 J	0.014*
Benzo(g,h,i)perylene	<0.4	<0.38	<0.4	0.59	50
Total TICs	12.5 JX	15.6 JX	12.9 JX	27.8 JX	N/A

Table 3-2
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for Detected TCL Semi-Volatile Organic Compounds

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in May 1993 (Phase I RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. All concentrations are reported in parts per million (ppm) or milligrams per kilogram (mg/kg).
4. < = below detection limit.
5. J = estimated value.
6. B = analyte detected in method blank.
7. Sample designations indicate the following: SS = surface soil sample; S = discrete sample; and D = duplicate sample.
8. X = result was manually entered into data file due to software limitations.
9. * = or method detection limit.
10. NYSDEC-recommended soil cleanup objective is based on the NYSDEC Technical and Administrative Guidance Memorandum: "Determination of Soil Cleanup Objectives and Cleanup Levels" (January 1994). Concentrations above this cleanup objective are highlighted on this table.
11. N/A = not available.

Table 3-3

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for TAL Inorganic Parameters

Inorganics	Soil Samples and Analytical Results (ppm)						
	SS-1S	SS-2S	SS-3S	SS-4S	SS-5S	SS-6S	SS-7S
Aluminum	13200	12000	13400	15200	15800	11400	8400
Antimony	172 J	19.7 J	154 J	<5.6	<6	12.5 J	29.2 J
Arsenic	11.2 J	17.9 J	16.5 J	16.9 J	10.6 J	10.7 J	12.3 J
Barium	285	216	394	398	179	246	205
Beryllium	0.8 B	0.66 B	0.72 B	0.6 B	1 B	0.58 B	0.49 B
Cadmium	8	17	11.8	38.7	1.5	4.6	9.1
Calcium	15400 J	108000 J	6420 J	42700 J	5140 J	43500 J	65300 J
Chromium	98.2 J	65.4	87.1	67.5	22.2	24.1 J	69
Cobalt	13.7	11.6	17.9	13.4	13.7	9.5	11.9
Copper	317	492 J	508 J	1300 J	41 J	662 J	943 J
Iron	63500	51400	111000	94000	31300	32300	73000
Lead	851 J	614 J	970 J	5060 J	249 J	225 J	855 J
Magnesium	3940	5100	3740	4160	3700	4870	3310
Manganese	923	755	971	768	706	648	863
Mercury	0.38 J	0.59 J	0.33 J	0.66 J	0.1 J	0.26 J	1.7 J
Nickel	77.6	153 J	117 J	137	48 J	35.9	63.9 J
Potassium	1880	1800	1800	2050	2020	1320	1170
Selenium	<0.3	<0.25	<0.3	<0.24	<0.24	0.47 BJ	<0.28
Silver	0.98 BJ	<0.83	<1.1	1.6 BJ	<0.94	<0.81	<0.67
Sodium	<113	154 B	<127	305 B	<112	423 B	144 B
Thallium	<0.69	<0.58	<0.69	9.3 J	<0.55	<0.59	<0.65
Vanadium	29.6	30.7	31.3	26.1	36.4	24	41.1
Zinc	883 J	1650	1200	6750	338	1490 J	1040
Cyanide	<0.81	<0.76	<0.78	<0.78	<0.67	<0.74	<0.62

Table 3-3
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for TAL Inorganic Parameters

Inorganics	Soil Samples and Analytical Results (ppm)					
	SS-8S	SS-9S	SS-10S	SS-11S	SS-12S	SS-13S
Aluminum	15300	16000	5160	8790	10500	11100
Antimony	32.7 J	<4.5	12.2 J	16.8 J	16.1 J	26.2 J
Arsenic	13.9 J	9.7 J	12.8 J	44.2 J	12.4 J	14.8 J
Barium	277	135	155	925	165	175
Beryllium	0.78 B	0.84	0.33 B	0.48 B	0.58 B	0.66 B
Cadmium	31.4	2.8	4.3	20.9	8.9	45.7
Calcium	17900 J	23700 J	266000 J	52300 J	51600 J	40000 J
Chromium	198	22.7	27.3	51.6	47.5 J	140
Cobalt	15.2	10.7	6 B	12.2	10.3	13.4
Copper	913 J	111 J	1070 J	1350 J	732	4660 J
Iron	54600	29000	17300	43200	41800	42700
Lead	673 J	149 J	761 J	9700 J	487 J	2450 J
Magnesium	4230	4240	2970	4240	4260	3880
Manganese	832	546	884	530	716	671
Mercury	0.65 J	0.07 J	0.74 J	0.14 J	0.84 J	19.6 J
Nickel	52.1 J	35.8 J	23.1 J	73 J	50.5	60.2 J
Potassium	2230	1620	863	1090	1250	1160
Selenium	0.57 BJ	<0.23	0.25 BJ	<0.22	<0.29	<0.27
Silver	1.3 BJ	<0.72	0.68 BJ	1 BJ	0.72 BJ	2.7J
Sodium	101 B	85.7 B	162 B	133 B	126 B	112 B
Thallium	<0.54	<0.54	<0.55	<0.52	<0.67	<0.62
Vanadium	35.8	30.9	14.6	22.1	27.1	39.6
Zinc	1270	163	764	2310	625 J	1230
Cyanide	<0.63	<0.59	<0.59	<0.6	<0.71	<0.62

Table 3-3
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for TAL Inorganic Parameters

Inorganics	Soil Samples and Analytical Results (ppm)					
	SS-14S	SS-15S	SS-16S	SS-17S	SS-18S	SS-19S
Aluminum	9140	12600	12500	14000	11000	7080
Antimony	18.8 J	9.9 BJ	<6.1	6.9 BJ	8.5 J	19.7 J
Arsenic	7.5 J	9.8 J	8.1 J	10.3 J	9.3 J	8.1 J
Barium	141	148	109	251	111	169
Beryllium	0.55 B	0.76 B	0.7 B	0.73 B	0.56 B	0.46 B
Cadmium	5.2	6.2	2 J	28.3	3.2	5.6
Calcium	53600 J	23000 J	19800	5560 J	26300 J	106000 J
Chromium	29.2	54.1	17.8	39	90.2 J	29.4
Cobalt	9.2	11.9	9.9 B	11.7	11.7	7.5 B
Copper	464 J	565 J	60.1 J	133 J	1340	1130 J
Iron	31700	45200	28200	52500	53900	38400
Lead	738 J	643 J	120 J	671 J	439 J	690 J
Magnesium	3230	4260	3850	3950	4090	4280
Manganese	783	700	533	619	736	550
Mercury	0.57 J	0.44 J	0.12 J	0.45 J	0.12 J	0.82 J
Nickel	31.9 J	43.5 J	30 J	48.8 J	90.1	46.8 J
Potassium	990	1140	897 B	1550	970	981 B
Selenium	<0.25	<0.25	<0.21	<0.29	<0.2	<0.25
Silver	1.4 BJ	1.5 BJ	<0.95	0.98 BJ	<0.57	<0.86
Sodium	81.8 B	112 B	<114	<108	<67.8	149 B
Thallium	<0.57	<0.58	<0.49	<0.66	<0.45	<0.58
Vanadium	22.6	28.1	24.6	29.3	29.7	25.1
Zinc	801	732	340	936	382 J	931
Cyanide	<0.59	<0.57	<0.68	<0.8	<0.67	<0.69

Table 3-3
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for TAL Inorganic Parameters

Inorganics	Soil Sample Location and Analytical Results (ppm)					
	SS-20S	SS-21S	SS-22S	SS-23S	SS-24S	SS-25S
Aluminum	11300	14600	11100	13700	10000	13900
Antimony	13.5 J	<7.2	<4.8	<5.2	6.3 BJ	<4.3
Arsenic	8.2 J	32.3 J	10.3 J	7.4 J	8.7 J	8.7 J
Barium	358	870	102	91.8	210	105
Beryllium	0.61 B	0.69 B	0.6 B	0.6 B	0.5 B	0.69 B
Cadmium	20	68.8	3.5	2.3	7	<0.32
Calcium	3170 J	4420	38000	9780	78000	14700
Chromium	43	56.4 J	15.3 J	21.9 J	61.4 J	18.3 J
Cobalt	11.2	9.8 B	8.7 B	10.6	9.2	9.8
Copper	650 J	737 J	79.4 J	120 J	1500 J	44.7 J
Iron	35800 J	64600	26200	30200	33900	24600
Lead	2230 J	4480 J	174 J	92.6 J	1360 J	172 J
Magnesium	3430	3830	3220	4120	3650	3890
Manganese	523	317 J	502 J	519 J	678 J	618 J
Mercury	0.08 J	0.22	<0.04	0.14	0.78	0.05 B
Nickel	36.9 J	54.6	26.6	31.5	36.6	26.2
Potassium	982	1450	1330	1340	947	1940
Selenium	<0.23	<0.27	0.3 BJ	<0.31	0.26 BJ	0.31 BJ
Silver	<0.76	<1.1	<0.76	<0.81	0.65 BJ	<0.68
Sodium	<91	<136	<90.5	<96.9	99.2 B	<81.1
Thallium	<0.53	<0.61	<0.61	<0.72	<0.55	<0.63
Vanadium	23	31.7	23.8	26.4	31	28.4
Zinc	2160	2940	260	294	1680	144
Cyanide	<0.73	1.3	<0.73	<0.63	<0.58	<0.56

Table 3-3
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for TAL Inorganic Parameters

Inorganics	Soil Samples and Analytical Results (ppm)				
	SS-25SD	SS-26S	SS-27S	SS-28S	SS-29S
Aluminum	13000	14600	13400	11700	10200
Antimony	<4.1	8.4 J	<3.4	19.1 J	<5
Arsenic	8.4 J	10.7 J	9.1 J	7.8 J	7.8 J
Barium	104	218	132	262	77
Beryllium	0.68 B	0.71	0.65	0.51 B	0.56 B
Cadmium	<0.30	10.4	1.2	14.8	<0.36
Calcium	11500	3900	4010	48800	4810
Chromium	17.5 J	40.3 J	28.1 J	47 J	13.4 J
Cobalt	10.1	13	12.2	11.2	8.7 B
Copper	47.2 J	231 J	86.4 J	4740 J	29.3 J
Iron	24800	41800	42700	41800	20800
Lead	172 J	633 J	194 J	4320 J	23 J
Magnesium	3670	4010	3960	4480	2980
Manganese	643 J	806 J	603 J	540 J	644 J
Mercury	<0.05	0.05 B	<0.04	4.9	<0.04
Nickel	26.6	48.9	31	58.8	22.5
Potassium	1620	1050	1160	1130	1110
Selenium	0.26 BJ	0.26 BJ	0.28 BJ	0.27 BJ	0.27 BJ
Silver	<0.65	<0.6	<0.54	4.6 J	<0.78
Sodium	<77.7	<71.6	<64.6	117 B	<93.1
Thallium	<0.46	<0.6	<0.49	<0.57	<0.53
Vanadium	26.2	27.8	25.7	151	20.8
Zinc	143	1680	179	2360	104
Cyanide	<0.55	<0.62	<0.6	<0.57	<0.7

Table 3-3
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for TAL Inorganic Parameters

Inorganics	Soil Samples and Analytical Results (ppm)								NYSDEC-Recommended Soil Cleanup Objective (ppm)
	SS-30S	SS-31S	SS-32S	SS-33S	SS-33SD	SS-34S	SS-35S	SSMW-7S	
Aluminum	10900	9330	7150	10300	10600	13000	9320	14,800	33000 (BG)
Antimony	<4.8	<4.9	<5.7	5.7 BJ	<6.1	<5.2	8.6 BJ	8.6 BJ	0.48 (BG)
Arsenic	7.7 J	8.5 J	9.1 J	8.6 J	8.6 J	7.7 J	9 J	6.4 J	7.5
Barium	76.8	65.5	72	75.7	78.1	89.2	101	96.5	300
Beryllium	0.6 B	0.48 B	0.38 B	0.6 B	0.61 B	0.63 B	0.56 B	0.68 B	1.0 (BG)
Cadmium	<0.35	<0.36	<0.41	<0.36	<0.44	<0.38	0.42 B	0.53 B	1.0
Calcium	37900	57400	81100 J	23900	25500 J	19300	69800 J	21,400 J	4400 (BG)
Chromium	14.3 J	12.1 J	10.6	14	14.3	17.8 J	17.9	22.4	10
Cobalt	8.6 B	7.8 B	6.4 B	8.6 B	9 B	9.6 B	8.8	11.4 B	30
Copper	25.5 J	23.8 J	31 J	24.1 J	23.4 J	28.1 J	58.9 J	22.0 J	25.
Iron	21900	19700	16200	21800	22200	23500	22100	29,100	2000
Lead	25	20.3	48.1	15.7	15	39.3	207 J	14.5	30 (BG)
Magnesium	3580	3140	3900	3220	3280	4140	5200	4,390	4000 (BG)
Manganese	466 J	478 J	339	513	518	526 J	494	566	500 (BG)
Mercury	0.05 B	<0.04	0.14 J	0.08 BJ	0.05 J	<0.04	0.1 J	0.08 BJ	0.1
Nickel	23.6	20.7	19.4 J	24.5 J	24.4 J	25.3	22.6 J	37.9 J	13
Potassium	1290	1050	1260	1300	1140	1660	1370	1,420	16000 (BG)
Selenium	<0.25	<0.28	<0.29	<0.27	<0.24	0.28 BJ	<0.22	<0.23	2
Silver	<0.76	<0.77	<0.89	<0.77	1 BJ	<0.83	<0.69	<1.0	N/A
Sodium	<90.3	<91.8	133 B	<91.1	<114	<98.4	120 B	<120	7000 (BG)
Thallium	<0.58	<0.65	<0.67	<0.63	<0.55	<0.63	<0.52	<0.54	N/A
Vanadium	21.7	18.8	17.6	20.4	21.6	25.8	21.1	30.1	150
Zinc	71.9	66.6	77.9	63	62.7	78.1	134	72.8	20
Cyanide	<0.7	<0.7	<0.63	<0.59	<0.56	<0.72	<0.53	<0.72	N/A

Table 3-3
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for TAL Inorganic Parameters

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in May 1993 (Phase I RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP.
3. Concentrations reported in parts per million (ppm) or milligrams per kilogram (mg/kg).
4. < = below detection limit.
5. Sample designations indicate the following: SS= surface soil sample; S = discrete sample; and D = duplicate sample.
6. B = value is less than the Contract Required Detection Limit, but greater than the Instrument Detection Limit.
7. NYSDEC-recommended soil cleanup objective is based on the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046: "Determination of Soil Cleanup Objectives and Cleanup Levels" (January 1994). Where background concentrations are required under TAGM 4046, average values for eastern New York State from the United States Geological Survey Publication: "Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States" (1984) are presented. Concentrations above these cleanup objectives are highlighted on this table.
8. BG = eastern New York State background concentration (see Note 7).
9. N/A = data is not available for background concentration.

Table 3-3A

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Surface Soil Analytical Results for EP Toxic Metals

EP Toxic Metals	Soil Samples and Analytical Results (ppb)					
	SS-3	SS-3D	SS-4	SS-7	SS-8	SS-11
Arsenic	<48.7	<48.5	<48.5	<48.8	<48.8	<48.8
Barium	2950 J	1070 J	1360 J	786 J	1070 J	808 J
Cadmium	45.3	48.3	169	49.8	75.5	85.5
Chromium	13.3	9.0 B	8.9 B	11.7	8.2 B	8.7 B
Lead	207 J	116 J	2190 J	568 J	1080 J	542 J
Mercury	11.5 BJ	10.4 B	10.0 BJ	9.2 BJ	8.2 BJ	8.5 BJ
Selenium	<76.2	<75.8	<75.9	<76.4	<76.4	<76.3
Silver	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7

EP Toxic Metals	Soil Samples and Analytical Results (ppb)					
	SS-13	SS-20	SS-21	SS-24	SS-28	Regulatory Level*
Arsenic	<48.8	<48.6	<48.7	<48.9	<48.7	5000
Barium	918 J	668 J	267 J	1110 J	1910 J	100000
Cadmium	41.4	19.5	5.9	111	186	1000
Chromium	11.2	9.3 B	9.7 B	12.0	9.9 B	5000
Lead	551 J	112 J	34.1 J	1660 J	7320 J	5000
Mercury	9.0 BJ	11.4 BJ	10.7 BJ	<7.0	<7.0	200
Selenium	<76.4	<76.1	<76.2	<76.5	<76.3	1000
Silver	<3.7	<3.7	<3.7	<3.7	<3.7	5000

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in September 1994 (Phase II RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP.
3. Concentrations reported in parts per billion (ppb) or micrograms per liter (ug/L).
4. < = below detection limit.
5. SS = surface soil sample.
6. J - concentration is estimated.
7. * = regulatory level presented in 6NYCRR Part 371.3, Table 1. Concentrations above these regulatory levels are highlighted in this table.
8. B = value is less than the Contract Required Detection Limit, but greater than the Instrument Detection Limit.

Table 3-4

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Subsurface Soil Analytical Results for Total PCBs

Sample I.D.	Total PCB Concentration (ppm)
TP-1S (10-18")	<0.037
TP- 2S (6-18")	<0.036
TP-3S (2-4')	0.1
TP-4S (0-2')	0.55
TP-5S (6-18")	<0.037
TP-6S (0-2')	0.5
TP-7S (6-18")	3.6
TP-8S (0-2')	0.29
TP-9S (0-2')	0.91
TP-10S (0-2')	0.47
TP-11S (6-18")	0.16
TP-12S (6-18")	0.28 NJ
TP-13S (0-2')	15.99 DJ
TP-14S (0-2')	6.1 NJ
TP-15S (0-2')	0.07
TP-16S (6-18")	4.4
TP-17S (6-18")	<0.036
TP-18S (6-18")	<0.036
TP-19S (2-4')	13 D
TP-20S (6-18")	0.3
TP-21S (6-18")	0.84
TP-21S (6-18") Dup	0.93
TP-22S (6-18")	0.09
TP-23S (6-18")	0.09
TP-24S (6-18")	0.32
TP-25S (6-18")	0.23
TP-26S (6-18")	<0.037
TP-27S (6-18")	<0.036
TP-28S (0-2')	0.53 NJ

Table 3-4
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Subsurface Soil Analytical Results for Total PCBs

Sample I.D.	Total PCB Concentration (ppm)
TP-28S (0-2') Dup.	0.32
TP-29S (6-18")	<0.035
TP-30S (6-18")	<0.036
TP-31S (0-2')	<0.035
TP-34S (6-18")	<0.037
TP-52S (2-3')	0.01 J
TP-53S (4-6')	0.03
TP-54S (2-4')	<0.018
TP-54S (2-4') Dup.	<0.018
TP-55S (2-4')	0.01 J
TP-55R*	<0.083
SS-60 (18-30")	<0.02
SS-60 (36-48")	<0.02
SS-61 (18-30")	1.3 J
SS-61 (36-48")	0.34
NYSDEC-Recommended Soil Cleanup Objective (ppm)	10

Notes:

1. Samples collected by Blasland & Bouck & Lee, Inc. in May, July, and August 1993 (Phase I RI); and September 1994 (Phase II RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. Concentrations reported in parts per million (ppm) or milligrams per kilogram (mg/kg).
4. Sample designations include the following: TP = subsurface soil sample; S = discrete samples, Dup = duplicate sample; and R = rinse blank.
5. J = estimated value.
6. NJ = tentatively identified at an estimated concentration.
7. < = each aroclor analyzed was not detected at the concentration presented.
8. * = aqueous result reported in parts per billion (ppb) or micrograms per liter (ug/l).
9. NYSDEC-recommended soil cleanup objective is based on the NYSDEC Technical and Administrative Guidance Memorandum: "Determination of Soil Cleanup Objectives and Cleanup Levels" (January 1994). Concentrations above this cleanup objective are highlighted on this table.

Table 3-5

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
TPC-12A Subsurface Soil Analytical Results

Compound	TPC-12AS (2-4')	TB-3*	NYSDEC-Recommended Soil Cleanup Objective (ppm)
Total PCBs	<0.02	NA	10
Volatile Organic Compounds			
Benzene	18 J	3 J	0.060
Toluene	290 J	3 J	1.5
Ethylbenzene	140 J	<10	5.5
Xylene (total)	720 J	<10	1.2
Total TICs	1620 JX	NTD	NA
Semi-Volatile Organic Compounds			
Naphthalene	20 J	NA	13
2-Methylnaphthalene	20 J	NA	36.4
Acenaphthene	0.19 J	NA	50
Dibenzofuran	0.11 J	NA	6.2
Fluorene	0.24 J	NA	50
Phenanthrene	0.85 J	NA	50
Anthracene	0.24 J	NA	50
Carbazole	0.13 J	NA	50
Fluoranthene	0.62 J	NA	50
Pyrene	0.41	NA	50
Benzo(a)anthracene	0.23 J	NA	0.22
Chrysene	0.2 J	NA	0.4
bis(2-ethylhexyl)phthalate	0.075 J	NA	50
Benzo(b)fluoranthene	0.13 J	NA	1.1
Benzo(k)fluoranthene	0.11 J	NA	1.1
Benzo(a)pyrene	0.11 J	NA	0.061
Total TICs	282.2 JX	NA	NA

Table 3-5
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
TPC-12A Subsurface Soil Analytical Results

Compound	TPC-12AS (2-4')	TB-3*	NYSDEC-Recommended Soil Cleanup Objective (ppm)
Inorganics			
Aluminum	17800 J	NA	33000 (BG)
Antimony	<6.9	NA	0.48 (BG)
Arsenic	7.0 J	NA	7.5
Barium	133 J	NA	300
Beryllium	0.84 J	NA	1.0 (BG)
Cadmium	0.92 J	NA	1.0
Calcium	4190 J	NA	4400 (BG)
Chromium	25.4 J	NA	10
Cobalt	13.2 J	NA	30
Copper	20.9 J	NA	25
Iron	28300 J	NA	2000
Lead	14.7 J	NA	30 (BG)
Magnesium	5510 J	NA	4000 (BG)
Manganese	511 J	NA	500 (BG)
Mercury	0.06 BJ	NA	0.1
Nickel	37.4 J	NA	13
Potassium	3000 J	NA	16000 (BG)
Selenium	<0.12	NA	2
Silver	<0.76	NA	N/A
Sodium	<130	NA	7000 (BG)
Thallium	<0.31	NA	N/A
Vanadium	37.1 J	NA	150
Zinc	63.0 J	NA	20
Cyanide	<0.09	NA	N/A

Table 3-5
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
TPC-12A Subsurface Soil Analytical Results

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in July 1993 (Phase I RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods. Only detected compounds are listed for VOC and SVOC analyses.
3. All concentrations are reported in parts per million (ppm) or milligrams per kilogram (mg/kg), unless otherwise noted.
4. < = below detection limit.
5. J = estimated value.
6. Sample designations indicate the following: TP = subsurface soil sample; C-12A = sample location is adjacent to bedrock core C-12; S = discrete sample; and TB = trip blank.
7. * = concentrations reported in parts per billion (ppb) or micrograms per liter (ug/L).
8. TICs = tentatively identified compounds.
9. NTD = no TICs detected.
10. NA = not analyzed.
11. X = result was manually entered into data file due to software limitations.
12. NYSDEC-recommended soil cleanup objective is based on the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046: "Determination of Soil Cleanup Objectives and Cleanup Levels" (January 1994). Where background concentrations are required under TAGM 4046, average values for eastern New York State from the United States Geological Survey Publication: "Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States" (1984) are used. Concentrations above these cleanup objectives are highlighted on this table.
13. BG = eastern New York State background concentration (see Note 12).
14. N/A = data is not available for background concentration.

Table 3-6

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Subsurface Soil Analytical Results for Detected TCL Volatile and Semi-Volatile Organic Compounds

	Subsurface Soil Samples and Analytical Results (ppm)						
	TP-1S (10-18")	TP-4S (0-2')	TP-8S (0-2')	TP-12S (6-18")	TP-13S (0-2')	TP-14S (0-2')	TP-15S (0-2')
Volatile Organic Compounds							
Methylene Chloride	<0.012	<0.011	<0.014	<0.012	<0.012	<0.011	<0.012
Acetone	<0.012	<0.011	<0.014	<0.012	<0.012	<0.011	<0.012
Total TICs	NTD	NTD	NTD	NTD	NTD	0.032 JX	NTD
Semi-Volatile Organic Compounds							
4-Methylphenol	<0.41	<0.37	<0.44	0.024 J	<1.5	<3.9	<0.39
Fluorene	<0.41	<0.37	<0.44	<0.37	<1.5	3.9	0.039
Pentachlorophenol	0.053 J	<0.9	<1.1	<0.9	<3.7	<9.4	0.027 J
Phenanthrene	0.12 J	<0.37	0.15 J	0.063 J	0.21 J	<3.9	<0.39
Anthracene	0.025 J	<0.37	<0.44	<0.37	<1.5	<3.9	<0.39
Carbazole	<0.41	<0.37	<0.44	<0.37	<1.5	<3.9	<0.39
Di-n-Butylphthalate	<0.41	<0.37	<0.44	<0.37	<1.5	<3.9	<0.39
Fluoranthene	0.15 J	<0.37	0.16 J	0.11 J	0.29 J	<3.9	<0.39
Pyrene	0.17 J	<0.37	0.18 J	0.12 J	0.32 J	<3.9	<0.39
Benzo(a)anthracene	0.093 J	<0.37	0.081 J	0.071 J	0.2 J	<3.9	<0.39
Chrysene	0.11 J	<0.37	0.12 J	0.083 J	0.22 J	<3.9	<0.39
bis(2-ethylhexyl)phthalate	<0.41	<0.37	<0.44	<0.37	<1.5	<3.9	<0.39
Benzo(b)fluoranthene	0.11 J	<0.37	0.18 J	0.12 J	0.2 J	<3.9	<0.39
Benzo(k)fluoranthene	0.1 J	<0.37	<0.44	0.068 J	0.21 J	<3.9	<0.39
Benzo(a)pyrene	0.089 J	<0.37	0.1 J	0.082 J	0.19 J	<3.9	<0.39
Indeno (1,2,3-cd) Pyrene	0.056 J	<0.37	0.066 J	0.066 J	<1.5	<3.9	<0.39
Benzo(g,h,i)perylene	0.041 J	<0.37	0.058 J	0.049 J	<1.5	<3.9	<0.39
Total TICs	15.6 JX	10.2 JX	28.6 JX	4 JX	19 JX	231.5 JX	1.2 JX

Table 3-6
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Subsurface Soil Analytical Results for Detected TCL Volatile and Semi-Volatile Organic Compounds

	Subsurface Soil Samples and Analytical Results (ppm)						
	TP-19S (2-4')	TP-22S (6-18")	TP-23S (6-18")	TP-26S (6-18"	TP-27S (6-18")	TP-28S (0-2')	TP-28SD (0-2')
Volatile Organic Compounds							
Methylene Chloride	<0.012	0.004 BJ	<0.012	<0.012	<0.011	0.002 J	0.002 J
Acetone	0.008 J	0.004 BJ	0.007 J	<0.012	0.003 J	<0.012	<0.012
Total TICs	0.036 J	0.03 JX	NTD	NTD	NTD	0.023 J	0.012 J
Semi-Volatile Organic Compounds							
4-Methylphenol	<4	<0.4	<0.39	<0.4	<0.39	<1.6	<0.4
Fluorene	<4	<0.4	<0.39	<0.4	<0.39	<1.6	<0.4
Pentachlorophenol	<9.8	<0.97	<0.94	<0.96	<0.94	<4	<0.96
Phenanthrene	<4	0.038 J	0.024 J	<0.4	<0.39	<1.6	0.03 J
Anthracene	<4	<0.4	<0.39	<0.4	<0.39	<1.6	<0.4
Carbazole	<4	<0.4	<0.39	<0.4	<0.39	<1.6	<0.4
Di-n-Butylphthalate	<4	<0.4	<0.39	<0.4	<0.39	<1.6	<0.4
Fluoranthene	<4	0.05 J	<0.39	<0.4	<0.39	<1.6	0.075 J
Pyrene	<4	0.048 J	0.022 J	<0.4	<0.39	<1.6	0.094 J
Benzo(a)anthracene	<4	0.02 J	<0.39	<0.4	<0.39	<1.6	0.043 J
Chrysene	<4	0.031 J	<0.39	<0.4	<0.39	<1.6	0.057 J
bis(2-ethylhexyl)phthalate	<4	0.051 J	0.022 J	<0.4	<0.39	<1.6	0.1 J
Benzo(b)fluoranthene	<4	0.037 J	<0.39	<0.4	<0.39	<1.6	0.051 J
Benzo(k)fluoranthene	<4	<0.4	<0.39	<0.4	<0.39	<1.6	0.037 J
Benzo(a)pyrene	<4	0.034 J	<0.39	<0.4	<0.39	<1.6	0.027 J
Indeno (1,2,3-cd) Pyrene	<4	<0.4	0.02 J	<0.4	<0.39	<1.6	<0.4
Benzo(g,h,i)perylene	<4	0.12 J	<0.39	<0.4	<0.39	<1.6	<0.4
Total TICs	322.5 JX	5 JX	1.1 JX	0.092 JX	0.078 JX	55.8 JX	10.3 JX

Table 3-6
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Subsurface Soil Analytical Results for Detected TCL Volatile and Semi-Volatile Organic Compounds

	Subsurface Soil Samples and Analytical Results (ppm)								NYSDEC-Recommended Soil Cleanup Objective (ppm)
	TP-30S (6-18")	TP-52S (2-3')	TP-53S (4-6')	TP-54S (2-4')	TP-54SD (2-4')	TP-55S (2-4')	TP-55R*	TB-5*	
Volatile Organic Compounds									
Methylene Chloride	0.001 J	<0.012	<0.011	<0.011	<0.01	<0.012	<10	<10	0.1
Acetone	<0.012	<0.012	<0.011	<0.01	<0.011	<0.012	<10	<10	0.2
Total TICs	NTD	NTD	NTD	NTD	NTD	NTD	NTD	NTD	N/A
Semi-Volatile Organic Compounds									
4-Methylphenol	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	0.9
Fluorene	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	50
Pentachlorophenol	<0.95	<0.93	<0.93	<0.86	<0.86	<0.96	<36	NA	1.0**
Phenanthrene	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	50
Anthracene	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	50
Carbazole	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	N/A
Di-n-Butylphthalate	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	8.1
Fluoranthene	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	50
Pyrene	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	50
Benzo(a)anthracene	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	0.224**
Chrysene	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	0.4
bis(2-ethylhexyl)phthalate	<0.39	0.06 J	0.17 J	<0.35	<0.35	0.045 J	<14	NA	50
Benzo(b)fluoranthene	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	1.1
Benzo(k)fluoranthene	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	1.1
Benzo(a)pyrene	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	0.061**
Indeno(1,2,3-cd)pyrene	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	3.2
Benzo(g,h,i)perylene	<0.39	<0.38	<0.38	<0.35	<0.35	<0.4	<14	NA	50.0
Total TICs	0.39 JX	0.27 JX	1.6 JX	0.4 JX	1 JX	4.4 JX	NTD	NA	N/A

Table 3-6
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Subsurface Soil Analytical Results for Detected TCL Volatile and Semi-Volatile Organic Compounds

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in May and August 1993 (Phase I RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods. Only detected compounds are listed on this table.
3. All concentrations are reported in parts per million (ppm) or milligrams per kilogram (mg/kg).
4. Sample designations indicate the following: TP = test pit subsurface soil location; S = discrete sample; and D = duplicate sample.
5. < = below detection limit.
6. J = estimated value.
7. B = compound was detected in method blank.
8. Sample designations indicate the following: TP = subsurface soil sample; S = discrete sample; D = duplicate sample; R = rinse blank; and TB = trip blank.
9. * = concentrations reported in micrograms per liter.
10. X = result was manually entered into data file due to software limitations.
11. TICs = tentatively identified compounds.
12. NTD = no TICs detected.
13. NA = not analyzed.
14. ** = or method detection limit.
15. NYSDEC-recommended soil cleanup objective is based on the concentrations presented in the NYSDEC Technical and Administrative Guidance Memorandum: "Determination of Soil Cleanup Objectives and Cleanup Levels" (January 1994). Concentrations above this cleanup objective are highlighted on this table.
16. N/A = not available.

Table 3-7

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
<u>Subsurface Soil Analytical Results for TAL Inorganic Parameters</u>

Inorganics	Soil Samples and Analytical Results (ppm)						
	TP-1S (10-18")	TP-4S (0-2')	TP-8S (0-2')	TP-12S (6-18")	TP-13S (0-2')	TP-14S (0-2')	TP-15S (0-2')
Aluminum	16200	6900	9390	10500	16100	16700	14400
Antimony	52.6 J	7.4 BJ	129 J	9.8 BJ	<5.7	<5.8	10.7 J
Arsenic	11.3 J	6.9 J	81.8 J	8.8 J	12.8 J	10.9 J	10.3 J
Barium	187	67.3	886	104	123	170	95.6
Beryllium	0.91 B	0.39 B	0.47 B	0.58 B	0.92 B	0.97 B	0.78 B
Cadmium	1.9	1.8	47.2	3.6	0.87 B	0.96 B	<0.35
Calcium	14000 J	126000 J	15700 J	36900 J	11000 J	17500 J	4000 J
Chromium	50 J	11.4 J	97.5 J	89.2 J	22.4 J	22.3 J	18.4 J
Cobalt	12.3	5.8 B	14.2	9.3	10.1 B	11.1	10.7
Copper	80	101	6780	191	174	159	28.2
Iron	35400	18100	70400	33200	33700	31500	28700
Lead	186 J	110 J	1010 J	164 J	108 J	148 J	15.7 J
Magnesium	4220	2910	2640	4010	3910	4380	3770
Manganese	782	377	871	510	731	604	489
Mercury	0.14 J	0.05 BJ	0.28 J	0.19 J	0.83 J	0.23 J	0.07 BJ
Nickel	78.5	21.6	50.1	44.9	41.9	38.6	31.3
Potassium	2190	965	1630	1170	1390	1390	1250
Selenium	0.41 BJ	<0.18	<0.33	<0.27	<0.25	0.72 BJ	<0.25
Silver	<0.91	<0.8	1.9 BJ	<0.72	<0.89	<0.92	<0.75
Sodium	<108	103 B	<121	<86.2	<106	<109	<89
Thallium	<0.74	<0.42	<0.76	<0.62	<0.58	<0.47	<0.57
Vanadium	33.5	16.6	19.9	27.9	37.6	31.2	28.2
Zinc	261 J	242 J	1930 J	307 J	152 J	271 J	71.7 J
Cyanide	<0.74	<0.67	5.9	1.7	<0.66	<0.69	<0.72

Table 3-7
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Subsurface Soil Analytical Results for TAL Inorganic Parameters

Inorganics	Soil Samples and Analytical Results (ppm)						
	TP-19S (2-4')	TP-22S (6-18")	TP-23S (6-18")	TP-26S (6-18")	TP-27S (6-18")	TP-28S (0-2')	TP-28SD (0-2')
Aluminum	13600	10700	14600	23800 J	16800 J	18600 J	13000 J
Antimony	<5.9	<4.7	<4.6	<4.2	<5.4	<5.6	<6
Arsenic	15.6	9 J	12.2	11.7	7 B	7.6	6.5
Barium	98.1 J	81.6	82.2 J	233 J	107 J	131 J	112 J
Beryllium	0.88 B	0.58 B	0.81 B	1.3	0.8 B	1.1	0.68 B
Cadmium	1 B	0.66 B	<0.33	<0.31	<0.4	1.7	2.6
Calcium	7690 J	40600	1990 J	3820 J	1830 J	4080 J	3960 J
Chromium	20.4	14.2 J	18	28.2	20.5	24.6	23.1
Cobalt	11.1	8 B	10.4	17.6	14.2	12.6	10.5 B
Copper	115 J	37.4 J	42 J	40.8 J	37.6 J	123 J	1040 J
Iron	29200	22200	31900	42100	33600	36500	30400
Lead	52.7	73.2	13.7	20.4	16.5	5380 J	36600 J
Magnesium	3600	3320	4240	7380	5100	5020	3600
Manganese	420 J	472 J	472 J	482 J	481 J	566 J	684 J
Mercury	0.09 B	<0.04	0.06 B	0.06 B	<0.04	0.27	0.1 B
Nickel	49.6 J	23.4	31.2 J	42.4 J	31.4 J	38.7 J	43.8 J
Potassium	1230	1160	813 B	1420	1270	1220	995 B
Selenium	0.63 BJ	<0.24	<0.15	<0.25	<0.23	<0.31	<0.24
Silver	<0.92	<0.74	<0.72	<0.66	<0.86	6.3 J	96.8 J
Sodium	<110	<88.6	<85.7	<78.6	<102	<104	<112
Thallium	0.94 B	<0.56	<0.36	<0.58	<0.53	0.83 B	<0.55
Vanadium	39.6	22	27.5	39.1	29	34	70.6
Zinc	151 J	126	75.1 J	78.6 J	71.8 J	691 J	1250 J
Cyanide	<0.73	<0.73	<0.71	<0.72	<0.71	<0.74	<0.72

Table 3-7
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Subsurface Soil Analytical Results for TAL Inorganic Parameters

Inorganics	Soil Samples and Analytical Results (ppm)								NYSDEC-Recommended Soil Cleanup Objective (ppm)
	TP-30S (6-18")	TP-52S (2-3')	TP-53S (4-6')	TP-54S (2-4')	TP-54SD (2-4')	TP-55S (2-4')	TP-55R*	TPMW-7S (2-4')	
Aluminum	11100 J	9190	6630	10800	7180	10400	<72.2	7640	33000 (BG)
Antimony	<5.4	<8.6	<7.0	<9.7	<8.9	<12.0	<49.7	<5.6	0.48 (BG)
Arsenic	5.7	7.2	7.5	9.1	7.8	8.4	<1.9	6.9 J	7.5
Barium	72.1 J	85.6	61.5	62.6	41.6	89.0	<38.5	60.1	300
Beryllium	0.56 B	0.52 B	0.36 B	0.54 B	0.36 B	0.57 B	<0.89	0.45 B	1.0 (BG)
Cadmium	<0.4	<0.48	<0.39	<0.54	<0.5	<0.67	<2.8	<0.41	1.0
Calcium	45100 J	6460	102000	36000	42400	18100	<616	113000 J	4400
Chromium	14	12.6	9.8	13.3	10.1	15.1	4.8 B	10.4	10
Cobalt	8.3 B	7.5 B	6.5 B	10.2	6.8 B	9.9 B	<5.5	6.6 B	30
Copper	21.7 J	23.1	33.8	27.5	24.9	26.2	5.0 B	17.7 J	25
Iron	23200	21300	16500	25500	17300	23500	220	14700	2000
Lead	11.6	11.3	17.2	13.4	11.3	11.1	<0.8	8.0	30 (BG)
Magnesium	3590	2780	3090	3230	2710	3560	<751	3190	4000 (BG)
Manganese	490	586	346	466	381	471	6.3 B	344	500 (BG)
Mercury	<0.02	0.07 B	<0.05	0.07 B	0.05 B	0.06 B	<0.09	0.03 BJ	0.1
Nickel	25.3 J	29.6	19.9	26.3	19.9	26.7	<7.5	17.7 J	13
Potassium	793 B	834 B	811	1220	671 B	1100 B	<743	1280	16000 (BG)
Selenium	<0.2	0.35 B	0.34 B	<0.29	<0.27	<0.36	<1.5	<0.27	2
Silver	<0.85	<0.94	<0.77	<1.1	<0.97	<1.3	<5.5	<0.87	N/A
Sodium	<102	<162	<132	<183	<167	<227	<939	147 B	7000 (BG)
Thallium	<0.47	<0.59	<0.49	<0.51	<0.47	<0.62	<2.6	<0.62	N/A
Vanadium	21.1	19.4	15.7	24.5	17.4	22.8	<6.8	17.3	150
Zinc	62.2 J	67.1	93.5	83.7	72.1	65.2	3.5 B	58.8	20
Cyanide	<0.69	<0.08	0.19 B	<0.04	<0.04	<0.04	<1.2	<0.54	N/A

Table 3-7
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Subsurface Soil Analytical Results for TAL Inorganic Parameters

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in May and August 1993 (Phase I RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. Concentrations reported in parts per million (ppm) or milligrams per kilogram (mg/kg).
4. < = below detection limit.
5. Sample designations indicate the following: TP = subsurface soil sample; S = discrete sample; and D = duplicate sample.
6. B = value is less than the Contract Required Detection Limit, but greater than the Instrument Detection Limit.
7. J = estimated value.
8. * = concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).
9. NYSDEC-recommended soil cleanup objective is based on the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046: "Determination of Soil Cleanup Objectives and Cleanup Levels" (January 1994). Where background concentrations are required under TAGM 4046, average values for eastern New York State from the United States Geological Survey Publication: "Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States" (1984) are used. Concentrations above these cleanup objectives are highlighted on this table.
10. BG = eastern New York State background concentration (see Note 9).
11. N/A = data is not available for background concentration.

Table 3-7A

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Soil Investigation
Subsurface Soil Analytical Results for EP Toxic Metals

EP Toxic Metals	Soil Samples and Analytical Results (ppb)		Regulatory Level (ppb)*
	TP-8 (6-24")	TP-28 (6-24")	
Arsenic	<48.8	<48.9	5000
Barium	502 J	1760 J	100000
Cadmium	15.6	176	1000
Chromium	10.1	14.1	5000
Lead	46.9 J	44,000 J	5000
Mercury	<7.0	<7.0	200
Selenium	<76.4	<76.4	1000
Silver	<3.7	5.5 B	5000

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in September 1994 (Phase II RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. Concentrations reported in parts per billion (ppb) or micrograms per liter (ug/L).
4. < = below detection limit.
5. TP = subsurface soil sample.
6. J = concentration is estimated.
7. B = value is less than the contract required deletion limit but greater than the instrument detection limit.
8. * = Regulatory level presented in 6NYCRR 371.3, Table 1. Concentrations above these regulatory levels are highlighted in this table.

Table 3-8

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Sediment Investigation
Quarry Pond and Outlet Channel Sediment Analytical Results for Total PCBs, Total Organic Carbon, and Percent Solids

Sample I.D.	Total PCB Concentration (ppm)	% TOC	% Solids
Quarry Pond			
SD-1S	9.2	3.4	27
SD-2S	13.2	4.7	24
SD-3S	0.65 J	13.1	47
SD-4S	7.4	4.8	25
SD-5S	12.1	4.6	19
SD-6S	14.9	5.2	19
SD-7S	21.8	3.6	38
SD-8S	4.9	4.0	23
SD-9S	2.8	3.1	32
SD-10S	4.4 J	4.2	24
SD-11S	14.9	5.1	22
SD-12S	13.8	4.6	40
SD-13S	8.4 J	2.6	52
SD-14S	20.6	5.0	14
SD-14A	0.55	3.2	32
SD-15S	4.2 J	4.8	20
SD-16S	8.0	4.3	24
SD-17S	9.3	5.0	25
SD-18S	19.4	4.7	43
SD-18A	0.81 J	6.3	61
SD-18B	1.1 J	0.7	70
SD-19S	0.18 J	0.4	67
SD-20S	3.4 J	3.1	33
SD-21S	1.6 J	8.3	41
SD-22S	21	5.1	36
SD-23S	63	9.6	39
SD-24S	13.3	3.2	29

Table 3-8
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Sediment Investigation
Quarry Pond and Outlet Channel Sediment Analytical Results for Total PCBs, Total Organic Carbon, and Percent Solids

Sample I.D.	Total PCB Concentration (ppm)	% TOC	% Solids
SD-24A	0.29	3.1	43
SD-25S (Duplicate of SD-10S)	3.7 J	4.4	25
SD-26S (Duplicate of SD-14A)	0.26 J	2.7	34
SD-27S	2.8 J	NA	40
SD-28S	7.7	NA	30
SD-28A	0.17 J	NA	49
SD-29S	11.5	NA	27
SD-30S	1.6 J	NA	29
SD-31S	9.8	NA	25
SD-32S	44.9	NA	32
SD-33S	5.3	NA	25
SD-34S	9.3	NA	23
SD-34A	3.2	NA	27
Quarry Pond Outlet Channel			
SD-35S	8.2	2.6	61
SD-36S	4.2 X	2.8	63
SD-37S	0.84	3.7	69
RB-1R	<0.050*	NA	NA
RB-2R	<0.050*	NA	NA
RB-3R	<0.050*	NA	NA
RB-4R	<0.050*	NA	NA

Table 3-8
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Sediment Investigation
Quarry Pond and Outlet Channel Sediment Analytical Results for Total PCBs, Total Organic Carbon, and Percent Solids

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in January 1993 (Phase I RI). Samples SD-1 through SD-34 were collected from quarry pond locations. Samples SD-35 through SD-37 were collected from the quarry pond outlet channel.
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. All sediment sample concentrations are reported on a dry-weight basis.
4. Concentrations are reported in parts per million (ppm) or milligrams per kilogram (mg/kg).
5. TOC = Total organic carbon, reported as percent organic carbon by weight.
6. J = estimated value.
7. X = reported result was derived from an instrument response outside the calibration range.
8. Sample designations indicate the following: S = Surface sample (0- to 6-inch depth); A = Core sample collected from a depth of 6-18 inches; B = Core sample collected from a depth of 18-30 inches; and R = Rinse blank.
9. NA = not analyzed.
10. -- = not applicable.
11. * = concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).
12. < = each aroclor was not detected at the concentration presented.

Table 3-9

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Sediment Investigation
Quarry Pond and Outlet Channel Sediment Analytical Results for Detected TCL Volatile Organic Compounds

Volatile Organic Compound	Sediment Samples and Analytical Results (ppm)				
	SD-3S	SD-5S	SD-14S	SD-14A	SD-16S
Acetone	0.008 J	0.67 J	0.76	0.1 J	0.33 J
Benzene	<0.016	<0.040	<0.059	<0.028	0.01 J
2-Butanone	<0.016	0.23	0.12	0.029	0.088
Carbon Disulfide	<0.016	0.007 J	<0.059	<0.028	0.012 J
Toluene	<0.016	<0.040	<0.059	<0.028	<0.045
Xylene (total)	<0.016	<0.040	<0.059	<0.028	0.008 J
Total TICs	NTD	0.111 J	0.324 J	0.07 J	0.041 J

Volatile Organic Compound	Sediment Samples and Analytical Results (ppm)							
	SD-18S	SD-18A	SD-18B	SD-24S	SD-24A	SD-26S (Duplicate of SD-14A)	SD-36S	RB-3R*
Acetone	0.083 J	0.036 B	0.007 J	0.34 J	0.25 J	1.3 J	0.013 J	<10
Benzene	<0.024	<0.016	<0.014	<0.032	<0.024	<0.13	<0.016	<10
2-Butanone	<0.024	<0.016	<0.014	0.073	0.05	<0.13	<0.016	<10
Carbon Disulfide	0.004 J	<0.016	<0.014	<0.032	<0.024	<0.13	<0.016	<10
Toluene	0.024 J	<0.016	<0.014	<0.032	<0.024	<0.13	<0.016	<10
Xylene (total)	<0.024	<0.016	<0.014	<0.032	<0.024	<0.13	<0.016	<10
Total TICs	NTD	NTD	NTD	0.02 J	NTD	0.088 J	NTD	20 J

Notes:

1. Samples were collected by Blasland, Bouck & Lee, Inc. in January 1993 (Phase I RI). All samples were collected from the quarry pond except SD-36S, which was collected from the quarry pond outlet channel.
2. Samples were analyzed in accordance with NYSDEC 1991 ASP methods. Only detected compounds are listed on this table.
3. All sediment sample concentrations are reported on a dry-weight basis.
4. Concentrations are reported in parts per million (ppm) or milligrams per kilogram (mg/kg).
5. < = below detection limit.
6. J = estimated value
7. B = analyte detected in method blank.
8. Sample designations indicate the following: S = surface sample (0- to 6-inch depth); A = core sample collected from a depth of 6-18 inches; B = core sample collected from a depth of 18-30 inches; and RB = rinse blank.

TICs = tentatively identified compounds.

NTD = no TICs detected.

11. * = concentrations reported in parts per billion (ppb) or micrograms per liter (ug/L).

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Table 3-10

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Sediment Investigation
Quarry Pond and Outlet Channel Sediment Analytical Results for Detected TCL Semi-Volatile Organic Compounds

Semi-Volatile Organic Compounds	**Sediment Samples and Analytical Results (ppm)**				
	SD-3S	**SD-5S**	**SD-14S**	**SD-14A**	**SD-16S**
Acenaphthylene	<0.53	<1.1	<1.6	<1.0	<45
Anthracene	<0.53	<1.1	<1.6	<1.0	<45
Benzo(a)anthracene	<0.53	<1.1	<1.6	0.16 J	<45
Benzo(a)pyrene	<0.53	<1.1	<1.6	<1.0	<45
Benzo(b)fluoranthene	<0.53	<1.1	<1.6	<1.0	<45
Benzo(g,h,i)perylene	<0.53	<1.1	<1.6	<1.0	<45
Benzo(k)fluoranthene	<0.53	<1.1	<1.6	<1.0	<45
bis(2-Ethylhexyl)phthalate	0.43 BJ	0.59 BJ	<1.6	0.54 BJ	25 BJ
Chrysene	<0.53	0.27 J	<1.6	0.2 J	<45
Dibenzo(a,h)anthracene	<0.53	<1.1	<1.6	<1.0	<45
Di-n-butylphthalate	0.065 BJ	<1.1	<1.6	<1.0	<45
Fluoranthene	0.079 J	<1.1	<1.6	0.38 J	<45
Fluorene	<0.53	<1.1	<1.6	<1.0	<45
Indeno(1,2,3-cd)pyrene	<0.53	<1.1	<1.6	<1.0	<45
2-Methylnaphthalene	<0.53	<1.1	<1.6	<1.0	<45
Phenanthrene	0.058 J	<1.1	<1.6	0.32 J	<45
Phenol	0.093 J	<1.1	<1.6	<1.0	<45
Pyrene	0.095 J	<1.1	<1.6	0.38 J	<45
Total TICs	49.8 JX	115.6 JX	215.3 JX	50 JX	732.0 JX

Table 3-10
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Sediment Investigation
Quarry Pond and Outlet Channel Sediment Analytical Results for Detected TCL Semi-Volatile Organic Compounds

Semi-Volatile Organic Compounds	Sediment Samples and Analytical Results (ppm)							
	SD-18S	SD-18A	SD-18B	SD-24S	SD-24A	SD-26S (Duplicate of SD-14A)	SD-36S	RB-3R*
Acenaphthylene	<23	<0.53	<0.47	<1.0	<0.76	<0.96	0.14 J	<10
Anthracene	<23	<0.53	<0.47	<1.0	<0.76	<0.96	0.13 J	<10
Benzo(a)anthracene	<23	<0.53	<0.47	0.4 J	0.39 J	<0.96	0.54	<10
Benzo(a)pyrene	<23	<0.53	<0.47	0.35 J	0.32 J	<0.96	0.39 J	<10
Benzo(b)fluoranthene	<23	<0.53	<0.47	0.51 J	0.46 J	<0.96	0.64	<10
Benzo(g,h,i)perylene	<23	<0.53	<0.47	<1.0	<0.76	<0.96	0.1 J	<10
Benzo(k)fluoranthene	<23	<0.53	<0.47	0.3 J	0.26 J	<0.96	0.44 J	<10
bis(2-Ethylhexyl)phthalate	4.8 BJ	0.2 BJ	0.092 BJ	1.0 BJ	<0.76	<0.96	0.72 B	6 BJ
Chrysene	<23	<0.53	<0.47	0.44 J	0.38 J	<0.96	0.56	<10
Dibenzo(a,h)anthracene	<23	<0.53	<0.47	0.055 J	<0.76	<0.96	0.11 J	<10
Di-n-butylphthalate	<23	<0.53	<0.47	<1.0	0.22 BJ	0.19 BJ	<0.52	<10
Fluoranthene	<23	0.11 J	<0.47	1.1	0.69 J	0.32 J	1.0	<10
Fluorene	<23	<0.53	<0.47	<1.0	<0.76	<0.96	0.14 J	<10
Indeno(1,2,3-cd)pyrene	<23	<0.53	<0.47	0.23 J	<0.76	<0.96	0.28 J	<10
2-Methylnapthalene	<23	<0.53	<0.47	<1.0	<0.76	<0.96	0.032 J	<10
Phenanthrene	<23	<0.53	<0.47	0.72 J	0.38 J	0.32 J	0.64	<10
Phenol	<23	<0.53	<0.47	<1.0	<0.76	<0.96	<0.52	<10
Pyrene	<23	0.088 J	0.12 J	0.86 J	0.6 J	0.29 J	0.82	<10
Total TICs	443.6 JX	21.6 JX	20 JX	87.7 JX	75.9 JX	74.9 JX	23.1 JX	9 JX

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in January 1993 (Phase I RI). All samples were collected from the quarry pond except for sample SD-36S, which was collected from the quarry pond outlet channel.
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. All sediment sample concentrations are reported on a dry-weight basis.
4. Concentrations are reported in parts per million (ppm) or milligrams per kilogram (mg/kg).
5. < = below detection limit.
6. B = analyte detected in method blank.
7. J = estimated value.
8. Sample designations indicate the following: S = surface sample (0-to 6-inch depth); A = core sample collected from a depth of 6-18 inches; B = ore sample collected from a depth of 18-30 inches; and R = rinse blank.

Cs = tentatively identified compounds.

10. X = result was manually entered into data file due to software limitations.
11. * = concentration reported in parts per billion (ppb) or micrograms per liter (ug/l).

Table 3-11

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Sediment Investigation
Quarry Pond and Outlet Channel Sediment Analytical Results for TAL Inorganic Parameters

Inorganics	Sediment Samples and Analytical Results (ppm)							
	SD-3S	SD-5S	SD-14S	SD-14A	SD-16S	SD-18S	SD-18A	SD-18B
Aluminum	6,160	15,600	13,200	13,200	12,500	5,040	12,600	13,900
Antimony	<12.2	<26.8	<37.5	<22.7	<26.1	<14.2	<12.2	<7.9
Arsenic	4.1	6.7	7.9	5.8	9.1	2.8 B	5.0	7.1
Barium	64.6	165	192	155	184	98.5	114	109
Beryllium	0.48 B	0.86 B	0.43 B	0.83 B	0.79 B	0.33 B	0.73 B	0.70 B
Cadmium	1.9	<1.5	<2.1	<1.3	<1.5	<0.81	<0.70	<0.45
Calcium	69,300	72,000	110,000	77,800	134,000	162,000	84,500	56,000
Chromium	9.9	20.3	15.8	17.9	17.2	7.7	16.5	17.4
Cobalt	6.0 B	9.2 B	7.9 B	8.7 B	8.8 B	4.0 B	8.5 B	9.5
Copper	85.7	46.7	68.4	42.1	55.9	56.2	33.4	30.1
Iron	13,700	26,500	25,600	26,800	27,000	10,300	20,900	24,600
Lead	93.4	42.4	78.7	33.1	68.8	49.5	30.6	19.7
Magnesium	5,240	3,810	3,200 B	3,990	3,410	1,990	3,550	3,950
Manganese	300	332	406	366	352	233	242	397
Mercury	0.05 B	0.15 B	0.36 B	0.21 B	0.18 B	0.09 B	0.07 B	0.07 B
Nickel	18.5	36.0	33.2	33.4	32.3	14.4	25.2	27.2
Potassium	1,170	2,300 B	1,280 B	1,240 B	1,990 B	692 B	1,460	1,370
Selenium	0.73 BJ	0.72 BJ	0.70 BJ	<0.38	1.0 BJ	0.77 BJ	0.50 BJ	<0.21
Silver	<0.72	<1.6	<2.2	<1.3	<1.5	<0.84	<0.72	<0.47
Sodium	154 B	308 B	465 B	288 B	343 B	194 B	198 B	170 B
Thallium	<0.77	<1.3	<1.5	<0.89	<2.3	<0.77	<0.57	<0.51
Vanadium	15.9	32.2	23.3 B	24.3	27.9	11.6 B	24.3	26.0
Zinc	196	258	250	156	213	251	105	83.8
Cyanide	1.1	<1.8	<2.5	<1.6	<2.1	<1.1	<0.81	<0.88

Table 3-11
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Sediment Investigation
Quarry Pond and Outlet Channel Sediment Analytical Results for TAL Inorganic Parameters

Inorganics	Sediment Samples and Analytical Results (ppm)				
	SD-24S	SD-24A	SD-26S (Duplicate of SD-14A)	SD-36S	RB-3R*
Aluminum	6,500	9,250	15,100	7,160	<62.2
Antimony	<28.5	<23.2	<27.0	<14.2	<53.8
Arsenic	4.4 B	5.0	7.5	4.1	<1.2
Barium	134	113	162	78.4	<11.9
Beryllium	0.31 B	0.78 B	0.79 B	0.37 B	<0.3
Cadmium	<1.6	<1.3	<1.5	1.3 B	<3.1
Calcium	183,000	76,500	71,900	43,600	<203
Chromium	11.2	13.5	20.2	16.2	<2
Cobalt	4.1 B	6.5 B	9.5 B	6.4 B	<5
Copper	73.6	111	42.6	441	<1.9
Iron	16,200	16,700	27,300	19,800	30.8 B
Lead	111	50.6	39.3	206	<0.89
Magnesium	3,190	2,750	3,990	3,630	<262
Manganese	288	224	367	360	<0.7
Mercury	0.17 B	0.16	0.16 B	0.39	<0.06
Nickel	20.0 B	23.6	35.5	27.0	<3.5
Potassium	959 B	1,120 B	1,850 B	760 B	<444
Selenium	0.78 BJ	0.68 BJ	0.60 BJ	0.44 BJ	<1.1
Silver	<1.7	<1.4	<1.6	<0.84	<3.2
Sodium	266 B	186 B	301 B	219 B	<297
Thallium	<1.3	<0.95	<0.94	<0.72	<2.6
Vanadium	14.9 B	18.9 B	28.7	17.3	<2.1
Zinc	203	132	160	234	<1.8
Cyanide	<1.6	<1.2	6.6	<0.66	<10

Table 3-11
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Sediment Investigation
Quarry Pond and Outlet Channel Sediment Analytical Results for TAL Inorganic Parameters

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in January 1993 (Phase I RI). All samples were collected from the quarry pond except for SD-36S, which was collected from the quarry pond outlet channel.
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. All sediment sample concentrations are reported on a dry-weight basis.
4. Concentrations are reported in parts per million (ppm) or milligrams per kilogram (mg/kg).
5. < = below detection limit.
6. Sample designations indicate the following: S = surface sample (0- to 6-inch depth); A = core sample collected from a depth of 6-18 inches; B = core sample collected from a depth of 18-30 inches; and R = rinse blank.
7. B = value is less than the Contract Required Detection Limit, but greater than the Instrument Detection Limit.
8. J = estimated value.
9. * = concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).

Table 3-12

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Sediment Investigation
Sediment Analytical Results for Total PCBs, Total Organic Carbon, and Percent Solids

Sample I.D.	Total PCB Concentration (ppm)	% TOC	% Solids
Storm-Water Drainage System			
SD-38A	0.37	2.9	79
SD-39A	<0.033	0.8	90
SD-40A	<0.047	0.6	64
SD-41A	0.05	1.4	86
SD-42A	<0.047	1.5	64
SD-43A	0.06	1.1	89
SD-44A	<0.038	0.9	79
SD-44B	<0.037	0.4	81
SD-45A	0.34	1.4	77
SD-46A	0.68	1.7	52
SD-47A	<0.041	1.5	74
SD-55A	0.16	0.9	77
SD-55B	<0.034	0.7	89
WS-CC-1	2.2	4.6	54
WS-CC-2	4.3	13	30
Cobleskill Creek			
SD-48A	<0.043	2.2	70
SD-49A	<0.036	0.3	83
SD-49B	<0.035	0.2	85
SD-50A	0.18	1.8	63
SD-51A	<0.036	0.2	83
SD-51D	<0.036	0.2	83
SD-52A	<0.038	0.3	80
SD-52B	<0.037	0.4	82
SD-54A	<0.035	0.3	85
SD-56A	<0.045	0.8	66
SD-01R	<0.050*	NA	NA
SD-02R	<0.050*	NA	NA

Table 3-12
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Sediment Investigation
Sediment Analytical Results for Total PCBs, Total Organic Carbon, and Percent Solids

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in May 1993 (Phase I RI). Samples WS-CC-1 and WS-CC-2 were collected by Blasland, Bouck & Lee, Inc. on November 10, 1992.
2. Samples were analyzed in accordance with NYSDEC 1991 ASP methods.
3. All sediment sample concentrations are reported on a dry-weight basis.
4. Concentrations are reported in parts per million (ppm) or milligrams per kilogram (mg/kg).
5. TOC = total Organic Carbon reported as percent organic carbon by dry weight.
6. Sample designations indicate the following: A = core sample from surface layer; B = core sample from below surface layer (see Table 2-2 for sample depth interval); D = duplicate sample; and R = rinse blank.
7. NA = not analyzed.
8. * = concentration reported in parts per billion (ppb) or micrograms per liter (ug/l).

Table 3-13

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Sediment Investigation
Sediment Analytical Results for Mercury

Storm Water Drainage System Sample I.D.	Mercury (ppm)
SD-39A	<0.03
SD-41A	<0.03
SD-43A	0.02 B
SD-44A	<0.04
SD-44D	0.03 B
SD-02R	<0.09*

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in May 1993 (Phase I RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. Concentrations are reported in parts per million (ppm) or milligrams per kilogram (mg/kg).
4. * = concentration reported in micrograms per liter (ug/l) or parts per billion (ppb).
5. < = below detection limit.
6. Sample designations indicate the following: SD = sediment sample; A = core sample collected from 0-6 inches; D = duplicate sample; and R = rinse sample.
7. B = value is less than the Contract Required Detection Limit, but greater than the Instrument Detection Limit.

Table 3-14

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Surface Water Investigation
Quarry Pond Surface Water Analytical Results for Total PCBs

Sample I.D.	Total PCB Concentration (ppb)
SW-1S	0.303
SW-1SF	0.067
SW-2S	0.314
SW-2SD	0.307
SW-2SDF	0.067
SW-2SF	<0.051
SW-3S	0.267
SW-3SF	<0.050
SW-4S	0.309
SW-4SF	0.074
SW-5S	0.315
SW-5SF	<0.055

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in May 1993 (Phase I RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. Concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).
4. Sample designations indicate the following: SW = surface water; S = discrete sample; F = filtered sample; and D = duplicate sample.
5. < = each aroclor analyzed was not detected at the concentration presented.

Table 3-15

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Surface Water Investigation
Quarry Pond Surface Water Analytical Results for Detected TCL Volatile and Semi-Volatile Organic Compounds

	Surface Water Samples and Analytical Results						
	SW-1S	SW-2S	SW-2S D	SW-3S	SW-4S	SW-5S	TB
Volatile Organic Compounds							
Total TICs	6 JX	NTD	NTD	11 JX	NTD	NTD	NTD
Semi-Volatile Organic Compound							
Total TICs	5 JX	3 JX	2 JX	8 JX	NTD	2 JX	NA

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in May 1993 (Phase I RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. All concentrations are reported in parts per billion (ppb) or micrograms per liter (ug/l).
4. J = estimated value.
5. Sample designations indicate the following: SW = surface water sample; S = discrete sample; D = duplicate sample; and TB = trip blank.
6. TICs = tentatively identified compounds.
7. NTD = no TICs detected.
8. NA = not analyzed.
9. X = result was manually entered into data file due to software limitations.

Table 3-16

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Surface Water Investigation
Quarry Pond Surface Water Analytical Results for TAL Inorganic Parameters

Inorganics	Surface Water Samples and Analytical Results (ppb)						
	SW-1S	SW-1SF	SW-2S	SW-2SD	SW-2SDF	SW-2SF	SW-3S
Aluminum	118 B	<82	<81.5	<81.9	<81.6	<82	107 B
Antimony	<27	<27.2	<27.1	<27.2	<27.1	<27.2	<27.2
Arsenic	1.9 B	1.6 B	2.8 B	2.2 B	1.4 B	1.7 B	1.7 B
Barium	63.3 B	65.7 B	66.3 B	66.3 B	66.1 B	63.7 B	65.5 B
Beryllium	0.51 B	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	<2	<2	<2	<2	<2	<2	<2
Calcium	70500	74500	73200	72900	74300	72400	74000
Chromium	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4
Cobalt	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8
Copper	<3.7	<3.7	<3.7	<3.7	<3.7	5.5 B	<3.7
Iron	187	<36	165	149	<35.8	<36	184
Lead	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Magnesium	5230	5470	5390	5390	5460	5350	5420
Manganese	62.2	1.9 B	72.4	70.2	1.4 B	1.9 B	70.2
Mercury	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09
Nickel	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5
Potassium	1910 B	1190 B	1510 B	1670 B	1710 B	1420 B	1720 B
Selenium	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Silver	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3
Sodium	18700	19700	19000	19400	19500	19100	19100
Thallium	<3	<3	<3	<3	<3	<3	<3
Vanadium	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
Zinc	2.8 B	<2.2	3.1 B	<2.2	<2.2	<2.2	<2.2
Cyanide	<10	NA	<10	<10	NA	NA	<10

Table 3-16
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Surface Water Investigation
Quarry Pond Surface Water Analytical Results for TAL Inorganic Parameters

Inorganics	Surface Water Samples and Analytical Results (ppb)				
	SW-3SF	SW-4S	SW-4SF	SW-5S	SW-5SF
Aluminum	<82	105 B	<81.9	101 B	<81.6
Antimony	<27.2	<27.2	<27.2	<27.3	<27.1
Arsenic	1.6 B	2.1 B	<1.1	2 B	1.4 B
Barium	60.6 B	65.4 B	63.4 B	66 B	63.8 B
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	<2	<2	<2	2.5 B	<2
Calcium	73600	73800	73800	73200	73100
Chromium	<2.4	<2.4	<2.4	<2.4	<2.4
Cobalt	<4.8	<4.8	<4.8	<4.8	<4.8
Copper	<3.7	<3.7	<3.7	<3.7	<3.7
Iron	<36	178	<36	210	<35.8
Lead	<0.6	<0.6	0.65 B	<0.6	<0.6
Magnesium	5440	5430	5460	5380	5400
Manganese	<1.2	68.6	<1.2	71.8	1.3 B
Mercury	<0.09	<0.09	<0.09	<0.09	<0.09
Nickel	<4.5	<4.5	<4.5	<4.5	<4.5
Potassium	1210 B	1440 B	1600 B	1560 B	1900 B
Selenium	<1.3	<1.3	<1.3	<1.3	<1.3
Silver	<4.3	<4.3	<4.3	<4.3	<4.3
Sodium	19400	19200	19400	19000	19500
Thallium	<3	<3	<3	<3	<3
Vanadium	<4.2	<4.2	<4.2	<4.2	<4.2
Zinc	<2.2	<2.2	<2.2	<2.2	<2.2
Cyanide	NA	<10	NA	<10	NA

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in May 1993 (Phase I RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. Concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).
4. Sample designations indicate the following: SW = surface water sample; S = discrete sample; F = filtered sample; and D = duplicate sample.
5. < = below detection limit.
6. B = value is less than the Contract Required Detection Limit, but greater than the Instrument Detection Limit.
7. NA = not analyzed.

Table 3-17

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Surface Water Investigation
Quarry Pond Surface Water Analytical Results for Total Suspended Solids

Sample I.D.	Total Suspended Solids (ppm)
SW-1S	7.6
SW-1SF	--
SW-2S	6.5
SW-2SD	6.9
SW-2SDF	--
SW-2SF	--
SW-3S	8.0
SW-3SF	--
SW-4S	7.6
SW-4SF	--
SW-5S	9.9
SW-5SF	--

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in May 1993 (Phase I RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. Concentrations reported in parts per million (ppm) or milligrams per liter (mg/l).
4. < = below detection limit.
5. Sample designations indicate the following: SW = surface water; S = discrete sample; F = filtered sample; and D = duplicate sample.
6. -- = not applicable.

Table 3-18

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Surface Water Investigation
Surface Water Analytical Results for Total PCBs

Storm Water Drainage System Sample I.D.	Total PCB Concentration (ppb)
SW-6S	<0.050
SW-6SF	<0.050
SW-7S	<0.050
SW-7SF	<0.050
SW-7SD	<0.050
SW-7SDF	<0.050
SW-8S	<0.050
SW-8SF	<0.050
SW-9S	<0.050
SW-9SF	<0.050
SW-01R	<0.050
SW-01RF	<0.050
WS-CC-1	<0.065
WS-CC-2	<0.065
NYSDEC Class C Surface Water Standard (ppb)	0.001

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in May 1993 (Phase I RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. Concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).
4. Sample designations indicate the following: SW = surface water sample; F = filtered sample; D = duplicate sample; S = discrete sample; and R = rinsate sample.
5. < = each aroclor analyzed was not detected at the concentration presented.

Table 3-19

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Surface Water Investigation
Surface Water Analytical Results for Mercury

Storm Water Drainage System Sample I.D.	Mercury (ppb)
SW-6S	<0.09
SW-6SF	0.09 B
SW-7S	<0.09
SW-7SF	<0.09
SW-7SD	<0.09
SW-7SDF	<0.09
SW-8S	<0.09
SW-8SF	<0.09
SW-9S	<0.09
SW-9SF	<0.09
SW-01R	<0.09
SW-01RF	<0.09
NYSDEC Class C Surface Water Standard (ppb)	2

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in May 1993 (Phase I RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. Concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).
4. Sample designations indicate the following: SW = surface water sample; F = filtered sample; D = duplicate sample; S = discrete sample; and R = rinsate sample.
5. B = value is less than the Contract Required Detection Limit, but greater than the Instrument Detection Limit.

Table 3-20

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for Total PCBs

Sample I.D.	Total PCB Concentration (ppb)
Phase I RI	
MW-1S	<0.051
MW-1SD	<0.050
MW-1SF	<0.054
MW-2S	<0.050
MW-2SF	<0.051
MW-3S	<0.050
MW-3SF	<0.053
MW-4S	<0.050
MW-4SF	<0.052
MW-6S	<0.050
MW-6SD	<0.050
MW-6SF	<0.079
MW-6SDF	<0.054
MW-7S	<0.050
MW-7SF	<0.052
MW-9S	<0.050
MW-9SF	<0.055
MW-10S	<0.050
MW-10SF	<0.059
MW-11S	<0.051
MW-11SF	<0.051
TW-1S	<0.05
TW-1SF	<0.05

Table 3-20
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for Total PCBs

Sample I.D.	Total PCB Concentration (ppb)
Phase II RI	
C-9	0.72
C-9F	<0.05
C-9 (resample)	<0.054
C-9D (resample)	<0.054
C-11	<0.050
C-11F	<0.050
C-12	<0.050
C-12F	<0.050
C-15	<0.050
C-15F	<0.050
C-16	0.101
C-16F	<0.050
C-16 (resample)	<0.050
C-16D (resample)	<0.051
C-16F (resample)	<0.051
C-16FD (resample)	<0.051
C-18	<0.050
C-18F	<0.051
C-19	<0.050
C-19A	<0.050
C-19F	<0.050
C-19AF	<0.050
NYSDEC Ground-Water Standard (Class GA) (ppb)	0.1

Table 3-20
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for Total PCBs

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. during May, June, and July 1993 (Phase I RI); and September 1994, March and April 1995 (Phase II RI).
2. Samples analyzed by Aquatec, Inc. in accordance with NYSDEC 1991 ASP methods.
3. < = each aroclor analyzed was not detected at the concentration presented.
4. Sample designations indicate the following: MW = monitoring well ground-water sample; C = bedrock corehole monitoring well sample; S = discrete sample; D or A = duplicate sample; and F = filtered sample.
5. Concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).
6. TW-1S = sample of drill water used during well installation.
7. Detected concentrations above the NYSDEC ground-water standard (Class GA) are highlighted in this table.

Table 3-21

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for Detected TCL Volatile and Semi-Volatile Organic Compounds

	Phase I RI Ground-Water Monitoring Well Samples and Analytical Results (ppb)													NYSDEC Ground-Water Standard (Class GA) (ppb)
	MW-1S	MW-2S	MW-3S	MW-4S	MW-6S	MW-6SD	MW-7S	MW-9S	MW-10S	MW-11S	TB-1	TB-2	TW-1S	
Volatile Organic Compounds														
Chloroform	3 J	<10	<10	<10	4 J	3 J	<10	<10	<10	<10	<10	<10	31	7
Total TICs	NTD	NTD	NTD	18 JX	18 JX	NTD	NTD	NTD	NTD	NTD	NTD	NTD	7 JX	NA
Semi-Volatile Organic Compounds														
Diethylphthalate	<16	<14	0.6 J	0.6 J	<10	<10	<10	<10	<10	<10	NA	NA	<10	NA
Di-n-Butylphthalate	0.8 J	<14	0.9 J	0.9 J	<0.5 J	<10	0.6 J	<10	1 J	0.6 J	NA	NA	<10	50
Total TICs	1,057 JX	54 JX	65 JX	158 JX	135 JX	NTD	3 JX	18 JX	55 JX	10 JX	NA	NA	96 JX	NA

Table 3-21
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for Detected TCL Volatile and Semi-Volatile Organic Compounds

	Phase II RI Ground-Water Monitoring Well Samples and Analytical Results (ppb)									NYSDEC Ground-Water Standard (Class GA) (ppb)
	C-11	C-12	C-15	C-16	C-18	C-19	C-19A	TBA	TBB	
Volatile Organic Compounds										
1,2-Dichloroethene (total)	<10	<67	<10	<10	57	<10	<10	<10	<10	5
Chloroform	<10	<67	<10	<10	<10	<10	<10	<10	3 J	7
Trichloroethene	<10	<67	<10	<10	93	<10	<10	<10	<10	5
Benzene	<10	1,000	<10	<10	7 J	<10	<10	<10	<10	0.7
Toluene	<10	150	<10	<10	<10	<10	<10	<10	<10	5
Ethylbenzene	<10	360	<10	<10	<10	<10	<10	<10	<10	5
Xylene (total)	<10	882	<10	<10	<10	<10	<10	<10	<10	5
Total TICs	NTD	1,634 NJ	NTD	NTD	NTD	NTD	NTD	NTD	NTD	N/A
Semi-Volatile Organic Compounds										
Phenol	<10	24 J	<10	<10	<10	<10	<10	NA	NA	1
Naphthalene	<10	89	<10	<10	<10	<10	<10	NA	NA	10
2-Methylnaphthalene	<10	16 J	<10	<10	<10	<10	<10	NA	NA	N/A
Total TICs	11 NJ	1,692 NJ	12 NJ	77 NJ	20 NJ	4 NJ	11 NJ	NA	NA	N/A

Table 3-21
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for Detected TCL Volatile and Semi-Volatile Organic Compounds

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. during May, June, and July 1993 (Phase I RI) and September 1994 (Phase II RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. Concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).
4. Sample designations indicate the following: MW = monitoring well ground-water sample; C = bedrock corehole monitoring well ground-water sample; S = discrete sample; D = duplicate sample; A = duplicate sample; TB = trip blank sample.
5. J = estimated value.
6. < = below detection limit.
7. NA = not analyzed.
8. TICs = tentatively identified compounds.
9. NTD = no TICs detected.
10. X = result was manually entered into data file due to software limitations.
11. TW-1S = sample of drill water used during well installations.
12. NJ = compound was tentatively identified at an estimated concentration.
13. N/A = Not available.
14. Concentrations detected above the NYSDEC ground-water standards are highlighted.

Table 3-21A

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for Detected Volatile Organic Compounds

	Phase II RI Analytical Results for Ground-Water Monitoring Well C-12 (USEPA Method 503.1) (ppb)	NYSDEC Ground-Water Standard (Class GA) (ppb)
Benzene	810	0.7
N-Butylbenzene	32	5
Ethylbenzene	65	5
Naphthalene	56	10
Toluene	95	5
1,2,4-Trimethylbenzene	270	5
1,3,5-Trimethylbenzene	40	5
Total Xylenes	720	5

Notes:

1. Sample collected by Blasland, Bouck & Lee, Inc. in September 1994 (Phase II RI).
2. Sample analyzed in accordance with NYSDEC 1991 ASP methods.
3. Concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).
4. C-12 is a bedrock corehole monitoring well ground-water sample.
5. Only detected compounds are listed.

Table 3-22

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for TAL Inorganic Parameters

Inorganics	Phase I RI Ground-Water Samples and Analytical Results (ppb)								
	MW-1SF	MW-2S	MW-2SF	MW-3S	MW-3SF	MW-4S	MW-4SF	MW-6S	MW-6SD
Aluminum	<72.4	664 J	<72.2	342 J	<72.2	88.7 BJ	<72.6	773 J	546 J
Antimony	<49.8	54.7 B	<49.6	<50.0	<49.6	<49.6	74.5	<49.8	<49.9
Arsenic	<1.9	2.4 B	3.0 B	2.7 B	2.6 B	2.0 B	1.9 B	2.3 B	2.2 B
Barium	<38.6	346	317	353	324	182 B	152 B	60.3 B	69.4 B
Beryllium	<0.9	<0.89	<0.89	<0.9	<0.89	<0.89	<0.9	<0.9	<0.9
Cadmium	<2.8	<2.8	<2.8	3.4 B	<2.8	<2.8	<2.8	<2.8	<2.8
Calcium	63,900	232,000	220,000	144,000	140,000	110,000	104,000	108,000	119,000
Chromium	<2.7	4.6 B	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7
Cobalt	<5.5	19.1 B	<5.5	21.0 B	6.4 B	<5.5	<5.5	<5.5	<5.5
Copper	<4.7	6.2 B	<4.7	5.7 B	<4.7	<4.7	<4.7	<4.7	<4.7
Iron	<28.1	44,700	21,300	45,800	5,170 J	34,700	3,030 J	4,850	4,450
Lead	1.0 B	1.6 B	<0.8	2.3 B	<0.79	2.2 B	<0.79	9.6	7.3
Magnesium	35,800	19,100	18,900	44,200	43,600	27,200	26,900	11,400	12,200
Manganese	<2.0	1,400	1,300	401	239 J	203	131 J	748	825
Mercury	0.53	<0.09	<0.09	0.63	<0.09	0.21	<0.09	<0.09	<0.09
Nickel	<7.5	34.5 B	<7.4	70.0	14.9 B	<7.4	<7.5	<7.5	<7.5
Potassium	2,930 B	2,540 B	2,080 B	1,700 B	1,340 B	2,140 B	2,020 B	2,140 B	2,650 B
Selenium	<0.98	<1.0	<1.0	<0.99	<0.99	<1.0	<0.99	<1.0	<0.99
Silver	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5
Sodium	11,400 J	250,000	245,000	87,900 J	86,600 J	53,600 J	53,400 J	40,900 J	27,400 J
Thallium	<2.6	<25.9	<25.9	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6
Vanadium	<6.8	<6.8	<6.8	<6.8	<6.7	<6.7	<6.8	<6.8	<6.8
Zinc	10.1 B	17.5 B	<2.8	10.9 B	4.3 B	<2.8	3.7 B	7.5 B	9.2 B
Cyanide	NA	<1.5	NA	<1.5	NA	<1.5	NA	<1.5	<1.5

Table 3-22
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for TAL Inorganic Parameters

Inorganics	Phase I RI Ground-Water Samples and Analytical Results (ppb)							
	MW-6SF	MW-6SDF	MW-7S	MW-7SF	MW-9S	MW-9SF	MW-10S	MW-10SF
Aluminum	101 B	<72.6	<72.2	<72.1	19,200 J	<72.2	28,500 J	<72.2
Antimony	<49.8	<50.0	58.6 B	<49.6	<50.0	<49.7	50.6 B	<49.6
Arsenic	4.0 B	<1.9	3.1 B	2.6 B	6.2 BJ	<1.9	5.6 B	<1.9
Barium	52.4 B	<38.8	73.0 B	72.3 B	343	116 B	481	106 B
Beryllium	<0.9	<0.9	<0.89	<0.89	1.2 B	<0.89	1.7 B	<0.89
Cadmium	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8
Calcium	110,000	82,100	156,000	154,000	276,000	168,000	344,000	142,000
Chromium	<2.7	<2.7	<2.7	<2.7	30.6	<2.7	42.3	<2.7
Cobalt	<5.5	<5.5	<5.5	<5.5	14.1 B	<5.5	26.9 B	<5.5
Copper	<4.7	<4.7	<4.7	<4.7	68.4	<4.7	71.1	<4.7
Iron	1,760 J	3,540 J	221	<28.0	36,100	<28.0	52,500	<28.0
Lead	1.8 B	0.92 B	1.7 B	0.9 BJ	48.9	1.2 B	50.7	<0.8
Magnesium	11,600	9,540	6,040	5,720	19,200	9,160	23,000	7,330
Manganese	809 J	503 J	284	283 J	1,850	1,370 J	1,120	43.6
Mercury	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	0.14 B	0.2 B
Nickel	<7.5	<7.5	<7.4	<7.4	40.3	<7.4	59.2	<7.4
Potassium	2,360 B	2,350 B	1,480 B	1,330 B	6,050	1,660 B	8,550	870 B
Selenium	<1.0	<0.99	<1.0	<0.99	<0.99	<1.0	1.0 BJ	<1.0
Silver	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5
Sodium	30,700 J	62,400 J	2,560 BJ	2,640 BJ	60,000	61,900	191,000 J	186,000 J
Thallium	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<25.6	<26.0
Vanadium	<6.8	<6.8	<6.8	<6.7	40.6 B	<6.8	60.9	<6.7
Zinc	<2.8	4.8 B	12.4 B	10.2 B	161	6.4 B	196	<2.8
Cyanide	NA	NA	<1.5	NA	<1.5	NA	<1.5	NA

Table 3-22
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for TAL Inorganic Parameters

Inorganics	Phase I RI Ground-Water Samples and Analytical Results (ppb)			
	MW-11S	MW-11SF	TW-1S	TW-1SF
Aluminum	71,700 J	194 B	<81.7	<81.8
Antimony	<49.5	<49.7	<27.1	<27.2
Arsenic	5.1 B	3.0 B	<1.1	<1.1
Barium	742	122 B	<19.0	<19.0
Beryllium	4.2 B	<0.89	<0.5	<0.5
Cadmium	5.4	<2.8	<2.0	<2.0
Calcium	450,000	167,000	15,900	15,800
Chromium	100	<2.7	<2.4	<2.4
Cobalt	61.7	<5.5	<4.8	<4.8
Copper	178	<4.7	<3.7	5.3 B
Iron	140,000	1,170 J	47.9 B	<35.9
Lead	62.3	1.4 B	<0.6	<0.6
Magnesium	46,600	13,800	1,910 B	1,930 B
Manganese	5,830	3,350 J	154	<1.2
Mercury	1.8	<0.09	<0.09	<0.09
Nickel	171	<7.5	<4.5	<4.5
Potassium	18,200	8,820	<649	<649
Selenium	<9.9	<1.0	<1.3	<1.3
Silver	<5.4	<5.5	<4.3	<4.3
Sodium	22,300	25,900 J	6,660	6,920
Thallium	<25.7	<2.6	<3.0	<3.0
Vanadium	142	<6.8	<4.2	<4.2
Zinc	444	6.3 B	3.2 B	<2.2
Cyanide	<1.5	NA	<10	NA

Table 3-22
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for TAL Inorganic Parameters

Inorganics	**Phase II RI Ground-Water Samples and Analytical Results (ppb)**			
	C-9	**C-9D**	**C-9F**	**C-9FD**
Aluminum	898	1,000	46.3 B	48.8 B
Antimony	3.2 B	<2.4	<2.1	<2.1
Arsenic	<3.4	<3.4	<3.4	<3.4
Barium	62.8 B	64.1 B	35.8 B	35.2 B
Beryllium	<0.04	<0.04	<0.04	<0.04
Cadmium	<0.20	<0.20	<0.20	<0.20
Calcium	116,000	113,000	45,800	44,900
Chromium	19.1	18.3	<0.80	0.91 B
Cobalt	10.5 B	10.1 B	1.3 B	2.4 B
Copper	67.5	68.0	4.0 B	5.9 B
Iron	6,090	8,150	<24.3	51.3 B
Lead	2.4 B	2.9 B	<1.5	<1.5
Magnesium	6,300	6,150	4,580 B	4,020 B
Manganese	151	156	34.0	43.1
Mercury	<0.06	0.07 B	0.06 B	0.06 B
Nickel	22.5 B	23.1 B	4.1 B	4.5 B
Potassium	4,380 B	4,290 B	4,090 B	3,710 B
Selenium	<3.3	<3.3	<3.3	<3.3
Silver	1.2 B	<1.2	<1.2	<1.2
Sodium	3,930 B	4,130 B	3,890 B	3,660 B
Thallium	<4.7	<4.7	<4.7	<4.7
Vanadium	2.3 B	2.4 B	<1.1	<1.1
Zinc	61.6	102	2.5 B	2.9 B
Cyanide	NA	NA	NA	NA

Table 3-22
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for TAL Inorganic Parameters

Inorganics	Phase II RI Ground-Water Samples and Analytical Results (ppb)					
	C-11	C-11F	C-12	C-12 F	C-15	C-15 F
Aluminum	4,370	9.2 B	151 B	15.0 B	216	9.2 B
Antimony	2.2 B	3.3 B	<2.0	2.2 B	<2.0	3.9 B
Arsenic	23.2	<1.5	11.7	8.0 B	<1.5	<1.5
Barium	168 B	139 B	501	468	141 B	134 B
Beryllium	0.50 B	<0.08	<0.08	<0.08	<0.08	<0.08
Cadmium	12.8	0.92 B	<0.30	<0.30	<0.30	0.32 B
Calcium	396,000	178,000	176,000	161,000	162,000	144,000
Chromium	11.2	1.0 B	1.9 B	0.89 B	1.5 B	0.89 B
Cobalt	9.7 B	2.4 B	17.3 B	12.5 B	2.0 B	1.0 B
Copper	185	4.2 B	7.1 B	<0.89	17.8 B	5.6 B
Iron	36,400 J	42.1 BJ	22,700 J	11,200 J	950 J	19.0 BJ
Lead	70.7	<1.3	2.2 B	<1.3	4.7	<1.3
Magnesium	19,800	13,600	16,800	16,800	20,300	20,600
Manganese	1,590	2,820	2,190	2,010	56.2	17.8
Mercury	<0.04	<0.04	0.95	<0.04	<0.04	<0.04
Nickel	32.4 B	6.3 B	10.4 B	7.9 B	6.4 B	4.7 B
Potassium	3,570 BJ	2,490 BJ	6,100 J	6,390 J	20,200 J	26,900 J
Selenium	<3.0	<3.0 J	<3.0 J	<3.0 J	<3.0 J	<3.0 J
Silver	<1.3 J	<1.3	<1.3	<1.3	<1.3	<1.3
Sodium	6,000 J	17,400 J	46,900 J	46,500 J	45,000 J	48,000 J
Thallium	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4
Vanadium	12.9 B	<1.3	1.9 B	<1.3	<1.3	<1.3
Zinc	265	31.3	33.3	4.2 B	30.1	17.6 B
Cyanide	<5.0	NA	<5.0	NA	<5.0	NA

Table 3-22
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for TAL Inorganic Parameters

Inorganics	Phase II RI Ground-Water Samples and Analytical Results (ppb)					
	C-16	C-16D	C-16F	C-16FD	C-18	C-18F
Aluminum	174 B	143 B	<8.1	<8.1	4,640	<8.1
Antimony	<2.0	<2.0	<2.0	<2.0	<2.0	4.8 B
Arsenic	<1.5	<1.5	<1.5	<1.5	6.4 B	<1.5
Barium	145 B	146 B	139 B	134 B	399	200
Beryllium	<0.08	<0.08	<0.08	<0.08	0.58 B	<0.09
Cadmium	<0.30	<0.30	<0.30	<0.30	2.8 B	<0.30
Calcium	157,000	159,000	152,000	148,000	381,000	144,000
Chromium	1.4 B	1.4 B	<0.90	<0.90	6.7 B	<0.89
Cobalt	1.8 B	2.3 B	1.7 B	1.8 B	9.4 B	1.5 B
Copper	3.5 B	3.5 B	0.94 B	1.1 B	21.3 B	1.6 B
Iron	2,400 J	2,100	<19.1 J	<39.5 J	10,200 J	<19.0 J
Lead	1.8 B	1.3 B	<1.3	<1.3	5.7	2.6 B
Magnesium	11,500	11,600	11,200	10,800	17,400	12,300
Manganese	701	707	683	663	1,250	534
Mercury	<0.04	<0.04	<0.04	0.08 B	0.13 B	<0.04
Nickel	6.3 B	6.3 B	6.0 B	7.8 B	35.2 B	3.9 B
Potassium	3,200 BJ	3,200 B	3,200 BJ	3,100 B	5,280 J	3,410 BJ
Selenium	<3.0 J	<3.0	<3.0 J	<3.0	<3.0 J	<3.0
Silver	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Sodium	42,600 J	43,300	43,200 J	42,400	47,700 J	45,600 J
Thallium	<2.4	<2.4	<2.4	<2.4	3.2 B	<2.4
Vanadium	<1.3	<1.3	<1.3	<1.3	15.5 B	<1.3
Zinc	21.7	12.0	4.3 B	4.0 B	97.7	11.1 B
Cyanide	R	<5.0	NA	NA	<5.0	NA

Table 3-22
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for TAL Inorganic Parameters

Inorganics	Phase II RI Ground-Water Samples and Analytical Results (ppb)				NYSDEC Ground-Water Standard (Class GA) (ppb)
	C-19	C-19A	C-19F	C-19AF	
Aluminum	639	260	41.0 B	165 B	N/A
Antimony	<2.0	2.0 B	3.0 B	2.0 B	N/A
Arsenic	<1.5	<1.5	<1.5	<1.5	25
Barium	182 B	177 B	172 B	168 B	1,000
Beryllium	0.11 B	<0.08	<0.08	<0.08	N/A
Cadmium	0.33 B	0.30 B	<0.30	0.30 B	10
Calcium	127,000	141,000	119,000	124,000	N/A
Chromium	1.6 B	1.1 B	<0.89	0.90 B	50
Cobalt	1.1 B	0.79 B	<0.79	0.80 B	N/A
Copper	17.3 B	2.7 B	1.4 B	1.7 B	200
Iron	1,670 J	598 J	95.5 BJ	407 J	300*
Lead	3.2	<1.3	<1.3	<1.3	25
Magnesium	27,200	24,700	25,800	24,400	35,000
Manganese	63.8	69.7	30.3	39.7	300*
Mercury	0.05 B	<0.04	0.16 B	0.06 B	2
Nickel	4.1 B	4.0 B	1.7 B	2.2 B	N/A
Potassium	2,960 J	3,150 J	2,960 BJ	3,110 BJ	N/A
Selenium	<3.0 J	<3.0 J	<3.0 J	<3.0 J	10
Silver	<1.3	<1.3	<1.3	<1.3	50
Sodium	23,000 J	27,400 J	25,800 J	27,100 J	20,000
Thallium	<2.4	<2.4	<2.4	<2.4	N/A
Vanadium	2.4 B	1.3 B	<1.3	1.3 B	N/A
Zinc	22.4	13.3 B	7.0 B	8.8 B	300
Cyanide	<5.0	<5.0	NA	NA	100

Table 3-22
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Ground-Water Analytical Results for TAL Inorganic Parameters

Notes:

1. Sample collected by Blasland, Bouck & Lee, Inc. in May, June, and July 1993 (Phase I RI); September 1994 and March and April 1995 (Phase II RI).
2. Sample analyzed in accordance with NYSDEC 1991 ASP methods.
3. B = value is less than the Contract Required Detection Limit but greater than the Instrument Detection Limit.
4. < = below detection limit.
5. Sample designations indicate the following: MW = monitoring well ground-water sample; C = bedrock corehole monitoring well ground-water sample; S= discrete sample; D or A = duplicate sample; F = filtered sample.
6. NA = not analyzed.
7. TW-1S = sample of drill water used during well installations.
8. J = estimated value.
9. * = NYSDEC ground-water standard (Class GA) for iron and manganese (total) is 500 ppb.
10. Concentrations above the NYSDEC ground-water standard are highlighted.
11. N/A = not available.
12. R = data was rejected.
13. Concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).

Table 3-23

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Residential Wells Analytical Results for Total PCBs

Sample I.D.	Total PCB Concentration (ppb)
Phase I RI	
CONFIDENTIAL	<0.05
[redacted]	<0.05
[redacted]	<0.05
[redacted]	<0.05
[redacted]	<0.05
Phase II RI	
CONFIDENTIAL	<0.05
[redacted]	<0.05
[redacted]	<0.05
[redacted]	<0.05
[redacted]	<0.05
[redacted]	<0.05
[redacted]	<0.05
[redacted]	<0.05
NYSDEC Ground-Water Standard (Class GA) (ppb)	0.1

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. during July and August 1993 (Phase I RI); and September 1994 (Phase II RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. < = each aroclor analyzed was not detected at the concentration presented.
4. Concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).
5. F = filtered sample.

Table 3-24

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Residential Wells Analytical Results for Detected TCL Volatile and Semi-Volatile Organic Compounds

	Phase I RI Residential Well Samples and Analytical Results (ppb)					
	CONFIDENTIAL					
Volatile Organic Compounds						
Acetone	<10	<10	<10	14 J	<12	<10
Total TICs	NTD	NTD	NTD	NTD	NTD	NTD
Semi-Volatile Organic Compounds						
Total TICs	NTD	42 JX	79 JX	8 JX	6 JX	NA
	Phase II RI Residential Well Samples and Analytical Results (ppb)					
	CONFIDENTIAL					
Volatile Organic Compounds (USEPA Method 524.2)						
Carbon Disulfide	<0.5	0.2 J	<0.5	<0.5	<0.5	<0.5
Chloroform	<10	<2	<3	<18	<2	3
m- & p-Xylene	<0.4	<0.5	<0.3	<0.2	<0.5	0.6
Naphthalene	<0.5	<0.5	1	<0.5	<0.5	<0.5
Xylene (total)	<0.6	<0.5	<0.5	<0.5	<0.5	0.9
Total TICs	NTD	NTD	NTD	NTD	NTD	NTD
Semi-Volatile Organic Compounds						
Naphthalene	<10	NA	1 J	<10	<10	NA
Carbazole	<10	NA	0.6 J	<10	<10	NA
N-nitrosodiphenylamine(1)	<10	NA	<10	<10	0.4 J	NA
Total TICs	10 NJ	NA	NTD	NTD	NTD	NA

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. during July and August 1993 (Phase I RI) and September 1994 (Phase II RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. Concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).
4. J = estimated value.
5. < = below detection limit.
6. NA = not analyzed.
7. TICs = tentatively identified compounds.
8. NTD = no TICs detected.
9. X = Result was manually entered into data file due to software limitations.
10. No trip blank was provided by Aquatec when Phase I RI sa CONFIDENTIAL collected. TB-4 is associated with the Phase I RI sample
11. NJ = compound was tentatively identified at an estimated concentration.
12. Sample designations indicate the following: A = duplicate sample; TB = trip blank.

Table 3-25

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Residential Wells Analytical Results for TAL Inorganic Parameters

Inorganics	Phase I RI Residential Well Samples and Analytical Results (ppb)					NYSDEC Ground-Water Standard (Class GA) (ppb)
	CONFIDENTIAL					
Aluminum	291 J	<72.5	<72.3	423 J	<72.7	N/A
Antimony	<49.5	54.1 B	<49.7	<49.6	<50.0	N/A
Arsenic	<1.9	<1.9	<1.9	<1.9	<1.4	25
Barium	63.6 B	407 J	184 B	86.5 B	77.2 BJ	1,000
Beryllium	<0.89	<0.9	<0.9	<0.89	<0.9	N/A
Cadmium	<2.8	<2.8	<2.8	<2.8	<2.8	10
Calcium	2,100 B	21,200 J	93,000 J	97,200 J	102,000 J	N/A
Chromium	<2.7	<2.7	<2.7	<2.7	<2.7	50
Cobalt	<5.4	<5.5	<5.5	<5.5	<5.5	N/A
Copper	14.0 B	5.2 B	24.7 B	36.3 J	11.1 BJ	200
Iron	308 J	50.7 B	479 J	605 J	418 J	300*
Lead	<1.3	<1.3	<1.3	2.9 B	<0.79	25
Magnesium	751 B	6,380 J	12,500 J	14,400 J	16,300 J	35,000
Manganese	3.4 B	<2.0	634 J	247 J	15.3 J	300*
Mercury	<0.09	<0.09	<0.09	<0.09	<0.09	2
Nickel	<7.4	<7.5	<7.5	<7.4	<7.5	N/A
Potassium	2,340 B	5,450 J	1,960 B	1,750 B	760 BJ	N/A
Selenium	<1.5	<1.5	<1.5	<1.5	1.2 BJ	10
Silver	<5.4	<5.5	<5.5	<5.5	<5.5	50
Sodium	156,000 J	481,000 J	8,540 J	12,500 J	12,500 J	20,000
Thallium	<2.6	<26.0	<2.6	<2.6	<2.6	N/A
Vanadium	<6.7	<6.8	<6.8	<6.7	<6.8	N/A
Zinc	6.4 B	15.1 B	12.1 B	65.2 J	537 J	300
Cyanide	<1.2	<1.2	<1.2	<1.2	3.8 BJ	100

Table 3-25
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Residential Wells Analytical Results for TAL Inorganic Parameters

Inorganics	Phase II RI Residential Well Samples and Analytical Results (ppb)							
	CONFIDENTIAL							
Aluminum	186 B	<8.1	111 B	20.0 B	193 B	71.8 B	<8.0	<8.1
Antimony	<2.0	2.4 B	2.0 B	2.1 B	<2.0	3.4 B	<2.0	<2.0
Arsenic	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Barium	85 B	75.7 B	64.4 B	58.9 B	424	375	78.1 B	77.7 B
Beryllium	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Cadmium	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Calcium	107,000	102,000	2,450 B	2,320 B	39,900	34,600	103,000	104,000
Chromium	<0.89	<0.90	<0.90	<0.90	<0.89	0.92	<0.89	<0.90
Cobalt	<0.79	<0.80	<0.80	<0.80	<0.79	<0.80	<0.79	<0.80
Copper	9.5 B	1.5 B	0.98 B	<0.90	5.2 B	4.3 B	5.4 B	1.3 B
Iron	327 J	20.1 BJ	131 J	23.3 BJ	391 J	68.5 BJ	1,600 J	1,120 J
Lead	2.7 B	<1.3	<1.3	<1.3	1.6 B	<1.3	<1.3	<1.3
Magnesium	12,200	11,700	792 B	712 B	9,790	8,630	17,100	17,200
Manganese	117	37.8	1.8 B	1.9 B	16.8	11.9 B	15.9	16.5
Mercury	<0.04	<0.04	<0.04	0.16 B	<0.04	<0.04	<0.04	<0.04
Nickel	2.0 B	<1.0	1.2 B	1.2 B	0.99 B	1.2 B	<0.99	1.7 B
Potassium	1,780 BJ	1,660 BJ	2,400 BJ	2,330 BJ	8,600 J	7,480 J	998 BJ	1,010 BJ
Selenium	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Silver	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Sodium	15,300 J	14,500 J	167,000 J	164,000 J	547,000 J	476,000 J	10,800 J	11,000 J
Thallium	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4
Vanadium	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Zinc	35.2	24.6	2.7 B	2.9 B	54.5	9.4 B	32.8	25.9
Cyanide	<5.0	NA	<5.0	NA	<5.0	NA	<5.0	NA

Table 3-25
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation
Residential Wells Analytical Results for TAL Inorganic Parameters

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. during July and August 1993 (Phase I RI) and September 1994 (Phase II RI).
2. Samples analyzed in accordance with NYSDEC 1991 ASP methods.
3. B = value is less than the Contract Required Detection Limit, but greater than the Instrument Detection Limit.
4. < = below detection limit.
5. Concentrations reported in parts per billion (ppb) or micrograms per liter (ug/l).
6. J = estimated value.
7. Concentrations detected above the NYSDEC ground-water standard (Class GA) are highlighted in this table.
8. N/A = not available.
9. Sample designations indicate the following: F = filtered ground-water sample.

Table 3-26

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation

Summary of Separate Phase Oil Thickness Measurements and Estimated Volumes of Bailed Product

Date	SPO Thickness (feet)						Approx. Volume of Water and SPO Removed (gallons)					
	C-3/MW-8	MW-5	C-4	C-10	C-13	C-14	C-3/MW-8	MW-5	C-4	C-10	C-13	C-14
6/28/93	0.015	2	NM	NM	NM	NM	1	2	–	–	–	–
6/29/93	0.01	0.46	NM	NM	NM	NM	0.53	1	–	–	–	–
6/30/93	<0.01	NM	NM	NM	NM	NM	0.26	–	–	–	–	–
7/1/93	<0.01	NM	NM	NM	NM	NM	0.26	–	–	–	–	–
7/16/93	0.01	0.01	NM	NM	NM	NM	2	1	–	–	–	–
8/6/93	0.03	0.03	NM	1.1	NM	NM	2.5	2	–	1	–	–
8/20/93	0.02	<0.01	NM	0.66	<0.01	1.5	0.42	0.42	–	2	0.42	4
8/27/93	0.04	<0.01	NM	0.15	<0.01	0.15	0.49	0.014	–	2	0.014	4
9/3/93	0.01	0.6	NM	0.1	NM	0.06	1	2.32	–	2	–	1.5
9/8/93	0.01	0.3	NM	0.08	NM	0.1	0.5	5.02	–	1.48	–	1.48
9/17/93	0.07	0.49	NM	0.11	0.17	0.58	2	3.9	–	2	2	1.9
9/24/93	0.06	0.08	NM	0.03	0.14	0.08	0.13	0.5	–	0.35	0.35	0.13
9/30/93	0.04	0.04	NM	NM	0.10	0.04	0.13	0.13	–	–	0.5	0.25
10/7/93	0.03	0.05	NM	NM	0.06	0.25	0.5	0.13	–	–	0.13	1.25
10/15/93	0.05	0.03	NM	NM	0.02	0.13	0.13	–	–	–	0.04	0.5
10/22/93	0.02	<0.01	NM	NM	0.06	0.15	0.13	–	–	–	1	1
10/29/93	0.04	0.01	NM	NM	0.03	0.04	0.25	–	–	–	0.25	0.25
11/12/93	0.4	0.02	NM	0.01	0.03	NM	2	–	–	–	–	–
12/1/93	10.01	0.01	NM	NM	0.03	NM	10	–	–	–	–	–
12/8/93	9.02	NM	NM	NM	0.02	NM	10	–	–	–	–	–
12/28/93	0.41	NM	NM	NM	NA	NM	1.5	–	–	–	–	–
1/5/94	NA	NM	NM	NM	NA	NM	–	–	–	–	–	–
1/24/94	0.48	NM	NM	NM	NA	NM	0.6	–	–	–	–	–
1/31/94	5.52	NM	NM	NM	NA	NM	4.5	–	–	–	–	–
2/18/94	0.67	NM	NM	NM	NA	NM	2	–	–	–	–	–
3/7/94	4.18	NM	NM	NM	NA	NM	7	–	–	–	–	–

Table 3-26
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation

Summary of Separate Phase Oil Thickness Measurements and Estimated Volumes of Bailed Product

Date	SPO Thickness (feet)						Approx. Volume of Water and SPO Removed (gallons)					
	C-3/MW-8	MW-5	C-4	C-10	C-13	C-14	C-3/MW-8	MW-5	C-4	C-10	C-13	C-14
3/21/94	2.9	NM	NM	NM	NA	NM	5	–	–	–	–	–
4/4/94	0.6	NM	0.30	NM	0.30	NM	1.5	–	0.5	–	0.5	–
4/19/94	0.3	NM	NM	NM	NM	NM	0.5	–	–	–	–	–
5/3/94	0.33	0.01	NM	NM	NM	NM	1	–	–	–	–	–
5/17/94	0.13	NM	NM	NM	NM	NM	–	–	–	–	–	–
5/31/94	2.49	NM	NM	NM	NM	NM	5	–	–	–	–	–
6/15/94	2.55	NM	0.22	NM	0.23	NM	5	–	–	–	–	–
6/29/94	1.5	NM	0.2	NM	0.25	NM	2	–	–	–	–	–
7/14/94	1.25	NM	0.22	NM	0.23	NM	2.5	–	–	–	–	–
7/29/94	2.03	NM	0.24	NM	0.23	0.05	2.5	–	–	–	–	–
8/10/94	2.14	NM	0.23	NM	0.23	0.03	3	–	–	–	–	–
8/23/94	0.88	NM	0.24	NM	0.23	NM	1	–	–	–	–	–
9/12/94	1.75	NM	0.20	NM	0.25	NM	2	–	–	–	–	–
9/20/94	0.30	NM	0.20	NM	NM	NM	–	–	–	–	–	–
10/5/94	0.25	NM	0.20	NM	0.20	0.25	–	–	–	–	–	–
10/31/94	0.45	NM	0.20	NM	0.20	0.20	0.5	–	–	–	–	–
11/18/94	1.59	NM	0.24	NM	0.30	0.26	1.5	–	–	–	–	–
12/8/94	2.08	NM	0.21	NM	0.36	NM	3	–	–	–	–	–
12/19/94	1.49	NM	0.23	NM	0.39	0.01	3	–	–	–	0.5	–
1/5/95	0.63	NM	0.22	NM	0.25	NM	1	–	–	–	–	–
1/17/95	0.34	NM	0.20	NM	0.29	NM	0.5	–	–	–	–	–
1/31/95	0.28	NM	0.29	NM	0.25	0.04	–	–	–	–	–	–
2/16/95	0.45	NM	0.22	NM	0.26	NM	1	–	–	–	–	–
3/1/95	1.04	NM	0.25	NM	0.22	NM	1	–	–	–	–	–

Table 3-26
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Ground-Water Investigation

Summary of Separate Phase Oil Thickness Measurements and Estimated Volumes of Bailed Product

	SPO Thickness (feet)						Approx. Volume of Water and SPO Removed (gallons)					
Date	C-3/MW-8	MW-5	C-4	C-10	C-13	C-14	C-3/MW-8	MW-5	C-4	C-10	C-13	C-14
3/14/95	0.37	NM	0.30	NM	0.15	NM	0.5	--	--	--	--	--
3/29/95	0.15	NM	0.26	NM	0.26	NM	--	--	--	--	--	--
Total (Approximate) Volume of Water and SPO Removed (gallons)							92.5	18.5	0.5	11.0	5.2	16.25

Notes:

1. SPO = separate phase oil.
2. Measurements to oil and water surfaces were made with a Teflon bailer from June 28, 1993 to September 8, 1993. After September 8, 1993, measurements were made with a Keck oil/water interface probe.
3. NM = SPO on water surface was not measurable.

-- = SPO was not bailed.

NA = monitoring well/corehole was not accessible.

Table 3-27

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

RI Biota Investigation

PCB Concentrations in Resident Fish
Cobleskill Creek and the Storm Water Drainage System (Unnamed Tributary)

Sample	Lipids (%)	Total PCBs (ppm)
Cobleskill Creek		
Smallmouth Bass		
CC-SB-01	1.52	0.15
CC-SB-02	1.75	0.08
CC-SB-03	1.37	0.06
Arithmetic Mean	1.55	0.10
Common Shiner		
CC-CS-01	3.65	0.41
CC-CS-02	1.80	0.32
CC-CS-03	4.01	0.29
Arithmetic Mean	3.15	0.34
Storm Water Drainage System (Unnamed Tributary)		
White Sucker		
UT-WS-01	1.97	0.19
UT-WS-02	1.90	0.09
UT-WS-03	1.24	<0.050
Arithmetic Mean	1.70	0.10
Fathead Minnow		
UT-FM-01	4.08	1.7
UT-FM-02	5.18	1.5
UT-FM-03	4.12	1.1
Arithmetic Mean	4.46	1.4

Notes:

1. Samples were collected by Blasland, Bouck & Lee, Inc. in October 1994.
2. Smallmouth bass and white sucker samples were prepared as skin-on fillet samples.
3. Common shiner and fathead minnow samples were prepared as whole-body composite samples.
4. Arithmetic mean concentration calculated using a value of one-half the detection limit for non-detect.
5. < = each aroclor analyzed was not detected at the concentration presented.

Table 4-1

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

Vegetative Species Observed or Typical of the Area

Common Name	Scientific Name
I. Woody Plants/Trees	
Red-osier dogwood	Cornus stolonifera
American elm	Ulmus americana
Paper birch	Betula papyrifera
Crabapple	Malus sp.
Quaking aspen	Populus tremuloides
Willow sp.	Salix sp.
Hawthorn	Crataegus sp.
Black willow	Salix sp.
Black cherry	Prunus serotina
Pussy willow	Salix sp.
White ash	Fraxinus americana
Boxelder	Acer negundo
Poplar sp.	Populus sp.
Staghorn sumac	Rhus typhina
Honeysuckle	Lonicera dioica
Sugar maple	Acer saccharum
Red maple	Acer rubrum
White pine	Pinus strobus
Black locust	Robinia pseudoacacia

Table 4-1
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

Vegetative Species Observed or Typical of the Area

Common Name	Scientific Name
II. Herbaceous Vegetation	
Goldenrod	Solidago sp.
Rough goldenrod	Solidago rugosa
Moth mullein	Verbascum blattaria
Mullein	Veronicastrum thapsus
Poison ivy	Rhus radicans
Viburnum sp.	Viburnum sp.
Dyer's weed	Solidago nemoralis
Teasel	Dipsacus laciniatus
Wild strawberries	Fragaria virginiana
Buttercup	Ranunculus sp.
Dillweed	Anethum graveolens
Musk mallow	Malva moshata
Stinging nettle	Urtica dioica
Bird's foot trefoil	Lotus corniculatus
Sedge	Carex sp.
Ox-eye daisy	Chrysanthemum leaucanthemum
Reed canary grass	Phalaris arundinacea
Field horsetail	Equisetum sp.
Bramble	Rubus sp.

Table 4-1
(Cont'd)

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

Vegetative Species Observed or Typical of the Area

Common Name	Scientific Name
Wild grape	Vitis sp.
Meadow rue	Thalictrum sp.
Cattail	Typha sp.
Aster	Aster sp.
Alfalfa	Medicago sativa
Clover	Trifolium sp.
Bush clover	Lespedeza sp.
Star thistle	Centauria scabiosa
Burdock	Arctium minus
Curly dock	Rumex crispus
Misc. grasses	Graminae sp.
Common St. John's wort	Hypericum perforatum
Spotted knapweed	Centaurea maculosa
Yellow avens	Geum aleppicum

Table 4-2

M. Wallace and Son, Inc. Scrapyard
Niagara Mohawk Power Corporation
Cobleskill, New York

Wildlife Species Observed or Typical of the Area

Common Name	Scientific Name
Birds	
Blue jay	Cyanocitta cristata
Red-eyed vireo	Vireo olivaceus
American robin	Turdus migratorius
Black-capped chickadee	Parus atricapillus
Red-winged blackbird	Agelaius phoeniceus
Barn swallow	Hirundinidae sp.
White-breasted nuthatch	Sitta carolinensis
Cardinal	Richmondena cardinalis
Eastern phoebe	Sayornis phoebe
Common crow	Corvus brachyrhynchos
Common flicker	Colaptes auratus
House sparrow	Passer domesticus
Common grackle	Quiscalus quiscala
American goldfinch	Spinus tristis
Common yellowthroat	Geothylpis trichas
Red-tailed hawk	Buteo jamaicensis
Sharp-shinned hawk	Accipter striatus
Kestrel	Falco sparverius
Great blue heron	Ardea herodias
Killdeer	Charadrius vociferus

Table 4-2
(Cont'd)

M. Wallace and Son, Inc. Scrapyard
Niagara Mohawk Power Corporation
Cobleskill, New York

Wildlife Species Observed or Typical of the Area

Common Name	Scientific Name
Kingfisher	Megaceryle alcyon
Mammals	
Eastern cottontail rabbit	Sylvilagus floridanus
Woodchuck	Marmota monax
Raccoon	Procyon lotor
White-tailed deer	Odocoileus virginiana
Opossum	Didelphis marsupialis
Mouse (sp.)	Peromyscus sp.
Vole (sp.)	Sorex sp., Blarina sp.
Bats (sp.)	Chiroptera
Other	
Herptiles	
Invertebrates	

Table 4-3

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

Fish Species Observed or Typical of the Area

Common Name	Scientific Name
Storm Water Drainage System (Unnamed Tributary)	
Fathead minnow	Pimephales promelas
Blacknose dace	Rhinichthys atratulus
Creek chub	Semotilus atromaculatus
White sucker	Catostomas commersoni
Cobleskill Creek[1]	
Smallmouth bass	Micropterus dolomieu
Rock bass	Ambloplites rupestris
Brown trout	Salmo trutta
Pumpkinseed	Lepomis gibbosus
Bluegill	Lepomis macrochirus
Northern hogsucker	Hypentelium nigricans
White sucker	Catostomas commersoni
Longnose dace	Rhinichthys cataractae
Cutlips minnow	Exaglossum maxillingua
Common shiner	Notropis comutus
Stoneroller	Campostoma anomalum
Creek chub	Semotilus atromaculatus
Blacknose dace	Rhinichthys atratulus

Notes:

[1] NYSDEC, 1995.

Table 4-4

Niagara Mohawk Power Corporation
M. Wallace and Son, Inc. Scrapyard
Cobleskill, New York

Potential Exposure Pathways Analysis

Environmental Media (1)	Birds			Mammals			Aquatic Biota		
Route (2)	Ig	D	Ih	Ig	D	Ih	Ig	D	Ih
Ground water	L	L	L	L	L	L	L	L	L
Soils	L	L	L	L	L	L	L	L	L
Surface waters	M	M	L	M	M	L	H	H	L
Aquatic sediments	M	M	L	M	M	L	H	H	L
Air	L	L	L	L	L	L	L	L	L

Notes:

1. Data suggest potential contaminant migration to surface waters and aquatic sediments.
2. Potential exposure routes include: Ig = Ingestion; D = Dermal; and Ih = Inhalation.
3. L = Low potential for exposure.
4. M = Moderate potential for exposure.
5. H = High potential for exposure.

TABLE 5–1

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

CHEMICALS OF INTEREST IN ON–SITE SURFACE SOIL

Constituent	
PCBs	Inorganics
Semi–Volatile Organics	Aluminium
	Antimony
Naphthalene	Arsenic
2–Methylnaphthalene	Barium
Acenapthene	Beryllium
Dibenzofuran	Cadmium
Fluorene	Chromium
Phenathrene	Cobalt
Anthracene	Copper
Carbazole	Iron
Di–n–butylphthalate	Lead
Fluoranthene	Magnesium
Pyrene	Manganese
Benzo(a)anthracene	Mercury
Chrysene	Nickel
Bis(2–ethylhexyl)phthalate	Selenium
Benzo(b)fluoranthene	Silver
Benzo(k)fluoranthene	Vanadium
Benzo(a)pyrene	Zinc
Indeno (1,2,3–cd) pyrene	
Dibenzo(a,h)anthracene	
Benzo(g,h,i)perylene	

TABLE 5–2

CHEMICALS OF INTEREST IN SURFACE SOIL OUTSIDE THE FENCE

Constituent
PCBs

TABLE 5-3

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

CHEMICALS OF INTEREST IN ON-SITE SURFACE WATER

Constituent
PCBs
Inorganics
Aluminum
Arsenic
Barium
Beryllium
Cadmium
Iron
Magnesium
Manganese
Zinc

TABLE 5-4

CHEMICALS OF INTEREST IN OFF-SITE (DRAINAGE SYSTEM) SURFACE WATER

Constituent
Inorganic
Mercury

TABLE 5-5

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

CHEMICALS OF INTEREST IN ON-SITE SEDIMENT

Constituent
PCBs
Volatile Organics
Acetone
Benzene
2-Butanone
Carbon Disulfide
Toluene
Semi-Volatile Organics
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perlyene
Benzo(k)fluoranthene
bis(2-Ethylhexyl)phthalate
Chrysene
Dibenzo(a,h)anthracene
Di-n-butylphthalate
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
2-Methylnaphthalene
Phenanthrene
Phenol
Pyrene
Inorganics
Aluminum
Arsenic
Barium
Beryllim
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Magnesium
Manganese
Mercury
Nickel
Selenium
Vanadium
Zinc
Cyanide

TABLE 5–6

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

CHEMICALS OF INTEREST IN OFF–SITE SEDIMENT

Consituent
Drainage Ditch
PCBs
Inorganics
Mercury
Cobleskill Creek
PCBs

TABLE 5–7

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

CHEMICALS OF INTEREST IN ON–SITE GROUNDWATER

Constituent
PCBs
Volatile Organics
Chlororform
1,2–Dichloroethene
Trichloroethene
Benzene
Toluene
Ethylbenzene
Xylenes
N–butylbenzene
1,2,4–Trimethylbenzene
1,3,5–Trimethylbenzene
Semi–Volatile Organics
Diethylphthalate
Di–n–butylpthalate
Phenol
Naphthalene
2–Methylnaphthalene
Inorganics
Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Magnesium
Manganese
Mercury
Nickel
Selenium
Thallium
Vanadium
Zinc

TABLE 5-8

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

CHEMICALS DETECTED IN RESIDENTIAL WELL WATER

Constituent
Volatile Organics
Acetone
Carbon Disulfide
Naphthalene
Semi-Volatile Organics
Carbazole
N-nitrosodiphenylamine
Inorganics
Aluminum
Antimony
Barium
Copper
Iron
Lead
Magnesium
Manganese
Nickel
Selenium
Zinc
Cyanide

TABLE 5-9

NIAGARA MOHAWK POWER CORPORATION, INC.
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

EXPOSURE FACTORS
ON-SITE ACTIVE SCRAPYARD OPERATOR

Exposure Pathway	Exposure Variable	Units	Value
All Pathways	Body Weight	(kg)	70 (1)
	Averaging Time		
	(noncancer effects)	(days)	9125 (1)
	(cancer effects)	(days)	25550 (1)
Incidental Ingestion of Soils	Ingestion Rate	(mg/day)	100 (3)
	Expsoure Frequency	(days/year)	250 (1)
	Exposure Duration	(years)	25 (1)
Dermal Contact with Soils	Dermal Absorption Factor	unitless	3% (PCBs) (2) 0.5% (cadmium) (2)
	Soil-to-Skin Adherence Factor	(mg/cm^2)	1 (2)
	Skin Surface Area	(cm^2)	2570 (4)
	Expsoure Frequency	(days/year)	250 (1)
	Exposure Duration	(years)	25 (1)
Inhalation Due to Soil Exposure	Expsoure Frequency	(days/year)	250 (1)
	Exposure Duration	(years)	25 (1)

Notes:

(1) USEPA, 1991a.
(2) USEPA, 1992. Midpoint of range given.
(3) USEPA, 1991a, gives a default ingestion rate of 50 mg/day for commercial/industrial workers. The adult ingestion rate of 100 mg/day is used in this scenario because these receptors are working outside in the scrapyard.
(4) USEPA, 1992. Assumes exposure of face, hands, and forearms.

TABLE 5-10

NIAGARA MOHAWK POWER CORPORATION, INC.
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

EXPOSURE FACTORS
ON-SITE QUARRY POND WATER TREATMENT SYSTEM WORKER

Exposure Pathway	Exposure Variable	Units	Value
All Pathways	Body Weight	(kg)	70 (1)
	Averaging Time		
	(noncancer effects)	(days)	9125 (1)
	(cancer effects)	(days)	25550 (1)
Incidental Ingestion of Soils	Ingestion Rate	(mg/day)	100 (4)
	Expsoure Frequency	(days/year)	24 (2)
	Exposure Duration	(years)	25 (1)
Dermal Contact with Soils	Dermal Absorption Factor	unitless	3% (PCBs) (3) 0.5% (cadmium) (3)
	Soil-to-Skin Adherence Factor	(mg/cm^2)	1 (3)
	Skin Surface Area	(cm^2)	2570 (5)
	Expsoure Frequency	(days/year)	24 (2)
	Exposure Duration	(years)	25 (1)
Inhalation Due to Soil Exposure	Expsoure Frequency	(days/year)	24 (2)
	Exposure Duration	(years)	25 (1)
Dermal Contact with Surface Water	DA	(mg/cm^2-event)	See Appendix C
	Skin Surface Area	(cm^2)	1980 (5)
	Expsoure Frequency	(days/year)	24 (2)
	Exposure Duration	(years)	25 (1)
Dermal Contact with Sediments	Dermal Absorption Factor	unitless	3% (PCBs) (3) 0.5% (cadmium) (3)
	Soil-to-Skin Adherence Factor	(mg/cm^2)	1 (3)
	Skin Surface Area	(cm^2)	1980 (5)
	Expsoure Frequency	(days/year)	24 (2)
	Exposure Duration	(years)	25 (1)

Notes:

(1) USEPA, 1991a.
(2) Assumes exposure occurs two days per month for each month of the year.
(3) USEPA, 1992. Midpoint of range given.
(4) USEPA, 1991a, gives a default ingestion rate of 50 mg/day for commercial/industrial workers. The adult ingestion rate of 100 mg/day is used in this scenario because these receptors are working outside.
(5) USEPA, 1992. Assumes exposure to surface soils is through the face, hands, and forearms, and exposure to sediment and surface water occurs through the hands and forearms.

TABLE 5-11

NIAGARA MOHAWK POWER CORPORATION, INC.
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

EXPOSURE FACTORS
TRESPASSSER (OLDER CHILD/ADOLESCENT)

Exposure Pathway	Exposure Variable	Units	Value
All Pathways	Body Weight	(kg)	44 (10)
	Averaging Time		
	(noncancer effects)	(days)	4380 (1)
	(cancer effects)	(days)	25550 (1)
Incidental Ingestion of Soils	Ingestion Rate	(mg/day)	100 (1)
	Expsoure Frequency	(days/year)	12 (3)
	Exposure Duration	(years)	12 (4)
Dermal Contact with Soils	Dermal Absorption Factor	unitless	3% (PCBs) (5) 0.5% (cadmium) (5)
	Soil-to-Skin Adherence Factor	(mg/cm^2)	1 (5)
	Skin Surface Area	(cm^2)	8170 (6)
	Expsoure Frequency	(days/year)	12 (3)
	Exposure Duration	(years)	12 (4)
Inhalation Due to Soil Exposure	Expsoure Frequency	(days/year)	12 (3)
	Exposure Duration	(years)	12 (4)
Incidental Ingestion of Quarry Water	Contact Rate	(l/hour)	0.05 (2)
	Exposure Time	(hour/event)	0.5 (1)
	Expsoure Frequency	(days/year)	12 (6)
	Exposure Duration	(years)	12 (4)
Dermal Contact with Surface Water	DA	(mg/cm^2-event)	See Appendix C
	Skin Surface Area	(cm^2)	13400 (8)
	Expsoure Frequency	(days/year)	12 (6)
	Exposure Duration	(years)	12 (4)
Incidental Ingestion of Sediments	Ingestion Rate	(mg/day)	100 (1)
	Expsoure Frequency	(days/year)	12 (6)
	Exposure Duration	(years)	12 (4)
Dermal Contact with Sediments	Dermal Absorption Factor	unitless	3% (PCBs) (5) 0.5% (cadmium) (5)
	Soil-to-Skin Adherence Factor	(mg/cm^2)	1 (5)
	Skin Surface Area	(cm^2)	4690 (9)
	Expsoure Frequency	(days/year)	12 (3)
	Exposure Duration	(years)	12 (4)

Notes:

(1) USEPA, 1991a.
(2) USEPA, 1989.
(3) Assumes exposure occurs one day per week during June, July and August.
(4) The years from age seven to age eighteen.
(5) USEPA, 1992. Midpoint of range given.
(6) USEPA, 1990. Assumes exposure to soils is through face, hands, arms, and legs, and feet (0.61 x 13,400).
(7) Assumes swimming occurs one day per week, during June, July, and August.
(8) USEPA, 1992. Assumes exposure via whole body during swimming.
(9) USEPA, 1990, 1992. Assumes exposure via feet, lower legs, hands, forearms (0.35 x 13,400)
(10) USEPA, 1990. Average of male and female 50th percentile body weights for midpoint of range for age 7-18.

TABLE 5-12

NIAGARA MOHAWK POWER CORPORATION, INC.
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

EXPOSURE FACTORS
OFF-SITE RECREATIONIST (OLDER CHILD/ADOLESCENT)

Exposure Pathway	Exposure Variable	Units	Value
All Pathways	Body Weight	(kg)	44 (1)
	Averaging Time		
	(noncancer effects)	(days)	4380 (6)
	(cancer effects)	(days)	25550 (6)
Dermal Contact with Cobleskill Creek Sediments	Dermal Absorption Factor	unitless	3% (PCBs) (4) 0.5% (cadmium) (4)
	Soil-to-Skin Adherence Factor	(mg/cm^2)	1 (4)
	Skin Surface Area	(cm^2)	4690 (5)
	Expsoure Frequency	(days/year)	20 (2)
	Exposure Duration	(years)	12 (3)
	DA	(mg/cm^2-event)	See Appendix C
Dermal Contact with Drainage System Sediments	Dermal Absorption Factor	unitless	3% (PCBs) (4) 0.5% (cadmium) (4)
	Soil-to-Skin Adherence Factor	(mg/cm^2)	1 (4)
	Skin Surface Area	(cm^2)	1640 (5)
	Expsoure Frequency	(days/year)	10 (2)
	Exposure Duration	(years)	12 (3)

Notes:

Dermal exposure to surface water is not evaluated (see Section 5.3.5.6), therefore a dermal exposure to surface water scenario is not presented here.

(1) USEPA, 1990.
(2) Assumes that recreationists swim in Cobleskill Creek one day per week for the months of May through September.
(3) The years from age seven to eighteen.
(4) USEPA, 1992. Midpoint of range given.
(5) USEPA, 1990, 1992. Assumes exposure to sediments is through the feet, lower legs, hands, and forearms, and exposure to the drainage ditch is through the hands and forearms. Based on a total body surface area of 13,400 cm^2.
(6) USEPA, 1989.

TABLE 5–13

NIAGARA MOHAWK POWER CORPORATION, INC.
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

EXPOSURE FACTORS
OFF–SITE RESIDENT EXPOSURE TO SURFACE SOILS

Exposure Pathway	Exposure Variable	Units	Child	Adult
All Pathways	Body Weight	(kg)	15	70 (1)
	Averaging Time			
	(noncancer effects)	(days)	10950 (1)	
	(cancer effects)	(days)	25550 (1)	
Incidental Ingestion of Soils	Ingestion Rate	(mg/day)	200	100 (1)
	Expsoure Frequency	(days/year)	120	40 (2)
	Exposure Duration	(years)	6	24 (1)
Dermal Contact with Soils	Dermal Absorption Factor	unitless	3% (PCBs) (3) 0.5% (cadmium) (3)	
	Soil–to–Skin Adherence Factor	(mg/cm^2)	1	1 (3)
	Skin Surface Area	(cm^2)	1980	4850 (4)
	Expsoure Frequency	(days/year)	120	40 (2)
	Exposure Duration	(years)	6	24 (1)
Inhalation Due to Soil Exposure	Expsoure Frequency	(days/year)	120	40 (2)
	Exposure Duration	(years)	6	24 (1)

Notes:

(1) USEPA, 1991.
(2) As suggested by Hawley, 1985.
(3) USEPA, 1992. Midpoint of range given.
(4) USEPA, 1992. Reasonable worst case default scenario. Individual wears shorts, short–sleeve shirt and shoes, and 25% of total surface area is exposed.

TABLE 5-14

NIAGARA MOHAWK POWER CORPORATION, INC.
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

EXPOSURE FACTORS
RESIDENT EXPOSURE TO GROUND WATER

Exposure Pathway	Exposure Variable	Units	Value
All Pathways	Body Weight	(kg)	70 (1)
	Averaging Time		
	(noncancer effects)	(days)	10950 (1)
	(cancer effects)	(days)	25550 (1)
Ingestion of Ground Water	Ingestion Rate	(l/day)	2 (1)
	Expsoure Frequency	(days/year)	350 (1)
	Exposure Duration	(years)	30 (1)
Dermal Contact While Bathing (Organics Only)	DA	(mg/cm^2-event)	See Appendix C
	Skin Surface Area	(cm^2)	19400 (2)
	Expsoure Frequency	(days/year)	350 (1)
	Exposure Duration	(years)	30 (1)
Inhalation Exposure While Showering (Organics Only)	Expsoure Frequency	(days/year)	350 (1)
	Exposure Duration	(years)	30 (1)

Notes:

(1) USEPA, 1991a.
(2) USEPA, 1992. Assumes whole body exposure.

TABLE 5–15

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

ON–SITE SURFACE SOIL EXPOSURE POINT CONCENTRATIONS

Chemical	Range of Detections (ppm)	Frequency of Detection	Arithmetic Mean (4) (ppm)	Standard Deviation (ppm)	Upper 95% Confidence Limit (5) (ppm)	RME Concentration (6) (ppm)
Lower Portion of Site (1)						
Total PCBs	0.035 – 15.0	5 /7	4.7	5.6	9.8	9.8
Entire Site (2)						
Total PCBs	ND – 164	43 /46	17.5	30.6	26.6	26.6
Semi–Volatile Organics (3)						
Naphthalene	ND – 1.5	7 /35	0.59	0.66	0.8	0.8
2–Methylnahpthalene	ND – 0.57	6 /35	0.55	0.63	0.77	0.57
Acenapthene	ND – 4	6 /35	0.73	0.93	1.0	1.0
Dibenzofuran	ND – 1.6	4 /35	0.62	0.66	0.8	0.8
Fluorene	ND – 2.8	9 /35	0.65	0.78	0.9	0.9
Phenathrene	ND – 19	30 /35	1.7	4.5	3.2	3.2
Anthracene	ND – 4.7	12 /35	0.68	1.1	1.1	1.1
Carbazole	ND – 3.3	11 /35	0.63	0.8	0.9	0.9
Di–n–Butylphthalate	ND – 0.15	6 /35	0.58	0.67	0.8	0.2
Fluoranthene	ND – 22	32 /35	2.2	5.2	4.0	4.0
Pyrene	ND – 20	33 /35	1.9	4.4	3.5	3.5
Benzo(a)anthracene	ND – 10	28 /35	1.1	2.2	1.9	1.9
Chrysene	ND – 10	29 /35	1.1	2.1	1.8	1.6
bis(2–ethylhexyl)phthalate	ND – 4.5	8 /35	0.86	1.0	1.2	1.2
Benzo(b)fluoranthene	ND – 7.5	27 /35	1.0	1.6	1.6	1.6
Benzo(k)fluoranthene	ND – 6.4	26 /35	0.82	1.5	1.3	1.3
Benzo(a)pyrene	ND – 7.5	27 /35	0.92	1.7	1.5	1.5
Indeno (1,2,3–cd) Pyrene	ND – 4.1	22 /35	0.67	0.95	0.99	0.99
Dibenzo(a,h)anthracene	ND – 2.1	16 /35	0.55	0.65	0.78	0.78
Benzo(g,h,i)perylene	ND – 3	22 /35	0.50	0.66	0.73	0.73

TABLE 5–15 (cont'd)

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

ON–SITE SURFACE SOIL EXPOSURE POINT CONCENTRATIONS

Chemical	Range of Detections (ppm)		Frequency of Detection	Arithmetic Mean (4) (ppm)	Standard Deviation (ppm)	Upper 95% Confidence Limit (5) (ppm)	RME Concentration (6) (ppm)
Inorganics							
Aluminium	5160 –	16000	35 /35	11639	2588	12528	12528
Antimony	ND –	172	21 /35	18.2	36.7	30.8	30.8
Arsenic	7.4 –	44.2	35 /35	12.0	7.2	14.4	14.4
Barium	65.5 –	925	35 /35	237	210	309	309
Beryllium	0.33 –	1.0	35 /35	0.62	0.13	0.66	0.66
Cadmium	ND –	68.8	28 /35	11.0	15.0	16.2	16.2
Chromium	10.6 –	198	35 /35	46.1	39.0	59.5	59.5
Cobalt	6 –	17.9	35 /35	10.8	2.4	11.6	11.6
Copper	23.4 –	4740	35 /35	720	1082	1091	1091
Iron	16200 –	111000	35 /35	40663	20758	47791	47791
Lead	15.7 –	9700	35 /35	1154	1938	1819	1819
Magnesium	2970 –	5200	35 /35	3917	528	4099	4099
Manganese	317 –	971	35 /35	638	155	691	691
Mercury	ND –	19.6	30 /35	1.0	3.3	2.1	2.1
Nickel	19.4 –	153	35 /35	49.4	31.7	60.3	60.3
Selenium	ND –	0.57	10 /35	0.19	0.10	0.23	0.23
Silver	ND –	4.6	13 /35	0.79	0.82	1.08	1.08
Vanadium	14.6 –	151	35 /35	30.4	21.5	37.8	37.8
Zinc	63 –	6750	35 /35	1031	1243	1458	1458

Notes:

(1) Based upon soil samples SS–39, SS–51, SS–55 through SS–57, SS–60, and SS–61 analyzed only for PCBs.

(2) Based upon soil samples SS–1 through SS–35 analyzed for PCBs, SVOCs and inorganics; SS–36 through SS–39, and SS–51 through SS–57 analyzed only for PCBs.

(3) One–half the SQL from samples SS–6, SS–11, SS–19, SS–20 and SS–21 were abnormally high and therefore were not included in the calculations (USEPA, 1989a).

(4) In the case of duplicate samples, the highest detected concentration for each consituent was used as the sample concentration. One– half the sample quantitaion limit (SQL) is used as a proxy concentration for samples where the consituent was not detected.

(5) Based on student's T–distribution with n–1 degrees of freedom, alpha = 0.025 in each tail.

(6) RME = the lesser of the upper 95% confidence limit and the maximum detected concentration.

ND = Non–detect

TABLE 5–16

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

OUTSIDE FENCE SURFACE SOIL EXPOSURE POINT CONCENTRATIONS

Chemical	Range of Detections (ppm)		Frequency of Detection	Arithmetic Mean (2) (ppm)	Standard Deviation (ppm)	Upper 95% Confidence Limit (3) (ppm)	RME Concentration (4) (ppm)
Total PCBs	ND –	0.23	14 /18	0.042	0.053	0.07	0.07

Notes:

(1) Based upon soil samples SS–40 through SS–50, and SS–62 through SS–68 analyzed for PCBs only.

(2) In the case of duplicate samples, the highest detected concentration for each consituent was used as the sample concentration.
One– half the sample quantitaion limit (SQL) is used as a proxy concentration for samples where the consituent was not detected.

(3) Based on student's T–distribution with n–1 degrees of freedom, alpha = 0.025 in each tail.

(4) RME = the lesser of the upper 95% confidence limit and the maximum detected concentration.

ND = Non–detect

TABLE 5-17

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

ON-SITE SURFACE WATER EXPOSURE POINT CONCENTRATIONS (1)

Chemical	Range of Detections (ppb)	Frequency of Detection	Arithmetic Mean (2) (ppb)	Standard Deviation (ppb)	Upper 95% Confidence Limit (3) (ppb)	RME Concentration (4) (ppb)
Total PCBs	0.27 - 0.32	5 /5	0.30	0.018	0.32	0.32
Inorganics						
Aluminum	ND - 118	4 /5	94	27	128	118
Arsenic	1.7 - 2.8	5 /5	2.1	0.37	2.6	2.6
Barium	63 - 66	5 /5	65	1.1	67	66
Berylium	ND - 0.51	1 /5	0.30	0.10	0.43	0.43
Cadmium	ND - 2.5	1 /5	1.3	0.60	2.0	2.0
Iron	165 - 210	5 /5	185	15	203	203
Magnesium	5230 - 5430	5 /5	5370	72	5460	5430
Manganese	62 - 72	5 /5	69	3.7	74	72
Zinc	ND - 3.1	2 /5	1.8	0.91	3.0	3.0

Notes:
(1) Based upon on-site surface water samples SW-1S through SW-5S (unfiltered).
(2) In the case of duplicate samples, the highest detected concentration for each consituent was used as the sample concentration. One- half the sample quantitaion limit (SQL) is used as a proxy concentration for samples where the consituent was not detected.
(3) Based on student's T-distribution with n-1 degrees of freedom, alpha = 0.025 in each tail.
(4) RME = the lesser of the upper 95% confidence limit and the maximum detected concentration.
ND = Non-detect

TABLE 5-18

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

OFF-SITE SURFACE WATER EXPOSURE POINT CONCENTRATIONS (1)

Chemical (1)	Range of Detections (ppb)	Frequency of Detection	Arithmatic Mean (2) (ppb)	Standard Deviation (ppb)	Upper 95% Confidence Limit (3) (ppb)	RME Concentration (4) (ppb)
Mercury	ND - 0.09	1 /4	0.056	0.019	0.087	0.087

Notes:

(1) Based upon off-site surface water samples 6-SF through 9-SF; constituent only detected in one filtered sample.
(2) One-half the sample quantitation limit (SQL) is used as a proxy concentration for samples where the constituent was not detected.
(3) Based on student's T-distribution with n-1 degrees of freedom, alpha = 0.025 in each tail.
(4) RME = the lesser of the upper 95% confidence limit and the maximum detected concentration.
ND = Non-detect

TABLE 5-19

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

ON-SITE SEDIMENT EXPOSURE POINT CONCENTRATIONS (1)

Chemical	Range of Detections (ppm)	Frequency of Detection	Arithmetic Mean (4) (ppm)	Standard Deviation (ppm)	Upper 95% Confidence Limit (5) (ppm)	RME Concentration (6) (ppm)
Total PCBs (2)	0.18 - 63	35 /35	11.4	12.2	15.6	15.6
Volatile Organics (3)						
Acetone	0.008 - 0.76	7 /7	0.31	0.28	0.58	0.58
Benzene	ND - 0.01	1 /7	0.014	0.006	0.020	0.010
2-Butanone	ND - 0.23	4 /7	0.077	0.075	0.146	0.146
Carbon Disulfide	ND - 0.012	3 /7	0.011	0.006	0.017	0.012
Toluene	ND - 0.024	1 /7	0.018	0.007	0.024	0.024
Semi-Volatile Organics (3)(7)						
Acenaphthylene	ND - 0.14	1 /7	0.32	0.28	0.58	0.14
Anthracene	ND - 0.13	1 /7	0.32	0.28	0.58	0.13
Benzo(a)anthracene	ND - 0.54	1 /7	0.37	0.28	0.62	0.54
Benzo(a)pyrene	ND - 0.39	1 /7	0.34	0.27	0.58	0.39
Benzo(b)fluoranthene	ND - 0.64	1 /7	0.40	0.29	0.66	0.64
Benzo(g,h,i)perlyene	ND - 0.1	1 /7	0.32	0.29	0.58	0.1
Benzo(k)fluoranthene	ND - 0.44	1 /7	0.34	0.27	0.58	0.44
Bis(2-ethylhexyl)phthalate	ND - 25	6 /7	4.7	8.4	12.5	12.5
Chrysene	ND - 0.56	3 /7	0.33	0.27	0.58	0.56
Dibenzo(a,h)anthracene	ND - 0.11	2 /7	0.25	0.29	0.52	0.11
Di-n-butylphthalate	ND - 0.065	1 /7	0.31	0.29	0.58	0.065
Fluoranthene	ND - 1.1	3 /7	0.50	0.44	0.91	0.91
Fluorene	ND - 0.14	1 /7	0.32	0.28	0.58	0.14
Indeno(1,2,3-cd)pyrene	ND - 0.28	2 /7	0.30	0.27	0.55	0.28
2-Methylnaphthalene	ND - 0.032	1 /7	0.31	0.29	0.58	0.032
Phenanthrene	ND - 0.72	3 /7	0.40	0.33	0.70	0.70
Phenol	ND - 0.093	1 /7	0.32	0.29	0.58	0.093
Pyrene	ND - 0.86	3 /7	0.45	0.37	0.79	0.79

TABLE 5-19 (cont'd)

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

ON-SITE SEDIMENT EXPOSURE POINT CONCENTRATIONS (1)

Chemical	Range of Detections (ppm)	Frequency of Detection	Arithmetic Mean (4) (ppm)	Standard Deviation (ppm)	Upper 95% Confidence Limit (5) (ppm)	RME Concentration (6) (ppm)
Inorganics (3)						
Aluminum	5040 - 15600	7 /7	9451	3880	13040	13040
Arsenic	2.05 - 9.1	7 /7	5.0	2.7	7.5	7.5
Barium	64.6 - 192	7 /7	131	47.7	175	175
Beryllim	0.31 - 0.86	7 /7	0.51	0.21	0.70	0.70
Cadmium	ND - 1.9	2 /7	0.99	0.45	1.4	1.4
Chromium	7.7 - 20.3	7 /7	14.0	4.2	17.9	17.9
Cobalt	4.0 - 9.2	7 /7	6.6	2.0	6.4	6.4
Copper	46.7 - 441	7 /7	118	132	241	241
Iron	10300 - 27000	7 /7	19871	6219	25623	25623
Lead	42.4 - 206	7 /7	92.8	51.2	140	140
Magnesium	1990 - 5240	7 /7	3496	896	4324	4324
Manganese	233 - 406	7 /7	324	52.1	373	373
Mercury	0.05 - 0.39	7 /7	0.20	0.12	0.31	0.31
Nickel	14.4 - 36.0	7 /7	25.9	7.7	33.1	33.1
Selenium	0.44 - 1.0	7 /7	0.73	0.15	0.87	0.87
Vanadium	11.6 - 32.2	7 /7	20.4	7.0	26.9	26.9
Zinc	196 - 258	7 /7	229	23.3	251	251
Cyanide	ND - 1.1	1 /7	0.65	0.30	1.1	1.1

Notes:

(1) All sediment samples taken from a depth of 0-6 inches.

(2) Based upon on-site sediment samples SD-1 through SD-24 and SD-27 through SD-37.

(3) Based upon on-site sediment samples SD-3, SD-5, SD-14, SD-16, SD-18, SD-24, and SD-36.

(4) In the case of duplicate samples, the highest detected concentration for each consituent was used as the sample concentration. One- half the sample quantitaion limit (SQL) is used as a proxy concentration for samples where the consituent was not detected.

(5) Based on student's T-distribution with n-1 degrees of freedom, alpha = 0.025 in each tail.

(6) RME = the lesser of the upper 95% confidence limit and the maximum detected concentration.

(7) One-half the sample quantitation limit for SD-16 and SD-18 were abnormally high and were therefore not included in the calculations (USEPA, 1989a).

ND = Non-detect

TABLE 5-20

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

OFF-SITE SEDIMENT EXPOSURE POINT CONCENTRATIONS (1)

Chemical	Range of Detections (ppm)	Frequency of Detection	Arithmetic Mean (5) (ppm)	Standard Deviation (ppm)	Upper 95% Confidence Limit (6) (ppm)	RME Concentration (7) (ppm)
Drainage System						
Total PCBs (2)	ND - 4.3	8 /13	0.64	1.2	1.4	1.4
Mercury (3)	ND - 0.03	2 /4	0.020	0.006	0.030	0.030
Cobleskill Creek						
Total PCBs (4)	ND - 0.18	1 /7	0.042	0.056	0.094	0.094

Notes:

(1) Surface water drainage system and Cobleskill Creek samples were considered separately.
(2) Based upon off-site sediment samples SD-38 through SD-47, SD-55, WS-CC-1 and WS-DD-2.
(3) Based upon off-site sediment samples SD-39, SD-41, SD-43, and SD-44.
(4) Based upon off-site sediment samples SD-48 through SD-52, SD-54 and SD-56.
(5) In the case of duplicate samples, the highest detected concentration for each consituent was used as the sample concentration. One- half the sample quantitaion limit (SQL) is used as a proxy concentration for samples where the consituent was not detected.
(6) Based on student's T-distribution with n-1 degrees of freedom, alpha = 0.025 in each tail.
(7) RME = the lesser of the upper 95% confidence limit and the maximum detected concentration.
ND = Non-detect

TABLE 5–21

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

ON–SITE GROUNDWATER EXPOSURE POINT CONCENTRATIONS

Chemical (1)	Range of Detections (ppb)	Frequency of Detection	Arithmetic Mean (2) (ppb)	Standard Deviation (ppb)	Upper 95% Confidence Limit (3) (ppb)	RME Concentration (4) (ppb)
Total PCBs	ND – 0.72	2 /16	0.064	0.16	0.14	0.14
Volatile Organics						
Chlororform (5)	ND – 34	3 /15	6.7	7.2	11	11
1,2–Dichloroethene	ND – 57	2 /15	10	14	16	16
Trichloroethene	ND – 93	2 /16	13	22	24	24
Benzene	ND – 1000	2 /16	118	299	277	277
Toluene	ND – 150	1 /16	20	40	41	41
Ethylbenzene	ND – 360	1 /16	31	66	77	77
Xylenes	ND – 882	1 /16	105	265	246	246
N–butylbenzene	NA – 32	1 / 1	2.0	NA	NA	0.032
1,2,4–Trimethylbenzene	NA – 270	1 / 1	17	NA	NA	0.27
1,3,5–Trimethylbenzene	NA – 40	1 / 1	2.5	NA	NA	0.04
Semi–Volatile Organics						
Diethylphthalate	ND – 0.8	2 /15	6.6	7.3	11	1
Di–n–butylphthalate	ND – 1	6 /15	5.3	7.7	9.6	1.0
Naphthalene	ND – 69	2 /16	14	23	26	26
Phenol	ND – 24	1 /15	6.6	4.7	9.2	9.2
2–Methylnaphthalene	ND – 16	1 /15	6.1	2.6	7.6	7.6
Inorganics (6)						
Aluminum	36.100 – 71700	15 /15	8633	16610	18588	18588
Antimony	ND – 59	5 /15	20	20	31	31
Arsenic	ND – 59	12 /15	6.8	14	16	16
Barium	ND – 742	15 /15	279	189	366	366
Beryllium	ND – 4.2	7 /15	0.71	1.0	1.2	1.2
Cadmium	ND – 13	7 /15	2.3	3.1	3.9	3.9
Chromium	ND – 100	11 /15	15	26	28	28
Cobalt	ND – 62	13 /15	14	15	21	21
Copper	ND – 165	13 /15	44	59	74	74
Iron	221.00 – 140000	15 /15	29423	34658	46779	46779
Lead	1.60 – 71	15 /15	18	25	31	31
Magnesium	6040.00 – 46600	15 /15	21129	11312	26074	26074
Manganese	56.20 – 5830	15 /15	1195	1404	1898	1898

TABLE 5-21 (cont'd)

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

GROUNDWATER EXPOSURE POINT CONCENTRATIONS

Chemical	Range of Detections (ppb)		Frequency of Detection	Arithmetic Mean (2) (ppb)	Standard Deviation (ppb)	Upper 95% Confidence Limit (3) (ppb)	RME Concentration (4) (ppb)
Inorganics (cont'd)							
Mercury	ND –	1.8	8 /15	0.28	0.5	0.5	0.53
Nickel	ND –	171	13 /15	34	42.1	55	55
Selenium	ND –	5.0	2 /15	1.4	1.2	2.0	2.0
Thallium	ND –	13	2 /15	3.9	4.6	6.2	6.2
Vanadium	ND –	142	9 /15	20	36.6	39	39
Zinc	ND –	444	15 /15	95	121.1	156	158

Notes:

(1) Based upon samples MW–1 through MW–4, MW–6, MW–7, MW–9 through MW–11, and C–9, C–11, C–12, C–15, C–16, C–18, and C–19.
(2) In the case of duplicate samples, the highest detected concentration for each consituent was used as the sample concentration.
One– half the sample quantitaion limit (SQL) is used as a proxy concentration for samples where the consituent was not detected.
(3) Based on student's T–distribution with n–1 degrees of freedom, alpha = 0.025 in each tail.
(4) RME = the lesser of the upper 95% confidence limit and the maximum detected concentration.
(5) Detected in drill water used in well installations.
(6) The MW–1 sample was not tested for inorganics.
NA = Not applicable
ND = Non–detect

TABLE 5-22

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

PCB CONCENTRATIONS IN SMALLMOUTH BASS FROM COBLESKILL CREEK (1) (2)

Chemical	Range of Detections (ppm)		Frequency of Detection	Arithmetic Mean (3) (ppm)	Standard Deviation (ppm)	Upper 95% Confidence Limit (4) (ppm)	RME Concentration (5) (ppm)
Total PCBs	0.056 -	0.15	3 /3	0.1	0.04	0.19	0.15

Notes:

(1) Samples collected on October 11, 1994.
(2) PCB concentrations arrived at through testing of skin-on fillet samples.
(3) One-half the sample quantitation limit (SQL) is used as a proxy concentration for samples where the constituent was not detected.
(4) Based on students T-distribution with n-1 degrees of freedom, alpha = 0.025 in each tail.
(5) RME = the lesser of the upper 95% confidence limit and the maximum detected concentration.

TABLE 5-23

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

RESIDENTIAL WELL WATER ANALYTICAL DATA SUMMARY

Chemical (1)	Range of Detections (ppb)	Frequency of Detection	Arithmatic Mean (3) (ppb)	Standard Deviation (ppb)	Upper 95% Confidence Limit (4) (ppb)
Volatile Organics					
Acetone	ND - 14	1 /5	7.0	3.5	11
Carbon Disulfide	ND - 0.2	1 /5	0.2	0.02	0.3 (5)
Naphthalene	ND - 1.0	1 /5	0.40	0.30	0.77
Semi-volatile organics (2)					
Carbazole	ND - 0.60	1 /5	0.15	0.26	0.47
N-nitrosodiphenylamine	ND - 0.40	1 /5	0.10	0.17	0.32
Inorganics					
Aluminum	ND - 423	5 /9	146	133	249
Antimony	ND - 54	2 /9	18	17	31
Barium	63.600 - 424	9 /9	163	139	270
Copper	0.980 - 36	9 /9	12	11	21
Iron	50.700 - 1600	9 /9	479	427	807
Lead	ND - 2.9	3 /9	1.2	0.91	1.9
Magnesium	751.00 - 17100	9 /9	10024	5812	14491
Manganese	ND - 634	8 /9	117	198	269
Nickel	ND - 3.8	3 /9	2.6	1.3	3.6
Selenium	ND - 1.5	1 /9	1.1	0.35	1.4
Zinc	2.7 - 537	9 /9	85	161	208
Cyanide	ND - 3.8	1 /9	1.8	1.1	2.7

Notes:

(1) Based upon residential well water samples Biggs 1, Biggs 2, Chichester, Coons and Sutphen.

(2) One-half the sample quantitation limits for carbazole and N-nitrosodiphenylamine were abnormally high and were therefore not included in the calculation (USEPA, 1989a).

(3) In the case of duplicate samples, the highest detected concentration for each consituent was used as the sample concentration. One- half the sample quantitation limit (SQL) is used as a proxy concentration for samples where the consituent was not detected.

(4) Based on student's T-distribution with n-1 degrees of freedom, alpha = 0.025 in each tail.

(5) In this case, the standard deviation exceeds the maximum detected concentration because the detection limits were slightly elevated.

ND = Non-detect

TABLE 5-24

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

CANCER TOXICITY VALUES FOR CHEMICALS OF INTEREST

Chemical Name	Weight-of-Evidence Class (1)	Weight-of-Evidence Source	Oral Slope Factor $(mg/kg-day)^{-1}$	Oral Slope Factor Source	Inhalation Unit Risk $(ug/m^3)^{-1}$	Inhalation Unit Risk Source
Acenaphthene	NA	NA	ND	NA	ND	NA
Acenaphthylene	D	IRIS (1994)	ND	NA	ND	NA
Acetone	D	IRIS (1994)	ND	NA	ND	NA
Aluminum	NA	NA	ND	NA	ND	NA
Anthracene	D	IRIS (1994)	ND	NA	ND	NA
Antimony	NA	NA	ND	NA	ND	NA
Arsenic	A	IRIS (1994)	1.75	IRIS (1994)	4.3E-03	IRIS (1994)
Barium	NA	NA	ND	NA	ND	NA
Benzene	A	IRIS (1994)	2.9E-02	IRIS (1994)	8.3E-06	IRIS (1994)
Benzo(a)anthracene (2)	B2	IRIS (1994)	7.3E-01	NA	ND	NA
Benzo(a)pyrene	B2	IRIS (1994)	7.3	IRIS (1994)	ND	HEAST (1994)
Benzo(b)fluoranthene (2)	B2	IRIS (1994)	7.3E-01	NA	ND	NA
Benzo(g,h,i)perylene	D	IRIS (1994)	ND	NA	ND	NA
Benzo(k)fluoranthene (2)	B2	IRIS (1994)	7.3E-02	NA	ND	NA
Beryllium	B2	IRIS (1994)	4.3	IRIS (1994)	2.4E-03	IRIS (1994)
Bis(2-ethylhexyl)phthalate	B2	IRIS (1994)	1.4E-02	IRIS (1994)	ND	NA
Butanone, 2-	D	IRIS (1994)	ND	NA	ND	NA
Cadmium	NA	NA	ND	NA	1.8E-03	NA
Carbazole	B2	HEAST (1993)	2E-02	HEAST (1993)	ND	NA
Carbon disulfide	NA	NA	ND	NA	ND	NA
Chloroform	B2	IRIS (1994)	6.1E-03	IRIS (1994)	2.3E-05	IRIS (1994)
Chromium (hexavalent)	A	IRIS (1994)	ND	NA	1.2E-02	IRIS (1994)
Chrysene (2)	B2	IRIS (1994)	7.3E-03	NA	ND	NA
Copper	D	IRIS (1994)	ND	NA	ND	NA
Cyanide	D	IRIS (1994)	ND	NA	ND	NA
Dibenz(a,h)anthracene (2)	B2	IRIS (1994)	7.3	NA	ND	NA
Dibenzofuran	D	IRIS (1994)	ND	NA	ND	NA
Dichloroethene, 1,2- (mixed isomers)	NA	NA	ND	NA	ND	NA
Diethylphthalate	D	IRIS (1994)	ND	NA	ND	NA
Di-n-butylphthalate	D	IRIS (1994)	ND	NA	ND	NA
Ethylbenzene	D	IRIS (1994)	ND	NA	ND	NA
Fluoranthene	D	IRIS (1994)	ND	NA	ND	NA
Fluorene	D	IRIS (1994)	ND	NA	ND	NA
Indeno(1,2,3-cd)pyrene (2)	B2	IRIS (1994)	7.3E-01	IRIS (1994)	ND	NA
Iron	NA	NA	ND	NA	ND	NA
Lead	B2	IRIS (1994)	ND	NA	ND	NA
Manganese (food)	D	IRIS (1994)	ND	NA	ND	NA
Manganese (water)	D	IRIS (1994)	ND	NA	ND	NA
Mercury	D	IRIS (1994)	ND	NA	ND	NA
Methylnaphthalene, 2-	NA	NA	ND	NA	ND	NA
Methylphenol, 2-	C	IRIS (1994)	ND	IRIS (1994)	ND	IRIS (1994)
Methylphenol, 4-	C	IRIS (1994)	ND	IRIS (1994)	ND	IRIS (1994)
N-butylbenzene	NA	NA	ND	NA	ND	NA
N-nitrosodiphenylamine	B2	IRIS (1994)	4.9E-03	IRIS (1994)	ND	NA
Naphthalene	D	IRIS (1994)	ND	NA	ND	NA
Nickel (3)	A	NA	ND	IRIS (1994)	2.4E-04	IRIS (1994)
Phenanthrene	D	IRIS (1994)	ND	NA	ND	NA
Phenol	D	IRIS (1994)	ND	NA	ND	NA
Polychlorinated biphenyls (PCBs)	B2	IRIS (1994)	7.7	IRIS (1994)	ND	NA
Pyrene	D	IRIS (1994)	ND	NA	ND	NA
Selenium	D	IRIS (1994)	ND	NA	ND	NA
Silver	D	IRIS (1994)	ND	NA	ND	NA
Thallium	NA	NA	ND	NA	ND	NA
Toluene	D	IRIS (1994)	ND	NA	ND	NA
Trichloroethene	C-B2	ECAO (1992)	1.1E-02	USEPA (1994) (4)	1.7E-06	USEPA (1994) (4)
Trimethylbenzene, 1,2,4-	NA	NA	ND	NA	ND	NA
Trimethylbenzene, 1,3,5-	NA	NA	ND	NA	ND	NA
Vanadium	NA	NA	ND	NA	ND	NA
Xylene, mixture	D	IRIS (1994)	ND	NA	ND	NA
Zinc	D	IRIS (1994)	ND	NA	ND	NA

Notes:

(1) A - Known human carcinogen
B1,B2 - Probable human carcinogen
C - Limited evidence of human carcinogenicity
D - Not classified
E - Negative evidence of human carcinogenicity
(2) Toxicity values relative to Benzo(a)pyrene per USEPA, 1993.
(3) The weight-of-evidence class and inhalation unit risk presented are for nickel refinery dust.
(4) USEPA, 1994. Risk Assessment Issue Papers, (USEPA Superfund Health Risk Technical Support Center) November, 1994.
ND = No Data
NA = Not Available

TABLE 5-25

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

NON-CANCER TOXICITY VALUES FOR CHEMICALS OF INTEREST

Chemical Name	Chronic Oral RfD (mg/kg-day)	Chronic Oral RfD Source	Chronic Inhalation RfC (mg/m^3)	Chronic Inhalation RfC Source
Acenaphthene	6E-02	NA	ND	NA
Acenaphthylene	ND	HEAST (1994)	ND	HEAST (1994)
Acetone	1E-01	IRIS (1994)	ND	NA
Aluminum	ND	HEAST (1994)	ND	HEAST (1994)
Anthracene	3E-01	IRIS (1994)	ND	NA
Antimony	4E-04	IRIS (1994)	ND	NA
Arsenic	3E-04	IRIS (1994)	ND	NA
Barium	7E-02	IRIS (1994)	ND	NA
Benzene	ND	NA	ND	NA
Benzo(a)anthracene	ND	NA	ND	NA
Benzo(a)pyrene	ND	NA	ND	NA
Benzo(b)fluoranthene	ND	NA	ND	NA
Benzo(g,h,i)perylene	ND	NA	ND	NA
Benzo(k)fluoranthene	ND	NA	ND	NA
Beryllium	5E-03	IRIS (1994)	ND	NA
Bis(2-ethylhexyl)phthalate	2E-02	IRIS (1994)	ND	NA
Butanone, 2-	6E-01	IRIS (1994)	1E+00	HEAST (1994)
Cadmium (food)	1E-03	IRIS (1994)	ND	NA
Cadmium (water)	5E-04	IRIS (1994)	ND	NA
Carbazole	ND	NA	ND	NA
Carbon disulfide	1E-01	IRIS (1994)	1E-02	HEAST (1994)
Chloroform	1E-02	IRIS (1994)	ND	NA
Chromium (hexavalent)	5E-03	IRIS (1994)	ND	NA
Chrysene	ND	HEAST (1994)	ND	HEAST (1994)
Copper	ND	HEAST (1994)	ND	NA
Cyanide	2E-02	IRIS (1994)	ND	NA
Dibenz(a,h)anthracene	ND	NA	ND	NA
Dibenzofuran	ND	HEAST (1994)	ND	HEAST (1994)
Dichloroethene, 1,2- (mixed isomers)	2E-02	IRIS (1994)	ND	NA
Diethylphthalate	8E-01	IRIS (1994)	ND	NA
Di-n-butylphthalate	1E-01	IRIS (1994)	ND	HEAST (1994)
Ethylbenzene	1E-01	NA	1E+00	NA
Fluoranthene	4E-02	IRIS (1994)	ND	NA
Fluorene	4E-02	IRIS (1994)	ND	NA
Indeno(1,2,3-cd)pyrene	ND	NA	ND	NA
Iron	ND	HEAST (1994)	ND	HEAST (1994)
Lead	ND	NA	ND	NA
Manganese (food)	1E-01	IRIS (1994)	5E-05	IRIS (1994)
Manganese (water)	5E-03	IRIS (1994)	5E-05	IRIS (1994)
Mercury	3E-04	HEAST (1994)	3E-04	HEAST (1994)
Methylnaphthalene, 2-	ND	NA	ND	NA
Methylphenol, 2-	5E-02	IRIS (1994)	ND	HEAST (1994)
Methylphenol, 4-	WD	IRIS (1994)	ND	HEAST (1994)
N-butylbenzene	ND	NA	ND	NA
N-nitrosodiphenylamine	ND	NA	ND	NA
Naphthalene	ND	HEAST (1994)	ND	NA
Nickel	2E-02	IRIS (1994)	ND	NA
Phenanthrene	ND	HEAST (1994)	ND	HEAST (1994)
Phenol	6E-01	IRIS (1994)	ND	HEAST (1994)
Polychlorinated biphenyls (PCBs) (1)	7E-05 (1)	IRIS (1994)	ND	NA
Pyrene	3E-02	IRIS (1994)	ND	NA
Selenium	5E-03	IRIS (1994)	ND	NA
Silver	5E-03	IRIS (1994)	ND	NA
Thallium	ND	NA	ND	NA
Toluene	2E-01	IRIS (1994)	4E-01	IRIS (1994)
Trichloroethene	ND	NA	ND	NA
Trimethylbenzene, 1,2,4-	ND	NA	ND	NA
Trimethylbenzene, 1,3,5-	ND	NA	ND	NA
Vanadium	7E-03	HEAST (1994)	ND	NA
Xylene, mixture	2E+00	IRIS (1994)	ND	NA
Zinc	3E-01	IRIS (1994)	ND	NA

Notes:
NA = Not available
ND = No data
WD = Withdrawn
(1) There is no RfD for PCBs as a class. The RfD presented here is for Aroclor 1016. An RfD of 2E-05 mg/kg-day has also been derived (IRIS, 1994) for Aroclor 1254.

TABLE 5-26

NIAGARA MOHAWK POWER CORPORATION, INC.
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

Summary of Hazard Indecies

Exposure Pathway	On-Site Active Scrapyard Operator (1)	On-Site Quarry Pond Maintenance Worker (2)	On-Site Tresspasser (2)	Off-Site Recreationist	Off-Site Resident (Soil Exposure)	Off-Site Resident (Hypothetical Ground Water Exposure)
On-Site Surface Soil						
Incidental Ingestion	1E-01	5E-02	4E-02	-	-	-
Dermal Contact	1E-01	3E-02	7E-02	-	-	-
Inhalation	NE	1E-03	7E-04	-	-	-
On-Site Quarry Pond Water						
Incidental Ingestion	-	-	6E-04	-	-	-
Dermal Contact	-	6E-05	3E-04	-	-	-
On-Site Quarry Pond Sediments						
Incidental Ingestion	-	-	2E-02	-	-	-
Dermal Contact	-	1E-02	2E-02	-	-	-
Off-Site Cobleskill Creek Sediments						
Dermal Contact	-	-	-	2E-04	-	-
Off-Site Drainage System Sediments						
Dermal Contact	-	-	-	6E-04	-	-
Off-Site Surface Soil						
Incidental Ingestion	-	-	-	-	1E-03	-
Dermal Contact	-	-	-	-	4E-04	-
Inhalation	-	-	-	-	NE	-
Ground Water (3)						
Ingestion	-	-	-	-	-	2E+01
Dermal Contact	-	-	-	-	-	3E-02
Inhalation	-	-	-	-	-	4E-01
Total Hazard Quotient =	2E-01	9E-02	2E-01	8E-04	1E-03	2E+01

Notes:

(1) Calculated using soil samples for only the active scrapyard area, as discussed in Section 5-2.
(2) Calculated using soil samples for the entire site, as discussed in Section 5-2.
(3) Off-site resident exposure to groundwater is evaluated using current on-site groundwater concentrations, as discussed in Section 5-2.
NE - Not evaluated due to lack of toxicity data

TABLE 5-27

NIAGARA MOHAWK POWER CORPORATION, INC.
M. WALLACE AND SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

Summary of Cancer Risks

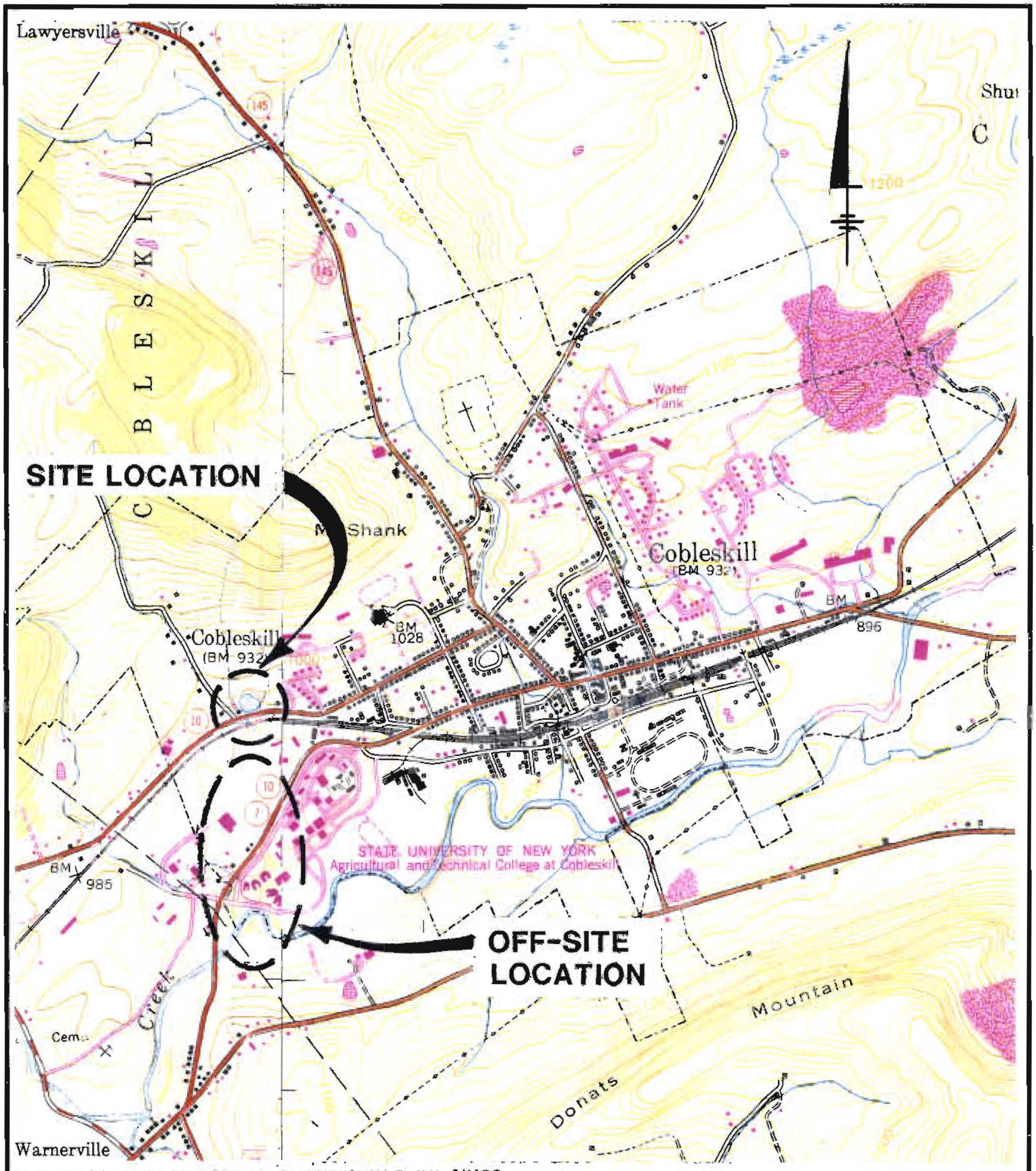
Exposure Pathway	On-Site Scrapyard Operator (1)	On-Site Quarry Pond Maintenance Worker (2)	On-Site Tresspasser (2)	Off-Site Recreationist	Off-Site Resident (Soil Exposure)	Off-Site Resident (Hypothetical Ground Water Exposure)
<u>On-Site Surface Soil</u>						
Incidental Ingestion	3E-05	8E-06	3E-05	-	-	-
Dermal Contact	2E-05	5E-06	6E-06	-	-	-
Inhalation	7E-06	2E-06	4E-07	-	-	-
<u>On-Site Quarry Pond Water</u>						
Incidental Ingestion	-	-	3E-08	-	-	-
Dermal Contact	-	1E-08	3E-08	-	-	-
<u>On-Site Quarry Pond Sediments</u>						
Incidental Ingestion	-	-	2E-06	-	-	-
Dermal Contact	-	5E-06	2E-06	-	-	-
<u>Off-Site Cobleskill Creek Sediments</u>						
Dermal Contact	-	-	-	2E-06	-	-
<u>Off-Site Drainage System Sediments</u>						
Dermal Contact	-	-	-	6E-06	-	-
<u>Off-Site Surface Soil</u>						
Incidental Ingestion	-	-	-	-	2E-07	-
Dermal Contact	-	-	-	-	1E-07	-
Inhalation	-	-	-	-	2E-08	-
<u>Ground Water (3)</u>						
Ingestion	-	-	-	-	-	5E-04
Dermal Contact	-	-	-	-	-	1E-05
Inhalation	-	-	-	-	-	9E-04
Total Cancer Risk =	6E-05	2E-05	1E-05	8E-06	3E-07	1E-03

<u>Notes:</u>

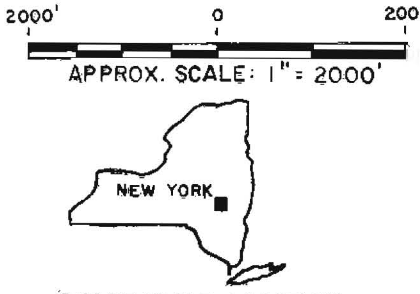
(1) Calculated using soil samples for only the active scrapyard area, as discussed in Section 5-2.
(2) Calculated using soil samples for the entire site, as discussed in Section 5-2.
(3) Off-site resident exposure to ground water is evaluated using current on-site ground water concentrations, as discussed in Section 5-2.

Figures

FIGURE 1-1



REFERENCE: USGS COBLESKILL, RICHMONDVILLE N.Y. QUADS.



QUADRANGLE LOCATION

NIAGARA MOHAWK POWER CORPORATION
COBLESKILL, NEW YORK

M. WALLACE & SON INC. SCRAPYARD
REMEDIAL INVESTIGATION
LOCATION MAP

JULY 1992
364.17.61

BLASLAND, BOUCK & LEE INC.
ENGINEERS & GEOSCIENTISTS

LEGEND:

GUY ANCHOR
UTILITY POLE
PROPERTY LINE
APPROXIMATE LIMIT OF QUARRY
DITCH

GENERAL NOTES:

1. ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
2. CONTOUR INTERVAL = 2 FT.
3. LOCATION OF UNDERGROUND UTILTIES AND OTHER UNDERGROUND STRUCTURES LOCATED BY FIELD MEASUREMENTS WHERE POSSIBLE, OTHERWISE OBTAINED FROM OTHER SOURCES AND MAY BE APPROXIMATE. OTHER UNDERGROUND UTILITIES AND STRUCTURES MAY EXIST, THE LOCATIONS OF WHICH ARE PRESENTLY UNKNOWN.
4. PROPERTY BOUNDARY LOCATED IN THE FIELD BY JOANNE DARCY CRUM, L.S., COBLESKILL, N.Y.
5. SITE SURVEY CONDUCTED BY BLASLAND & BOUCK ENGINEERS, P.C., OCTOBER 1992.

VIEW: 40SCALE
LAYERS: OFF=* ON=BASE*,SITE*
5/11/95 05-TMW 54-DMW.PGL
38417798R/38417001.DWG

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE & SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

REMEDIAL INVESTIGATION

SITE PLAN

FIGURE
1-2

LEGEND:

▨ QUARRY POND SURFACE WATER DRAINAGE ROUTE

—P— - - — PROPERTY LINE

— — — — STORM SEWER PIPE ROUTE

— — — DRAINAGE DITCH

——— SURFACE WATER FEATURE

—x—x—x— FENCE

MH ○ STORM SEWER MANHOLE

CB □ STORM SEWER CATCH BASIN

BUILDINGS

→ DIRECTION OF SURFACE WATER FLOW

200' 0 2 400'

GENERAL NOTES:

1. THIS SHEET WAS DEVELOPED FROM THE VILLAGE OF COBLESKILL, NEW YORK, STORM SEWER SYSTEM MAP THIS SHEET HAS BEEN UPDATED UNDER HC 7525 DATED FEBRUARY 1965

LAYERS ON = *; LAYERS OFF = 36417X10*,36417X03-SPDATA, REF
3/9/96 54-DMW
3641779R\36417C04.DWG

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

NIAGARA MOHAWK POWER CORPORATION
M. WALLACE & SON, INC. SCRAPYARD
COBLESKILL, NEW YORK

REMEDIAL INVESTIGATION

SURFACE WATER FEATURES AND SITE DRAINAGE PATH

FIGURE
1-3

SITE MAPS ARE AVAILABLE IN HARD COPY IN REMEDIATION FILES